



ECONOMIC AND SOCIAL INDICATORS FOR THE QUEENSLAND MUD CRAB GULF OF CARPENTARIA FISHERY IN 2019/20

A Report for Fisheries Queensland

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ABBREVIATIONS

ABARES	Australian Bureau of Agriculture and Resource Economics and Science
fte	full-time equivalent
GOS	Gross Operating Surplus
GVP	Gross Value of Production
GSP	Gross State Product
GRP	Gross Regional Product
PWI	Personal Wellbeing Index
QLD	Queensland

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GLOSSARY

Active Business: refers to a fisher operating a fishing business which fished at least one day during the relevant period.

Beach Price: refers to the unimproved price received by commercial fishers when landing their catch at the beach, wharf or port (also referred to as wharf price and comparable to farm gate price), and is generally expressed in terms of \$/kg or \$/unit. Processing margins are not included in the beach price as processing operations are assumed to occur further along the value chain. The use of beach prices also removes the effect of transfer pricing by the firm if it is vertically integrated into the value chain.

Business Profit: is defined as *Gross Operating Surplus (GOS)* less *Depreciation* less *Owner-operator and Unpaid Family Labour*. Business Profit represents a more complete picture of the actual financial status of an individual firm, compared with *Gross Operating Surplus*.

Business Profit before Depreciation: is defined as *Gross Operating Surplus* less imputed wages for *Owner-operator and Unpaid Family Labour*.

Gross Margin: is defined as *Gross Income* less *Total Variable Cost*. This is a basic measure of profit which assumes that capital has no alternative use and that as fishing activity (days fished) varies there is no change in capital or fixed costs.

Cost of Management Services: management services will generally include biological monitoring and reporting; policy, regulation and legislation development; compliance and enforcement services; licensing services; and research.

Days Fished: refers to the number of days fished at the 'boat mark' level, or at a business level where there is no boat mark. For example, a business with two boat marks that each fished on 200 days through the year has 400 days fished.

Depreciation: refers to the annual reduction in the value of capital due to general wear and tear or the reduction in value of an item over time. Note this is a measure of economic depreciation not accounting depreciation¹.

Employment: is a measure of the number of working proprietors, managers, directors and other employees, including owner-operators, in terms of the number (total jobs) or full-time equivalent (fte) jobs. One fte is considered to be 37.5 hours per week for 42 weeks per year.

Endorsement: in this report represents the licences, symbols, quota and effort units that allow fishers to access the commercial fisheries.

Equity: Commercial fishing businesses in Queensland utilise valuable fishing licences, vessels or vehicles and other capital. They may also borrow money to finance the business. The total assets held by a business less its total liabilities is the business' equity.

Gross Income: refers to the cash receipts received by an individual firm and is expressed in dollar terms. Gross income is calculated as catch (kg) multiplied by 'beach price' (\$/kg). It is the contribution of an individual fishing business to the GVP of a fishing sector or fishery. Gross income excludes income from other sources such as government assistance payments or leasing of quota.

¹ Accounting depreciation allocates the cost of an asset over its useful life.

Gross Operating Surplus (GOS): is defined as *Gross Income* less *Total Costs* and is expressed in current dollar terms. GOS does not include a value for owner/operator wages, unpaid family work, or depreciation.

Gross State Product (GSP) and Gross Regional Product (GRP): are measures of the net contribution of an activity to the state/regional economy. Contribution to GSP or GRP is measured as value of output less the cost of goods and services (including imports) used in producing the output. It can also be measured as household income plus other value added (gross operating surplus and all taxes, less subsidies). It represents payments to the primary inputs of production (labour, capital and land).

Gross Value of Production (GVP): refers to the value of the total annual catch for individual fisheries, fishing sectors or the fishing industry as a whole, and is measured in dollar terms. GVP, generally reported on an annual basis, is the quantity of catch for the year multiplied by the average beach price. It is equivalent to *Gross Income*.

Household Income (economic contribution): is a component of Gross State Product (GSP) and Gross Regional Product (GRP) and is a measure of wages and salaries, drawings by owner operators and other payments to labour including overtime payments and income tax, but excluding payroll tax.

Owner-operator and Unpaid Family Labour: in many fishing businesses there is a component of labour that does not draw a direct wage or salary from the business. This will generally include owner-operator labour and often also includes some unpaid family labour. The value of this labour needs to be accounted for which involves imputing a labour cost based on the amount of time and equivalent wages rate. In profitability calculations this labour cost can be included simply as another cost so that *Gross Operating Surplus* takes account of this cost. Alternatively, it can be deducted from GOS to give a separate indicator called *Business Profit before Depreciation* in this report. Owner-operator and unpaid family labour is separated into variable labour (fishing and repairs and maintenance) and overhead labour (management and administration).

Profit at Full Equity: is calculated as *Business Profit* plus *leasing of building, equipment & quota transfer* payments less *depreciation associated with leased capital*. Profit at Full Equity represents the profitability of an individual fishing business, assuming the business has full equity in the operation, i.e. there is no outstanding debt associated with the investment in capital so equity is 100%. Profit at Full Equity is a useful absolute measure of the economic performance of fishing firms.

Rate of Return on Total Capital at Full Equity: is calculated as *Profit at Full Equity* divided by *Total Capital at Full Equity* multiplied by 100. The value of leased equipment, rent and transferred quota is capitalised and added to *Total Capital* to calculate *Total Capital at Full Equity*. This rate of return is expressed in percentage terms and is calculated for an individual fishing business. It refers to the economic return to the total investment in capital items, and is a useful relative measure of the performance of individual firms. *Rate of Return on Total Capital at Full Equity* is useful to compare the performance of various fishing businesses, and to compare the performance of other types of operators, and with other industries.

Total Costs: defined as *Total Variable Cost* plus *Total Fixed Cost*. It does not include *depreciation*.

Total Fixed Cost: are costs that remain fixed regardless of the level of catch or the amount of time spent fishing. As such these costs, measured in current dollar terms, are likely to remain relatively constant from one year to the next. Examples of fixed cost include:

- insurance
- administrative and industry fees
- office & business administration (communication, stationery, accountancy fees)
- interest on loan repayments and overdraft
- leasing.

Total Variable Cost: are costs which are dependent upon the level of catch or, more commonly, the amount of time spent fishing. As catch or fishing time increases, variable costs also increase. Variable costs are measured in current dollar terms and include the following individual cost items:

- fuel, oil and grease for the boat
- bait
- ice
- provisions
- crew payments
- unscheduled repairs & maintenance.

Total Capital: includes capital items that are required by the fishing business to earn the gross income². It includes boat hull, engine, electronics and other permanent fixtures and tender boats, as well as endorsements. Other capital items such as motor vehicles, sheds, cold-rooms, and jetty/moorings are included to the extent that they are used in the fishing business.

² Total capital should not be confused with financial capital which is money provided by lenders for a price (interest).

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SUMMARY

This report presents economic and social indicators for the Mud Crab Gulf of Carpentaria fishery for the 2019/20 financial year.

BDO EconSearch was contracted by Fisheries Queensland to develop economic and social indicators to inform stakeholders with published financial, economic and social information about professional fishers (i.e. commercial fishers and charter operators) in Queensland. Data was previously collected for the 2017/18 and 2018/19 financial years (BDO EconSearch 2020). This report presents the results for the 2019/20 financial year.

A summary of key indicators is provided in Table S-1. In 2019/20, the Mud Crab Gulf of Carpentaria fishery produced \$2.6m in gross value of production (at beach price) from a catch of 76t. The fishery generated \$-0.5m in net economic return. Including flow-on effects on the broader economy, the fishery supported \$3.2m of gross state product and 20 fte jobs in Queensland.

Table S-1 Summary of key economic indicators for the 2017/18 to 2019/20 financial years for the Mud Crab Gulf of Carpentaria fishery

Indicator	2017/18	2018/19	2019/20
Catch as reported by weight (t)	146t	141t	76t
Gross Value of Production (GVP) (beach price) (\$m)	\$4.7m	\$4.4m	\$2.6m
Export Value (\$m) ^a	\$0.0m	\$0.0m	\$0.1m
Active Businesses	35 businesses	34 businesses	36 businesses
Management Cost/Gross Value of Production	20.7%	25.0%	46.2%
Rate of Return on Total Capital at Full Equity ^b	55.5%	31.7%	20.1%
Active Endorsement Value per Active Business ^b	\$34,104	\$38,811	\$48,646
Gross State Product (direct + flow-on) (\$m)	\$8.5m	\$8.1m	\$3.2m
Employment (direct + flow-on)	57 fte jobs	63 fte jobs	20 fte jobs
Net Economic Return (\$m)	\$1.2m	\$0.3m	\$-0.5m
Net Economic Return/Gross Value of Production	24.8%	5.8%	-18.9%

^a In 2019/20, the definition of exports was expanded to include exports further down the supply-chain.

^b 2017/18 and 2018/19 values have been revised due to an improvement in the method to attribute capital value to fisheries.

Source: BDO EconSearch analysis

1. INTRODUCTION

This report presents economic and social indicators for the Mud Crab Gulf of Carpentaria fishery for the 2019/20 financial year.

The Queensland Sustainable Fisheries Strategy 2017-2027 (SFS) sets out a comprehensive reform plan with a number of actions which will improve the management of Queensland fisheries. With respect to actions relating to fisheries monitoring, the SFS requires Fisheries Queensland to deliver a practical and cost-effective system to collect data on economic and social indicators from Queensland fishers and directly related stakeholders (e.g. fish processors, wholesalers, community groups). These indicators will be used by Fisheries Queensland to better understand the economic and social aspects of each fishery and of the different types of fishers (e.g. level of activity, region of activity, mode of fishing) within each fishery.

These economic and social indicators will be used to inform management decisions and to monitor progress towards desired targets. As these surveys continue, they will provide an appropriate timeseries that can be used to understand the economic development of the industry.

BDO EconSearch was contracted by Fisheries Queensland to develop economic and social indicators to inform stakeholders with published financial, economic and social information about professional fishers (i.e. commercial fishers and charter operators) in Queensland. Data was previously collected for the 2017/18 and 2018/19 financial years (BDO EconSearch 2020). This report presents the results for the 2019/20 financial year.

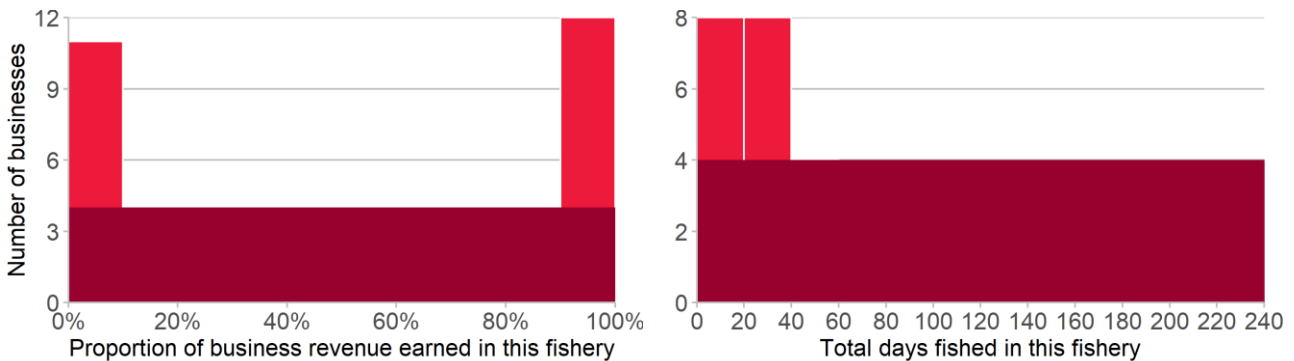
This report is complemented by a summary report 'Summary Economic and Social Indicators for Queensland's Commercial Fisheries in 2019/20' (BDO EconSearch 2022) that describes the indicators in detail and presents results for each of Queensland's commercial fisheries. The remainder of this section provides a broad outline of the methods and data used.

1.1. Background

For the purpose of this report, the Mud Crab Gulf of Carpentaria Fishery includes all mud crabbing activity with a C1 symbol as regulated by Fisheries Queensland in the Gulf of Carpentaria, and excludes any catch on the east coast of Queensland.

The distribution of businesses in the Mud Crab Gulf of Carpentaria fishery in terms of proportion of revenue earned within the Mud Crab Gulf of Carpentaria fishery (i.e. the level of specialisation in this particular fishery) and total days fished (i.e. level of activity in this fishery) is presented in Figure 1-1. Each visible bar represents at least 5 businesses and the burgundy band along the horizontal axis covers the area between 0 and 4 businesses to ensure confidentiality. The limits of the horizontal axis are set to show non-confidential data only which means there may be businesses with greater days fished than the maximum axis values. Business level financial indicators are presented for groups along each of these distributions in this report.

Figure 1-1 Revenue share and days fished of businesses in the Mud Crab Gulf of Carpentaria fishery in the 2019/20 financial year



Source: 2021 business survey

1.2. Indicators

This report presents indicators in the following categories:

- Economic indicators
 - Business financial indicators
 - Economic contribution indicators
 - Fishery economic indicators
- Social indicators
 - Perceptions of management
 - Lifestyle, satisfaction and personal wellbeing
 - Community contribution.

1.3. Data

The indicators are based on a confidential survey of fishing businesses undertaken in 2021 to collect data for the 2019/20 financial year and fisheries monitoring data provided by Fisheries Queensland. Survey data are confidential and BDO EconSearch will not provide individual data to Fisheries Queensland in any form that is not also appropriate to be published publicly, such as by aggregating responses into groups of at least 5 for any statistic (see BDO EconSearch 2022 for details). At a high level, the data collected include:

- Survey data:
 - Itemised costs of fishing, business administration and associated processing, including processing amounts
 - Species prices and market destinations and leasing costs
 - Symbol and quota values
 - Capital values (e.g. vessel, vehicles, buildings and equipment)
 - Perceptions of fisheries management, lifestyle and wellbeing
 - Effects of COVID-19 in 2019/20 (reported in BDO EconSearch 2022).
- Fisheries Queensland data:
 - Fisher level fishing activity such as catch by species and effort, including spatial and temporal dimensions
 - Symbol and quota ownership, trading and utilisation
 - Management costs
 - Licence fees.

1.4. Method

The methods used to collect data and generate the economic indicators were similar across all fisheries. The methods are presented in the summary report of economic and social indicators for Queensland's commercial fisheries in 2019/20 (BDO EconSearch 2022). Indicators were produced through a number of techniques including:

- Business level statistical matching and imputation to scale up (or expand) the survey sample of fishing businesses to represent the whole commercial fishing industry.
- Regional economic contribution analysis (using an input-output approach) to estimate the employment, gross state product and household income generated by the commercial fishing industry in Queensland and its regions.
- Established financial reporting techniques to describe the profitability of fishing businesses.
- Data visualisation to present demographic and social indicator results.

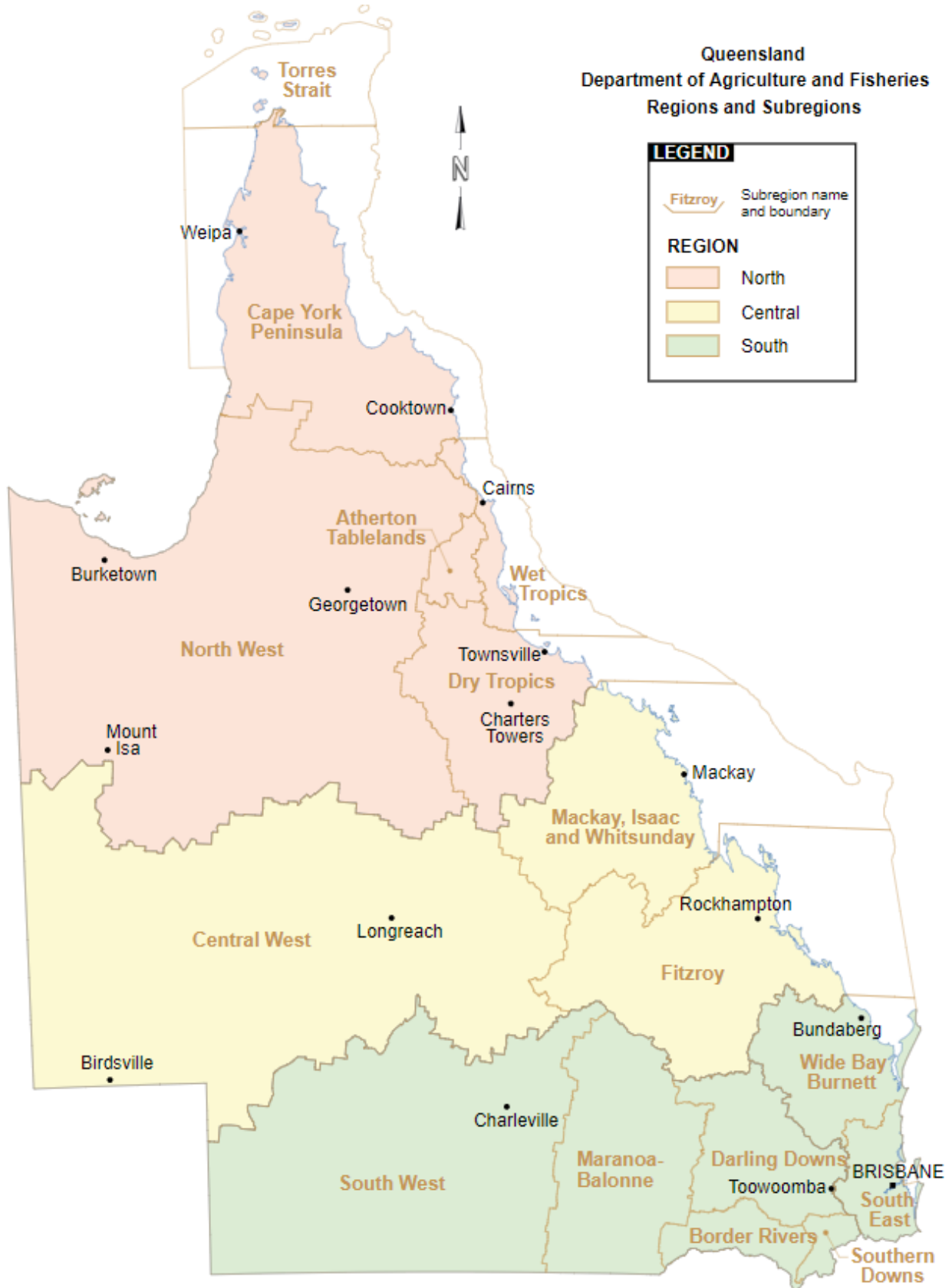
1.5. Regions

Economic contribution results and business financial indicators are presented for Queensland as a whole and on a regional basis in accordance with the Department of Agriculture and Fisheries Subregion definitions. Only coastal regions are reported:

- North West
- Cape York Peninsula (includes Torres Strait)
- Wet Tropics
- Dry Tropics
- Mackay, Isaac and Whitsunday
- Fitzroy
- Wide Bay Burnett
- South East.

Only regions where substantial fishing activity took place in 2019/20 are presented in this report.

Figure 1-2 Department of Agriculture and Fisheries Subregions used for reporting



Source: Business Queensland (2019)

1.6. Survey

The survey captured responses from 16.7% of fishing businesses that were active in 2019/20, representing 14.2% of Mud Crab Gulf of Carpentaria fishery gross value of production (GVP). Regional response rates ranged from 19.0% (Cape York Peninsula) to 15.0% (North West).

Table 1-1 Survey sample for the 2019/20 financial year in the Mud Crab Gulf of Carpentaria fishery

Fishing Region ^a	Active Businesses	Sample Size	% of Active Businesses Sampled	Fishery GVP (\$m)	Sampled GVP (\$m)	% of GVP Sampled
Cape York Peninsula	21	4	19.0%	1.2	0.1	9.4%
North West	20	3	15.0%	1.4	0.3	18.3%
Queensland	36	6	16.7%	2.6	0.4	14.2%

^a The sum of regions may not equal the state totals due to some businesses being active in multiple regions, rounding errors and confidentiality.

Source: BDO EconSearch analysis

2. CATCH, VALUE, PRICES AND MARKETS

Catch, price, value and market destinations are shown in Table 2-1. The Mud Crab Gulf of Carpentaria fishery produced 76t of catch and \$2.6m in GVP (at beach price). Market destinations for where fishing businesses sell their catch to include Queensland (24.8%), Interstate (75.2%). Total overseas is an estimate by fishing businesses about the proportion of catch that is ultimately exported overseas, this was estimated at 2.9%.

Table 2-1 Catch, GVP and markets for the Mud Crab Gulf of Carpentaria fishery in the 2019/20 financial year

Species	Catch	Price per Unit	Unit	GVP (\$m)	Market Destination			
					QLD	Interstate	Direct overseas	Total overseas
Crab - Mud	75,714	\$34.87	Kg	\$2.64	24.8%	75.2%	0.0%	2.9%
Fishery Total	75,714	\$34.87	Kg	\$2.64	24.8%	75.2%	0.0%	2.9%

Source: BDO EconSearch analysis

3. COST OF MANAGEMENT

The costs incurred by Fisheries Queensland in managing Queensland's fisheries is not equal to the administration fees or licence fees charged by Fisheries Queensland to the fishing businesses. This section discusses the costs incurred by Fisheries Queensland and not the administration and licence fees charged by Fisheries Queensland to commercial fishing businesses.

While the total cost of managing Queensland's commercial fisheries is known, the precise cost of managing each individual fishery is difficult to determine. This is because the costs of activities such as fishery monitoring, assessment, management and compliance overlap several fisheries. For example a single fishery monitoring activity can collect information for several fisheries which in turn inputs into the management of several different fisheries. Allocating the costs of managing fisheries requires a degree of subjective assessment based on the benefits derived by the individual fisheries from those activities. The costs of managing the commercial sector for each fishery were provided to BDO EconSearch by Fisheries Queensland. Costs were allocated to the fisheries based on the cost being incurred to enable the management of the fishery and then proportionally attributed to the respective sectors based on the benefits of management to the fishery. This was done for the purpose of developing economic indicators and should not be relied upon for any other purpose. These costs were incurred while delivering the following services:

- annual reports of fishery status
- policy and management services
- regulatory/legislation and licensing services
- compliance services
- directorate services
- extension services
- fishery monitoring and research services.

Estimated total management costs, as detailed in Table 3-1, for the Mud Crab Gulf of Carpentaria fishery were \$1.2m in 2019/20. As a proportion of GVP, total management costs were 46.2% per cent in 2019/20.

Table 3-1 Costs of management in the Mud Crab Gulf of Carpentaria fishery in the 2019/20 financial year

Indicator	Value
Management Costs (\$m)	\$1.2m
GVP (\$m)	\$2.6m
Management Costs/GVP (%)	46.2%

Source: Fisheries Queensland and BDO EconSearch analysis

4. FINANCIAL INDICATORS

This section presents a series of tables that describe the average financial performance of businesses' operations in the Mud Crab Gulf of Carpentaria fishery in 2019/20. The average business refers to the average activity within the Mud Crab Gulf of Carpentaria fishery of businesses that access the fishery. A business entity may operate across several fisheries, however the "Average Business" financial indicators in these tables represents just the proportion of activity attributable to this fishery. For example, a business that is active in both the Mud Crab Gulf of Carpentaria fishery and another fishery will have its business activity (employment, expenditure, capital values, etc.) split between the financial indicators tables of the two fisheries.

4.1. Financial Performance

Financial indicators are presented in Table 4-1 to Table 4-5 that follow using various groupings:

- **Whole fishery:** provides total financial information for the whole fishery.
- **Average business:** the average business entity operations in the fishery across the whole fishery.
- **Return on investment quartiles:** the performance of the average business in each return on investment quartile calculated by allocating an even number of businesses to each quartile.
- **Days fished quartiles:** the performance of the average business in each activity level quartile (days fished) calculated by allocating an even number of businesses to each quartile.
- **Share of revenue earned in this fishery:** the performance of the average businesses that are specialised in this fishery compared to those that earn more of their revenue in other fisheries. This allows comparison of the business characteristics of businesses with different levels of specialisation in the Mud Crab Gulf of Carpentaria fishery.
- **Fishing regions:** total performance of all fishing activity in each fishing region.

The assets, liabilities and equity of businesses that accessed the Mud Crab Gulf of Carpentaria fishery in 2019/20 are summarised following the financial indicators tables.

Fishing employment and activity

Businesses that accessed the Mud Crab Gulf of Carpentaria fishery in 2019/20, on average employed 0.3 fte and fished on 73 days of the year (Table 4-1).

Revenue and costs

Average revenue was \$73,340 and average variable costs were \$31,380, producing an average gross margin of \$41,961. Average fixed costs were \$13,537 with total unpaid labour of \$7,967, producing an average gross operating surplus of \$36,390 (Table 4-1).

Profitability

Average business profit, which accounts for depreciation and unpaid labour, was \$21,396. The average profit at full equity, which excludes any leasing and interest costs, was \$23,787. Dividing this profit at full equity by the capital value of fishing gear and equipment produces a return on investment of 41.9%. The return on total capital at full equity is 20.1% (Table 4-1).

Table 4-1 Financial performance of the Mud Crab Gulf of Carpentaria fishery in the 2018/19 and 2019/20 financial years, average business and whole fishery

Indicator	2018/19			2019/20		
	Average per Business	Total for the Whole Fishery	%	Average per Business	Total for the Whole Fishery	%
Fishing Businesses						
Active Businesses	34	34		36	36	
Sample Size	7	7		6	6	
Fishing Activity						
Catch (kg)	4,136	140,641		2,103	75,714	
Days Fished	111	3,776		73	2,611	
Prop. of Revenue Earned in this Fishery	63%	63%		23%	23%	
Employment						
Total Jobs	3.0	103		1.1	40	
FTE Jobs	0.7	25		0.3	11	
(1) Gross Income	\$128,133	\$4,356,526		\$73,340	\$2,640,256	
Variable Costs						
Bait & Ice	\$5,221	\$177,499	7%	\$1,810	\$65,172	4%
Fuel	\$18,694	\$635,586	25%	\$9,631	\$346,721	21%
Labour - paid	\$14,946	\$508,175	20%	\$10,660	\$383,774	24%
(2) Labour - unpaid	\$13,325	\$453,057	18%	\$7,165	\$257,944	16%
Other	\$1,655	\$56,257	2%	\$360	\$12,946	1%
Provisions	\$1,488	\$50,594	2%	\$1,753	\$63,113	4%
(3) Total Variable Cost	\$55,328	\$1,881,168	74%	\$31,380	\$1,129,670	70%
Fixed Costs						
Insurance	\$573	\$19,485	1%	\$1,088	\$39,166	2%
(4) Interest	\$423	\$14,391	1%	\$508	\$18,290	1%
(5) Labour - unpaid	\$4,349	\$147,862	6%	\$801	\$28,852	2%
(6) Leasing fees - other	\$1,342	\$45,624	2%	\$993	\$35,737	2%
(6) Leasing fees - Quota ^a	-	-	-	\$0	\$0	0%
(6) Leasing fees - Symbol ^a	-	-	-	\$1,324	\$47,679	3%
Legal & Accounting	\$824	\$28,033	1%	\$473	\$17,044	1%
Licence fees	\$1,213	\$41,239	2%	\$1,324	\$47,663	3%
Office & Admin	\$4,230	\$143,827	6%	\$1,351	\$48,634	3%
Repairs & Maintenance	\$3,878	\$131,852	5%	\$3,479	\$125,230	8%
Slipping & Mooring	\$171	\$5,809	0%	\$799	\$28,775	2%
Telephone etc.	\$606	\$20,617	1%	\$701	\$25,245	2%
Travel	\$1,787	\$60,747	2%	\$439	\$15,798	1%
VMS costs ^b	-	-	-	\$256	\$9,216	1%
(7) Total Fixed Cost	\$19,397	\$659,486	26%	\$13,537	\$487,329	30%
(8) Total Costs (3+7)	\$74,725	\$2,540,654	100%	\$44,917	\$1,616,999	100%
Profitability						
Gross Margin (1-3)	\$72,805	\$2,475,358		\$41,961	\$1,510,586	
(9) Total Unpaid Labour (2+5)	\$17,674	\$600,920		\$7,967	\$286,796	
Gross Operating Surplus (1-8+9)	\$71,082	\$2,416,791		\$36,390	\$1,310,053	
(10) Business Profit before Depreciation (1-8)	\$53,408	\$1,815,872		\$28,424	\$1,023,257	
(11) Depreciation	\$6,550	\$222,685		\$7,028	\$253,011	
Business Profit (10-11)	\$46,858	\$1,593,187		\$21,396	\$770,247	
Profit at Full Equity ^c	\$49,252	\$1,674,573		\$23,787	\$856,328	
Capital^d						
Fishing Gear and Equipment	\$90,717	\$3,084,377		\$45,572	\$1,640,591	
Licence and Quota Value	\$38,811	\$1,319,582		\$48,646	\$1,751,250	
Total Capital	\$129,528	\$4,403,960		\$94,218	\$3,391,841	
Rate of Return at Full Equity^d						
Rate of Return on Fishing Gear and Equipment at Full Equity ^c	47.7%	47.7%		41.9%	41.9%	
Rate of Return on Total Capital at Full Equity ^c	31.7%	31.7%		20.1%	20.1%	

^a In 2018/19 these costs are included in Leasing fees - other.

^b In 2018/19 these costs are included in Office & Admin.

^c Full equity values account for the value of leased equipment, symbols and transferred quota (6) by subtracting the lease cost when calculating profit at full equity and capitalising the lease cost (increasing capital value) when calculating rates of return.

^d 2018/19 values have been revised due to an improvement in the method used to attribute capital value to fisheries.

Source: BDO EconSearch analysis

Table 4-2 Financial performance of the Mud Crab Gulf of Carpentaria fishery in the 2019/20 financial year, average business in each return on investment quartile

Indicator	Return on Investment Quartile				Average per Business
	1 Quartile	2 Quartile	3 Quartile	4 Quartile	
Fishing Businesses					
Active Businesses	9	9	9	9	36
Sample Size	3	1	2		6
Fishing Activity					
Catch (kg)	659	1,260	1,965	4,529	2,103
Days Fished	31	55	84	120	73
Prop. of Revenue Earned in this Fishery	72%	31%	40%	49%	23%
Employment					
Total Jobs	1.6	0.7	1.0	1.2	1.1
FTE Jobs	0.3	0.2	0.3	0.5	0.3
(1) Gross Income	\$21,908	\$44,905	\$68,615	\$157,934	\$73,340
Variable Costs					
Bait & Ice	\$1,250	\$1,401	\$2,319	\$2,272	\$1,810
Fuel	\$5,998	\$7,663	\$9,774	\$15,089	\$9,631
Labour - paid	\$6,438	\$7,209	\$6,453	\$22,541	\$10,660
(2) Labour - unpaid	\$7,426	\$5,390	\$6,063	\$9,782	\$7,165
Other	\$221	\$249	\$400	\$568	\$360
Provisions	\$178	\$1,234	\$2,786	\$2,815	\$1,753
(3) Total Variable Cost	\$21,512	\$23,145	\$27,795	\$53,067	\$31,380
Fixed Costs					
Insurance	\$511	\$1,056	\$1,402	\$1,383	\$1,088
(4) Interest	\$5	\$647	\$586	\$795	\$508
(5) Labour - unpaid	\$483	\$350	\$1,377	\$996	\$801
(6) Leasing fees - other	\$6	\$1,356	\$1,205	\$1,403	\$993
(6) Leasing fees - Quota	\$0	\$0	\$0	\$0	\$0
(6) Leasing fees - Symbol	\$2,129	\$884	\$841	\$1,444	\$1,324
Legal & Accounting	\$400	\$335	\$540	\$618	\$473
Licence fees	\$1,784	\$1,301	\$523	\$1,688	\$1,324
Office & Admin	\$1,885	\$996	\$817	\$1,706	\$1,351
Repairs & Maintenance	\$1,617	\$2,452	\$4,494	\$5,351	\$3,479
Slipping & Mooring	\$944	\$588	\$635	\$1,030	\$799
Telephone etc.	\$538	\$522	\$815	\$930	\$701
Travel	\$256	\$355	\$515	\$630	\$439
VMS costs	\$256	\$198	\$200	\$370	\$256
(7) Total Fixed Cost	\$10,815	\$11,039	\$13,951	\$18,343	\$13,537
(8) Total Costs (3+7)	\$32,327	\$34,184	\$41,746	\$71,411	\$44,917
Profitability					
Gross Margin (1-3)	\$397	\$21,760	\$40,820	\$104,867	\$41,961
(9) Total Unpaid Labour (2+5)	\$7,909	\$5,740	\$7,439	\$10,778	\$7,967
Gross Operating Surplus (1-8+9)	-\$2,509	\$16,461	\$34,309	\$97,301	\$36,390
(10) Business Profit before Depreciation (1-8)	-\$10,418	\$10,721	\$26,869	\$86,523	\$28,424
(11) Depreciation	\$6,245	\$4,444	\$8,472	\$8,952	\$7,028
Business Profit (10-11)	-\$16,663	\$6,277	\$18,398	\$77,571	\$21,396
Profit at Full Equity ^a	-\$14,513	\$8,533	\$20,446	\$80,681	\$23,787
Capital					
Fishing Gear and Equipment	\$37,168	\$34,748	\$54,490	\$55,882	\$45,572
Licence and Quota Value	\$34,668	\$54,020	\$33,805	\$72,090	\$48,646
Total Capital	\$71,836	\$88,768	\$88,295	\$127,972	\$94,218
Rate of Return at Full Equity					
Rate of Return on Fishing Gear and Equipment at Full Equity ^a	-38.7%	17.3%	30.6%	110.1%	41.9%
Rate of Return on Total Capital at Full Equity ^a	-15.5%	7.6%	18.7%	50.5%	20.1%

^a Full equity values account for the value of leased equipment, symbols and transferred quota (6) by subtracting the lease cost when calculating profit at full equity and capitalising the lease cost (increasing capital value) when calculating rates of return.

Source: BDO EconSearch analysis

Table 4-3 Financial performance of the Mud Crab Gulf of Carpentaria fishery in the 2019/20 financial year, average business in each days fished quartile

Indicator	Days Fished Quartile				Average per Business
	1 Quartile	2 Quartile	3 Quartile	4 Quartile	
Fishing Businesses					
Active Businesses	9	9	9	9	36
Sample Size	1	3	1	1	6
Fishing Activity					
Catch (kg)	133	825	2,274	5,180	2,103
Days Fished	11	34	82	164	73
Prop. of Revenue Earned in this Fishery	28%	42%	46%	77%	23%
Employment					
Total Jobs	0.4	1.2	1.0	1.9	1.1
FTE Jobs	0.0	0.3	0.2	0.7	0.3
(1) Gross Income	\$4,555	\$27,812	\$80,267	\$180,728	\$73,340
Variable Costs					
Bait & Ice	\$475	\$715	\$1,491	\$4,561	\$1,810
Fuel	\$731	\$4,284	\$10,301	\$23,209	\$9,631
Labour - paid	\$936	\$6,773	\$15,817	\$19,115	\$10,660
(2) Labour - unpaid	\$478	\$5,432	\$8,162	\$14,589	\$7,165
Other	\$66	\$126	\$357	\$890	\$360
Provisions	\$154	\$142	\$796	\$5,921	\$1,753
(3) Total Variable Cost	\$2,840	\$17,471	\$36,924	\$68,284	\$31,380
Fixed Costs					
Insurance	\$240	\$352	\$950	\$2,809	\$1,088
(4) Interest	\$17	\$69	\$531	\$1,415	\$508
(5) Labour - unpaid	\$221	\$244	\$466	\$2,274	\$801
(6) Leasing fees - other	\$17	\$88	\$1,058	\$2,808	\$993
(6) Leasing fees - Quota	\$0	\$0	\$0	\$0	\$0
(6) Leasing fees - Symbol	\$842	\$1,016	\$1,377	\$2,063	\$1,324
Legal & Accounting	\$264	\$146	\$379	\$1,104	\$473
Licence fees	\$1,057	\$1,078	\$1,301	\$1,860	\$1,324
Office & Admin	\$863	\$976	\$1,436	\$2,128	\$1,351
Repairs & Maintenance	\$768	\$1,439	\$2,689	\$9,018	\$3,479
Slipping & Mooring	\$54	\$836	\$836	\$1,471	\$799
Telephone etc.	\$289	\$242	\$599	\$1,675	\$701
Travel	\$75	\$211	\$390	\$1,080	\$439
VMS costs	\$127	\$144	\$276	\$477	\$256
(7) Total Fixed Cost	\$4,833	\$6,844	\$12,288	\$30,183	\$13,537
(8) Total Costs (3+7)	\$7,673	\$24,315	\$49,212	\$98,467	\$44,917
Profitability					
Gross Margin (1-3)	\$1,715	\$10,341	\$43,342	\$112,444	\$41,961
(9) Total Unpaid Labour (2+5)	\$699	\$5,676	\$8,628	\$16,863	\$7,967
Gross Operating Surplus (1-8+9)	-\$2,419	\$9,174	\$39,682	\$99,124	\$36,390
(10) Business Profit before Depreciation (1-8)	-\$3,118	\$3,498	\$31,054	\$82,261	\$28,424
(11) Depreciation	\$4,033	\$2,767	\$5,143	\$16,170	\$7,028
Business Profit (10-11)	-\$7,151	\$731	\$25,912	\$66,091	\$21,396
Profit at Full Equity ^a	-\$6,260	\$1,890	\$28,446	\$71,072	\$23,787
Capital					
Fishing Gear and Equipment	\$24,827	\$20,859	\$38,746	\$97,856	\$45,572
Licence and Quota Value	\$42,295	\$31,076	\$58,510	\$62,703	\$48,646
Total Capital	\$67,121	\$51,934	\$97,257	\$160,559	\$94,218
Rate of Return at Full Equity					
Rate of Return on Fishing Gear and Equipment at Full Equity ^a	-24.6%	8.5%	55.5%	55.6%	41.9%
Rate of Return on Total Capital at Full Equity ^a	-8.2%	3.0%	23.0%	33.6%	20.1%

^a Full equity values account for the value of leased equipment, symbols and transferred quota (6) by subtracting the lease cost when calculating profit at full equity and capitalising the lease cost (increasing capital value) when calculating rates of return.

Source: BDO EconSearch analysis

Table 4-4 Total financial performance of the Mud Crab Gulf of Carpentaria fishery in the 2019/20 financial year, in each major region

Indicator		Subregion		Total for the Whole Fishery
		Cape York Peninsula	North West	
Fishing Businesses				
	Active Businesses	21	20	36
	Sample Size	4	3	6
Fishing Activity				
	Catch (kg)	35,243	40,471	75,714
	Days Fished	1,259	1,352	2,611
Employment				
	Total Jobs	21.8	18.0	40
	FTE Jobs	5.9	5.0	11
(1)	Gross Income	\$1,225,359	\$1,414,898	\$2,640,256
Variable Costs				
	Bait & Ice	\$23,385	\$41,787	\$65,172
	Fuel	\$152,157	\$194,564	\$346,721
	Labour - paid	\$193,575	\$190,199	\$383,774
(2)	Labour - unpaid	\$118,851	\$139,093	\$257,944
	Other	\$5,414	\$7,532	\$12,946
	Provisions	\$22,399	\$40,714	\$63,113
(3)	Total Variable Cost	\$515,781	\$613,889	\$1,129,670
Fixed Costs				
	Insurance	\$16,333	\$22,833	\$39,166
(4)	Interest	\$8,366	\$9,924	\$18,290
(5)	Labour - unpaid	\$10,391	\$18,462	\$28,852
(6)	Leasing fees - other	\$15,694	\$20,043	\$35,737
(6)	Leasing fees - Quota	\$58	\$265	\$0
(6)	Leasing fees - Symbol	\$27,396	\$20,283	\$47,679
	Legal & Accounting	\$8,153	\$8,890	\$17,044
	Licence fees	\$25,837	\$21,826	\$47,663
	Office & Admin	\$24,180	\$24,455	\$48,634
	Repairs & Maintenance	\$52,347	\$72,883	\$125,230
	Slipping & Mooring	\$14,837	\$13,938	\$28,775
	Telephone etc.	\$12,067	\$13,178	\$25,245
	Travel	\$6,927	\$8,871	\$15,798
	VMS costs	\$4,130	\$5,086	\$9,216
(7)	Total Fixed Cost	\$226,715	\$260,937	\$487,329
(8)	Total Costs (3+7)	\$742,496	\$874,826	\$1,616,999
Profitability				
	Gross Margin (1-3)	\$709,578	\$801,009	\$1,510,586
(9)	Total Unpaid Labour (2+5)	\$129,241	\$157,555	\$286,796
	Gross Operating Surplus (1-8+9)	\$612,104	\$697,627	\$1,310,053
(10)	Business Profit before Depreciation (1-8)	\$482,862	\$540,072	\$1,023,257
(11)	Depreciation	\$113,836	\$139,175	\$253,011
	Business Profit (10-11)	\$369,026	\$400,897	\$770,247
	Profit at Full Equity ^a	\$413,504	\$442,823	\$856,328
Capital				
	Fishing Gear and Equipment	\$602,274	\$1,038,318	\$1,640,591
	Licence and Quota Value	\$958,418	\$792,831	\$1,751,250
	Total Capital	\$1,560,692	\$1,831,149	\$3,391,841
Rate of Return at Full Equity				
	Rate of Return on Fishing Gear and Equipment at Full Equity ^a	53.3%	34.9%	41.9%
	Rate of Return on Total Capital at Full Equity ^a	20.6%	19.5%	20.1%

^a The capital values in the calculation of full equity include the capitalised value of leased equipment, symbols and transferred quota (6). They are larger than the capital values stated in the table.

Source: BDO EconSearch analysis

Table 4-5 Financial performance of the Mud Crab Gulf of Carpentaria fishery in the 2019/20 financial year, average business in each level of specialisation group

Indicator	Share of Revenue earned in Fishery		Average per Business
	High Revenue Share	Low Revenue Share	
Fishing Businesses			
Active Businesses	18	18	36
Sample Size	4	2	6
Fishing Activity			
Catch (kg)	3,373	833	2,103
Days Fished	105	40	73
Prop. of Revenue Earned in this Fishery	85%	12%	23%
Employment			
Total Jobs	2.0	0.2	1.1
FTE Jobs	0.5	0.1	0.3
(1) Gross Income	\$117,783	\$28,897	\$73,340
Variable Costs			
Bait & Ice	\$3,117	\$504	\$1,810
Fuel	\$16,402	\$2,860	\$9,631
Labour - paid	\$16,733	\$4,588	\$10,660
(2) Labour - unpaid	\$13,166	\$1,164	\$7,165
Other	\$619	\$100	\$360
Provisions	\$3,065	\$441	\$1,753
(3) Total Variable Cost	\$53,102	\$9,657	\$31,380
Fixed Costs			
Insurance	\$1,898	\$278	\$1,088
(4) Interest	\$892	\$124	\$508
(5) Labour - unpaid	\$1,394	\$209	\$801
(6) Leasing fees - other	\$1,798	\$187	\$993
(6) Leasing fees - Quota	\$0	\$0	\$0
(6) Leasing fees - Symbol	\$2,264	\$384	\$1,324
Legal & Accounting	\$840	\$106	\$473
Licence fees	\$2,051	\$597	\$1,324
Office & Admin	\$2,161	\$541	\$1,351
Repairs & Maintenance	\$5,651	\$1,306	\$3,479
Slipping & Mooring	\$1,232	\$366	\$799
Telephone etc.	\$1,233	\$170	\$701
Travel	\$727	\$151	\$439
VMS costs	\$406	\$106	\$256
(7) Total Fixed Cost	\$22,548	\$4,526	\$13,537
(8) Total Costs (3+7)	\$75,650	\$14,183	\$44,917
Profitability			
Gross Margin (1-3)	\$64,681	\$19,240	\$41,961
(9) Total Unpaid Labour (2+5)	\$14,559	\$1,374	\$7,967
Gross Operating Surplus (1-8+9)	\$56,692	\$16,088	\$36,390
(10) Business Profit before Depreciation (1-8)	\$42,133	\$14,715	\$28,424
(11) Depreciation	\$12,197	\$1,859	\$7,028
Business Profit (10-11)	\$29,936	\$12,855	\$21,396
Profit at Full Equity ^a	\$34,048	\$13,526	\$23,787
Capital			
Fishing Gear and Equipment	\$73,782	\$17,362	\$45,572
Licence and Quota Value	\$50,776	\$46,516	\$48,646
Total Capital	\$124,558	\$63,878	\$94,218
Rate of Return at Full Equity			
Rate of Return on Fishing Gear and Equipment at Full Equity ^a	36.7%	65.6%	41.9%
Rate of Return on Total Capital at Full Equity ^a	20.5%	19.1%	20.1%

^a Full equity values account for the value of leased equipment, symbols and transferred quota (6) by subtracting the lease cost when calculating profit at full equity and capitalising the lease cost (increasing capital value) when calculating rates of return.

Source: BDO EconSearch analysis

4.2. Assets, Liabilities and Equity

Commercial fishing businesses in Queensland utilise valuable fishing licences, vessels or vehicles and other capital. They may also borrow money to finance the business. The total assets held by a business less its total liabilities is the business' equity. Table 4-6 presents a simple average of the equity of all surveyed businesses that access the Mud Crab Gulf of Carpentaria fishery. The average is of whole businesses, unlike the financial performance tables above which present averages of proportions of businesses that access the fishery.

Table 4-6 Average business assets, liabilities and equity of businesses participating in the Mud Crab Gulf of Carpentaria fishery in the 2019/20 financial year

	Value
Assets	
Licence and quota	\$109,116
Plant and equipment	\$178,503
Other assets	\$104,960
Total assets	\$392,580
Liabilities	
Total liabilities	\$40,833
Equity	
Total equity	\$351,746
Equity / Total assets	89.6%

Source: BDO EconSearch analysis

5. ECONOMIC CONTRIBUTION

Estimates of the economic contribution of the Mud Crab Gulf of Carpentaria fishery to the Queensland and regional economies in 2019/20 are outlined in this section.

Economic contribution analysis is a descriptive analysis that traces the gross economic activity of the fishery as dollars of expenditure cycle through the regional and state economies. The analysis used the business data reported above and other regional/state data that highlight the linkages that exist within the economy.

Contribution or impact?

An *economic contribution analysis* (presented in this report) can be thought of as a footprint or snapshot analysis of economic activity. It is distinctly different to an *economic impact analysis*, which can be thought of as an analysis of a *change* in economic activity (not the subject of this report). An economic impact analysis is an appropriate approach for evaluating a change where an industry is generating new revenues that would otherwise not occur, keeping revenues in the region that would otherwise be lost, or being subject to changes that result in existing revenues being lost.

Direct and flow-on effects

The following types of activity are presented in this report as *direct* economic contribution:

- the landed beach value of production
- the sustaining capital expenditure of fishing businesses
- the margin value of local processing.

Each of these activities generates flow-on effects to other sectors through purchases of inputs and the employment of labour. These effects have been estimated using input-output analysis (BDO EconSearch 2022).

Economic contribution indicators

Economic contributions have been specified in terms of the following indicators (see Glossary for detail).

- Value of output (direct output is equivalent to gross value of production or GVP)
- Employment (fte and total jobs)
- Household income
- Gross regional (and state) product.

5.1. Economic Contribution to Queensland

Estimates of the economic contribution in 2019/20 by the Mud Crab Gulf of Carpentaria fishery to Queensland and its regions are presented in this section.

Direct contribution measures fishing activity, capital expenditure by fishing businesses and estimated limited processing activity. *Flow-on* contribution measures the economic effects in other sectors of the economy (such as retail and wholesale trade, manufacturing, etc.) supported by the purchases of inputs by businesses described above as *direct* contribution. Flow-on effects are also known as *multiplier effects*. Flow-on effects are disaggregated by industry with the top 10 industries shown separately in Table 5-1. Capital expenditures are assumed to be the same as depreciation (i.e. sustaining the capital stock) which may or may not be the case in a given year but is a reasonable assumption in the long-run. Economic contribution of capital expenditure should, therefore, be interpreted as a long-run average.

Table 5-1 presents the estimated economic contribution of the Mud Crab Gulf of Carpentaria fishery to Queensland in 2019/20.

Table 5-1 Economic contribution of the Mud Crab Gulf of Carpentaria Fishery to Queensland in the 2019/20 financial year

Sector	Output (\$m)	Gross State Product (\$m)	Household Income (\$m)	Employment (fte)	Employment (total)
Direct					
Fishing	2.6	2.2	0.7	11	40
Other direct					
CAPEX	<0.1	<0.1	<0.1	<1	<1
Total Direct	2.6	2.2	0.7	11	40
Flow-on					
Retail Trade	0.2	<0.1	<0.1	1	2
Personal & Other Services	0.1	<0.1	<0.1	<1	<1
Admin Support Services	<0.1	<0.1	<0.1	<1	<1
Health & Community Services	<0.1	<0.1	<0.1	<1	<1
Food & Beverage Services	<0.1	<0.1	<0.1	<1	<1
Education & Training	<0.1	<0.1	<0.1	<1	<1
Professional, Scientific & Technical Services	<0.1	<0.1	<0.1	<1	<1
Wholesale Trade	<0.1	<0.1	<0.1	<1	<1
Construction Services	<0.1	<0.1	<0.1	<1	<1
Insurance & Other Financial Services	<0.1	<0.1	<0.1	<1	<1
Other Sectors	1.0	0.5	0.1	2	2
Total Flow-on	1.9	1.0	0.6	9	9
Total Contribution	4.5	3.2	1.2	20	49

Source: BDO EconSearch analysis

Value of Output (Direct)

The value of fishing activity output at beach price (also known as GVP) generated directly in the Mud Crab Gulf of Carpentaria fishery was \$2.6m in 2019/20 (Table 5-1).

Employment

The Mud Crab Gulf of Carpentaria fishery directly employed 11 fte jobs in 2019/20 in the activity of fishing.

Flow-on business activity was estimated to support a further 9 fte jobs in 2019/20 state-wide. These jobs were spread across a range of industries.

Total direct and flow-on employment contribution by the Mud Crab Gulf of Carpentaria fishery to Queensland was estimated to be 20 fte jobs in 2019/20 (Table 5-1).

Household Income

Estimated household income of \$0.7m was directly earned in 2019/20 in the Mud Crab Gulf of Carpentaria fishery through employee wages and estimated drawings by owner/operators.

Flow-on business activity was estimated to support a further \$0.6m of household income in 2019/20 state-wide.

Total direct and flow-on household income contribution by the Mud Crab Gulf of Carpentaria fishery in Queensland was estimated to be \$1.2m in 2019/20 (Table 5-1).

Gross State Product

Contribution to gross state product is measured as value of output less the cost of goods and services (including imports but excluding wages) used in producing the output. Estimated gross state product of \$2.2m was produced in 2019/20 directly through fishing activity in the Mud Crab Gulf of Carpentaria fishery.

Flow-on business activity was estimated to support a further \$1.0m of gross state product in 2019/20 state-wide.

Total direct and flow-on contribution by the Mud Crab Gulf of Carpentaria fishery to Queensland was estimated to be \$3.2m in 2019/20 (Table 5-1).

5.2. Economic Contribution to Regions of Queensland

Table 5-2 presents the estimated economic contribution of the Mud Crab Gulf of Carpentaria fishery to regions of Queensland in 2019/20. Direct activity includes fishing, capital and processing activity. In terms of fte employment including all flow-on effects, the largest contributions of the Mud Crab Gulf of Carpentaria fishery were to Cape York Peninsula (8 fte jobs) and North West (7 fte jobs).

Table 5-2 Economic contribution of the Mud Crab Gulf of Carpentaria fishery to major regions of Queensland in the 2019/20 financial year

Region	Output (\$m)	Gross Regional Product (\$m)	Household Income (\$m)	Employment (fte)	Employment (total)
Direct					
North West	1.4	1.1	0.3	5	18
Cape York Peninsula	1.2	1.0	0.3	6	22
Queensland ^a	2.6	2.2	0.7	11	40
Flow-On					
North West	0.6	0.3	0.2	2	2
Cape York Peninsula	0.4	0.2	0.1	2	2
Queensland ^a	1.9	1.0	0.6	9	9
Total					
North West	2.0	1.4	0.5	7	20
Cape York Peninsula	1.6	1.3	0.4	8	24
Queensland ^a	4.5	3.2	1.2	20	49

^a Flow-on and total contributions for Queensland do not equal the sum of regions as separate regional economic models were used to model the flow-on effects within each individual region so inter-regional flow-on effects are included in the Queensland results, but not the regional results. There may also be discrepancies in direct, flow-on and total contributions due to rounding and maintaining confidentiality.

Source: BDO EconSearch analysis

6. NET ECONOMIC RETURN

Net economic return is the long-run profit from a fishery after all costs have been met, including compensation for unpaid labour (e.g. unpaid work by family members and owners), subsidised fishery management costs, depreciation and the opportunity cost of capital (excluding endorsement) (Bath et al. 2018). These unit costs or long-term costs all need to be covered if the fishing business is to remain viable in the fishery. The opportunity cost of capital is equivalent to what the business' investment could have earned in the next most similar alternative use considering risk and skills required. What remains after the value of these inputs (labour, capital, materials and services) has been netted out is the net economic return. The value of endorsements is excluded from the opportunity cost of capital as this (access to the fishery) is the asset that net economic return seeks to estimate the net return to.

Commercial fishing operations in Australia are not risk free. Returns can be impacted both positively and negatively by factors such as natural events, changes in market conditions, disease, and management regulations. Determining the opportunity cost of capital involves an assessment of the degree of financial risk involved in the activity. For a risk-free operation, an appropriate opportunity cost of capital might be the long-term real rate of return on government bonds. The greater the risks involved, the greater is the necessary return on capital to justify the investment in that particular activity. For this analysis an opportunity cost of capital of 10 per cent has been used with sensitivity analysis at 7 and 15 per cent. The lower-bound is consistent with ABARES Australian fisheries economic indicator reporting for commonwealth managed fisheries (Bath et al. 2018). Commonwealth managed fisheries are generally larger and characterised by larger businesses with less overall variation than state managed inshore fisheries. This is why the 7 per cent used by ABARES is used as a lower-bound in this analysis. The upper-bound of 15 per cent represents a reasonable estimate for what an investor might expect when buying into a commercial fishery in Queensland, given the variability and risk involved in this type of fishing business.

The net economic return results are presented in Table 6-1. Assuming an opportunity cost of capital of 10 per cent, net economic return generated in the Mud Crab Gulf of Carpentaria fishery was estimated to be \$-0.5m in the 2019/20 financial year.

Table 6-1 Net Economic Return of the Mud Crab Gulf of Carpentaria fishery in the 2019/20 financial year assuming a 10% opportunity cost of capital

	Value (\$m)
Gross Value of Production (GVP)	2.64
Less Labour Costs	0.67
Less Materials & Services	0.83
Less Management Costs	1.22
Less Depreciation	0.25
Less Opportunity Cost of Capital (10%)	0.16
Net Economic Return	-0.50

Source: BDO EconSearch analysis

The sensitivity analysis in Table 6-2 shows that, with the varying assumptions about opportunity cost of capital, net economic return was likely in the range of \$-0.58m to \$-0.45m.

Table 6-2 Sensitivity of Net Economic Return

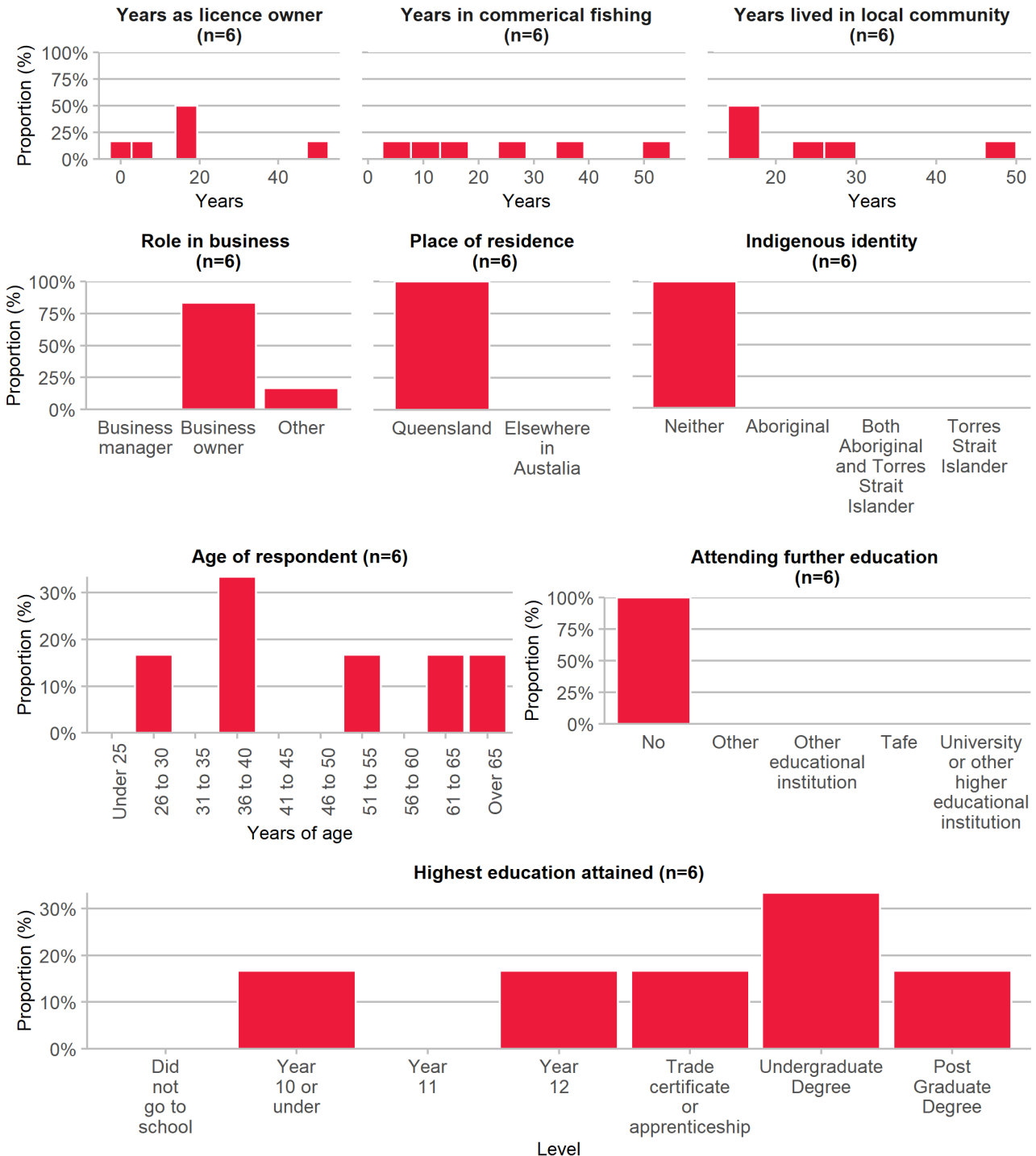
Opportunity Cost of Capital (%)	7%	10%	15%
Less Opportunity Cost of Capital (\$m)	0.11	0.16	0.25
Net Economic Return (\$m)	-0.45	-0.50	-0.58

Source: BDO EconSearch analysis

7. DEMOGRAPHICS

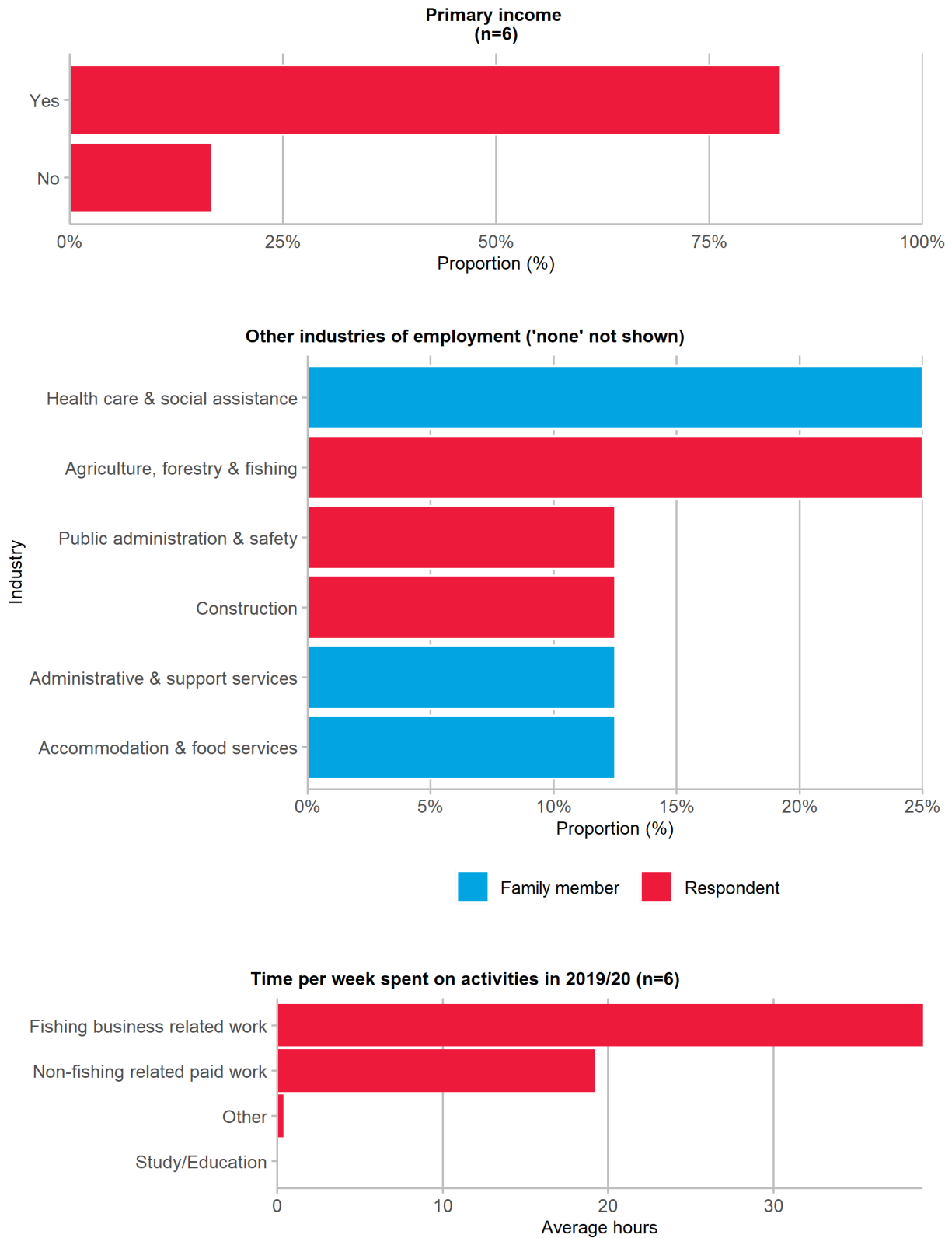
Figure 7-1 and Figure 7-2 present a demographic profile of fishers who responded to the survey and accessed the Mud Crab Gulf of Carpentaria fishery in Queensland in the 2019/20 financial year. These are raw sample data and have not been expanded to the fishery.

Figure 7-1 Demographic profile of the Mud Crab Gulf of Carpentaria fishery in the 2019/20 financial year - part 1



Source: BDO EconSearch analysis

Figure 7-2 Demographic profile of the Mud Crab Gulf of Carpentaria fishery in the 2019/20 financial year - part 2



Source: BDO EconSearch analysis

8. SOCIAL INDICATORS

Fishers may derive non-financial benefits or costs from the Mud Crab Gulf of Carpentaria fishery and may contribute to the community in different ways. This section presents a series of social indicators including:

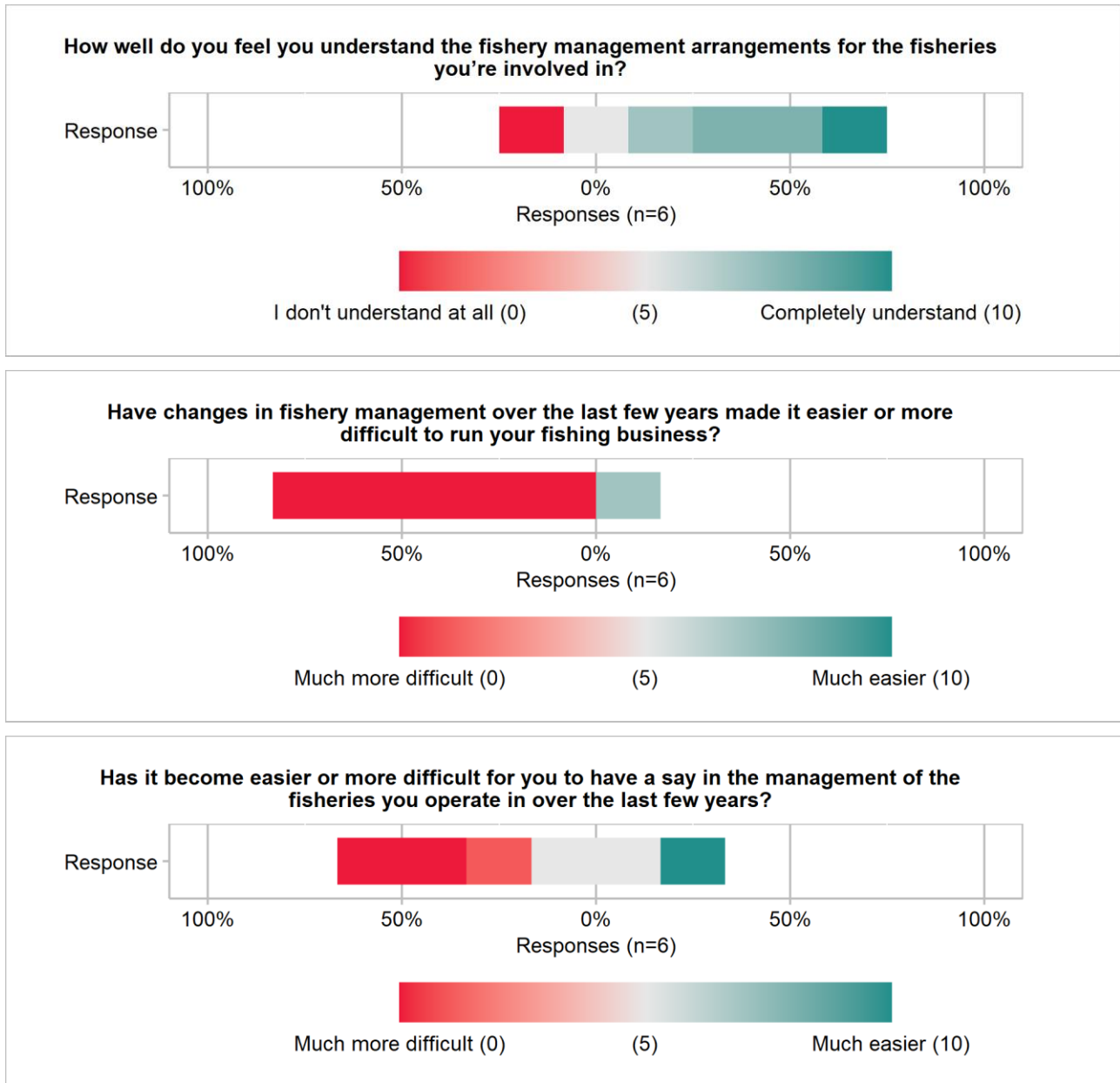
- Perceptions of management
- Lifestyle, satisfaction and personal wellbeing
- Community contribution.

8.1. Perceptions of Management

Figure 8-1 presents fishers' perceptions of different aspects of fishery management and participation in management.

High levels of stewardship amongst fishers are associated with a good understanding of the rules and regulations that apply to fishing activities and ease of compliance. Figure 8-1 shows that almost three quarters of fishers who access the Mud Crab Gulf of Carpentaria fishery feel that they understand the fishery management arrangements for the fisheries they are involved in. However, a similar proportion felt that changes in fishery management in the last few years have made it more difficult to run their business and over half felt that it has become more difficult to have a say in management. Overall, this suggests that fishers who access the Mud Crab Gulf of Carpentaria fishery perceive fishery management to be difficult to comply with and have a say in which may be associated with higher costs of management and compliance activities.

Figure 8-1 Perceptions of fishery management in the Mud Crab Gulf of Carpentaria fishery (2019/20 financial year)



Source: BDO EconSearch analysis

8.2. Lifestyle, Satisfaction and Personal Wellbeing

Figure 8-2 to Figure 8-3 present indicators of satisfaction and wellbeing and the social costs and benefits of being a commercial fisher. Fishers may derive non-financial benefits or costs from the Mud Crab Gulf of Carpentaria fishery. Figure 8-2 presents the perceptions of fishers about these benefits and costs.

Figure 8-2 shows that fishers who access the Mud Crab Gulf of Carpentaria fishery were very satisfied with many aspects of being a commercial fisher, particularly working outdoors and the adventure of the job. However, half were dissatisfied with current fishing regulations and just under half were dissatisfied with the predictability of their income.

Figure 8-4 shows that there was strong agreement amongst fishers who access the Mud Crab Gulf of Carpentaria fishery that fishing is an important aspect of their lives and lifestyle. Over half indicated that, if given the opportunity, they would not choose to do a different job. Fishers who access the Mud Crab Gulf of Carpentaria fishery were unanimous in agreement that commercial fishing is a rewarding job that makes fishers feel that they are doing something worthwhile.

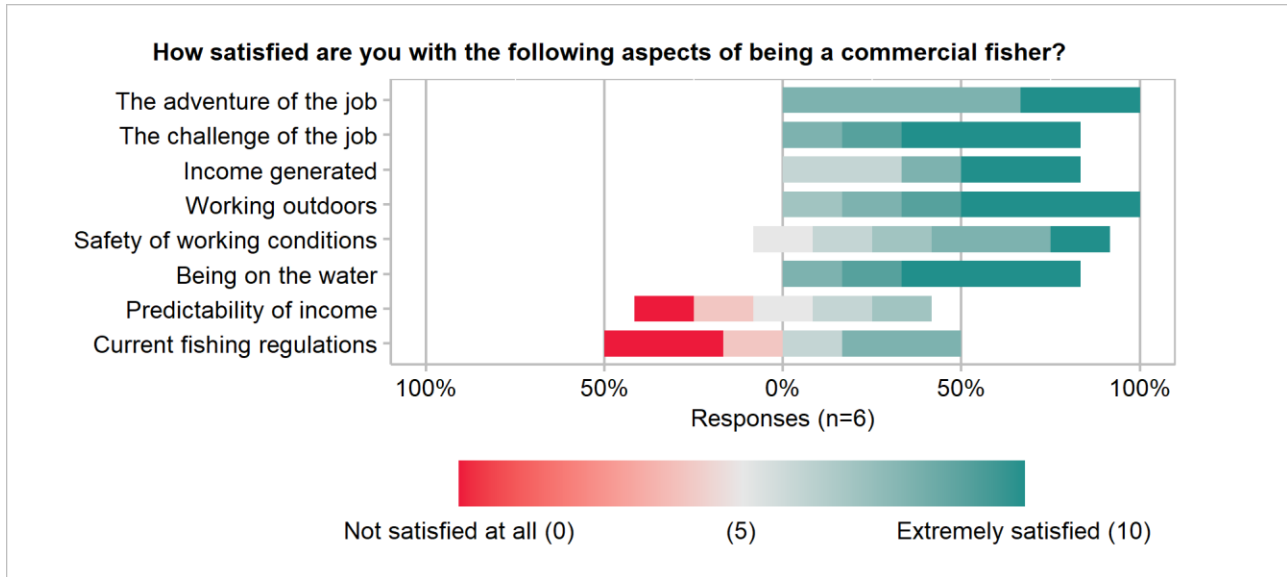
Figure 8-4 also shows that there was unanimous agreement amongst fishers who access the Mud Crab Gulf of Carpentaria fishery that commercial fishing is financially risky and that it is stressful to be a commercial fisher. However, over half also feel that because of commercial fishing they have a good quality of life. Over half of respondents indicated that they are unable to cope with changes to fisheries regulations. Fishers who access the Mud Crab Gulf of Carpentaria fishery were evenly split about whether being a commercial fisher has negative mental health impacts on them, though over half indicated that they do not feel secure in their job.

Figure 8-3 shows that fishers who access the Mud Crab Gulf of Carpentaria fishery indicated that they had high levels of personal wellbeing across most PWI domains. Respondents from the Mud Crab Gulf of Carpentaria fishery had a significantly higher level of personal wellbeing than the Australian and Queensland average. The Personal Wellbeing Index (PWI) is a validated measure of wellbeing with established benchmarks that are useful for comparing between groups. A higher PWI means higher subjective wellbeing. It is calculated from the data presented in Figure 8-2 though the charts themselves also provide useful information about the levels of different domains of wellbeing for fishers that access the Mud Crab Gulf of Carpentaria fishery. The PWI for the Mud Crab Gulf of Carpentaria fishery is compared against the average for Australia, Queensland and regional Queensland, as reported in the Regional Wellbeing Survey (Health Research Institute 2020), below:

- Australia: 70.4
- Queensland: 69.2
- Regional Queensland: 71.5
- Mud Crab Gulf of Carpentaria fishery: 77.6.

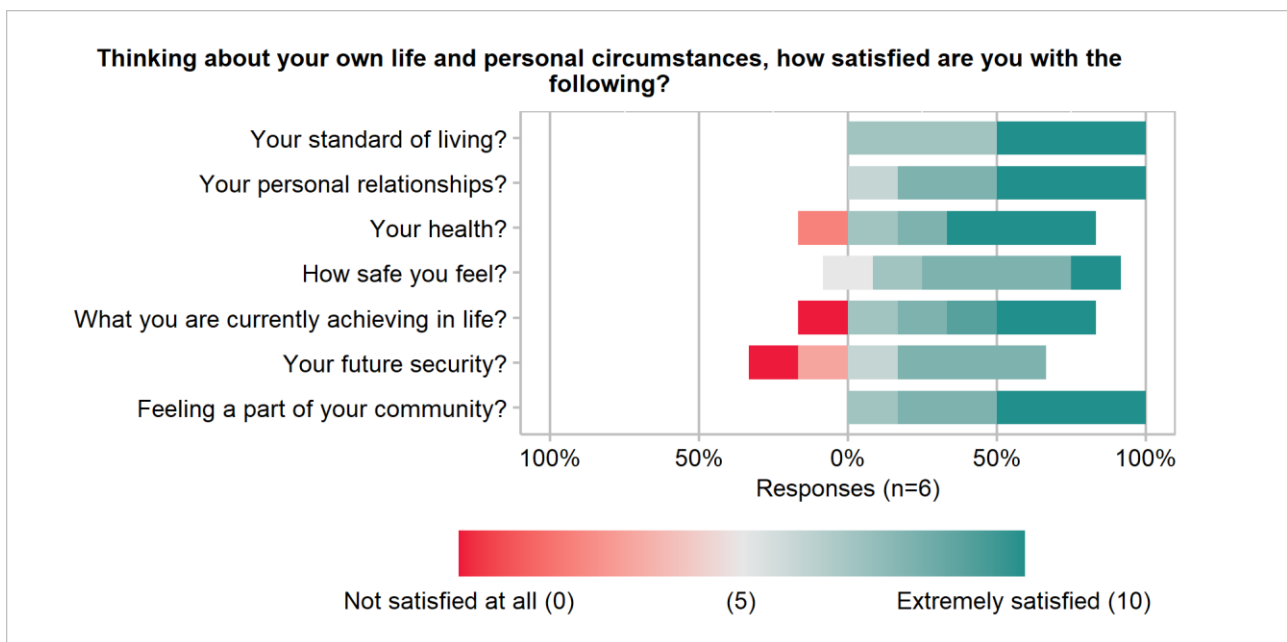
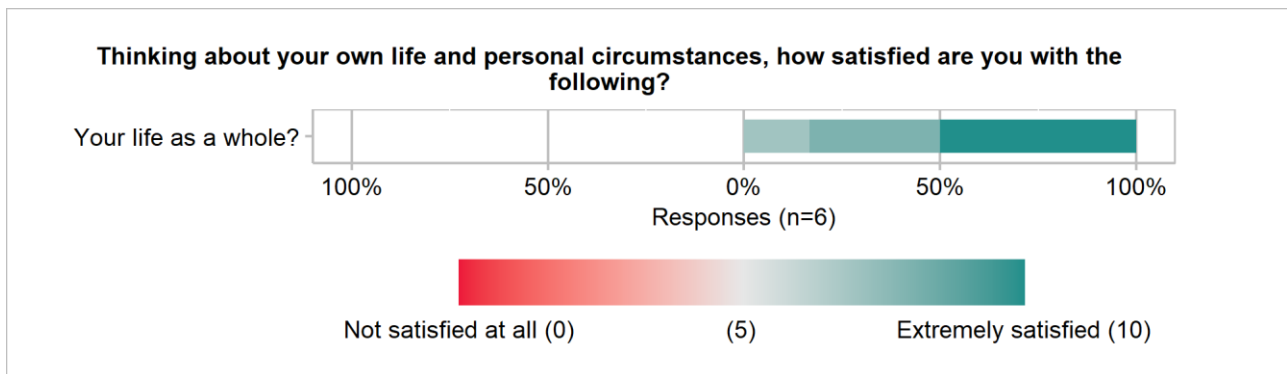
Overall, these results indicate that fishing activities are making a significant, positive contribution to the overall satisfaction and personal wellbeing of fishers that access the Mud Crab Gulf of Carpentaria fishery. However, they also indicate that although fishers who access the Mud Crab Gulf of Carpentaria fishery enjoy their role as commercial fishers, uncertainty around regulations and their income and job security has a negative impact on their wellbeing.

Figure 8-2 Satisfaction in the Mud Crab Gulf of Carpentaria fishery (2019/20 financial year)



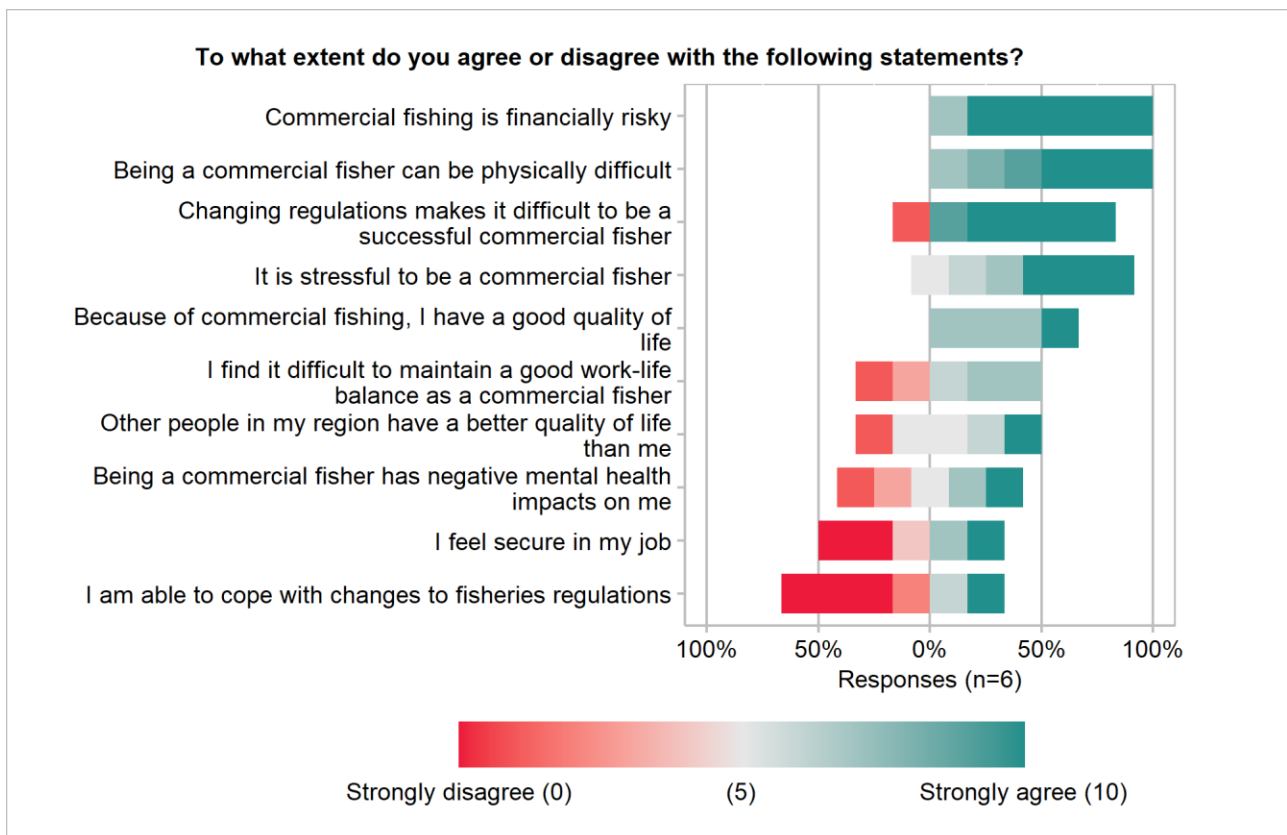
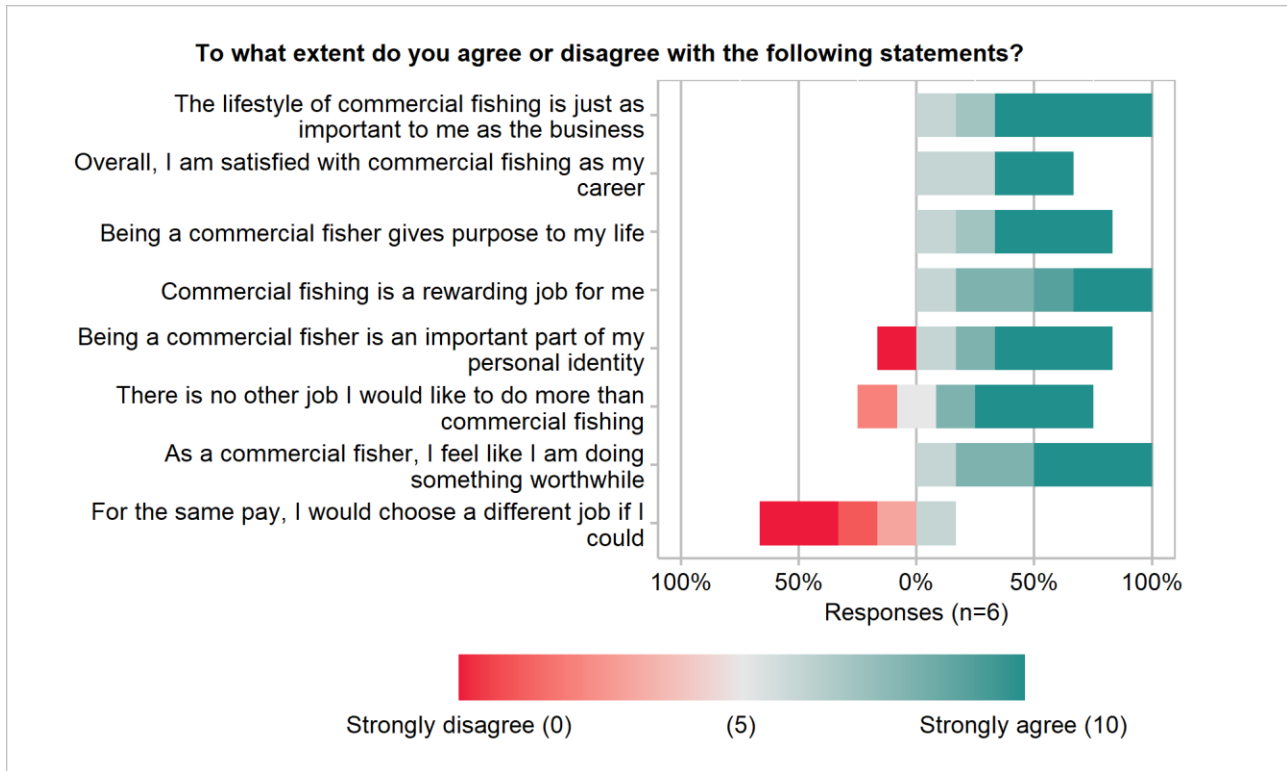
Source: BDO EconSearch analysis

Figure 8-3 Personal wellbeing in the Mud Crab Gulf of Carpentaria fishery (2019/20 financial year)



Source: BDO EconSearch analysis

Figure 8-4 Social costs and benefits to wellbeing in the Mud Crab Gulf of Carpentaria fishery (2019/20 financial year)



Source: BDO EconSearch analysis

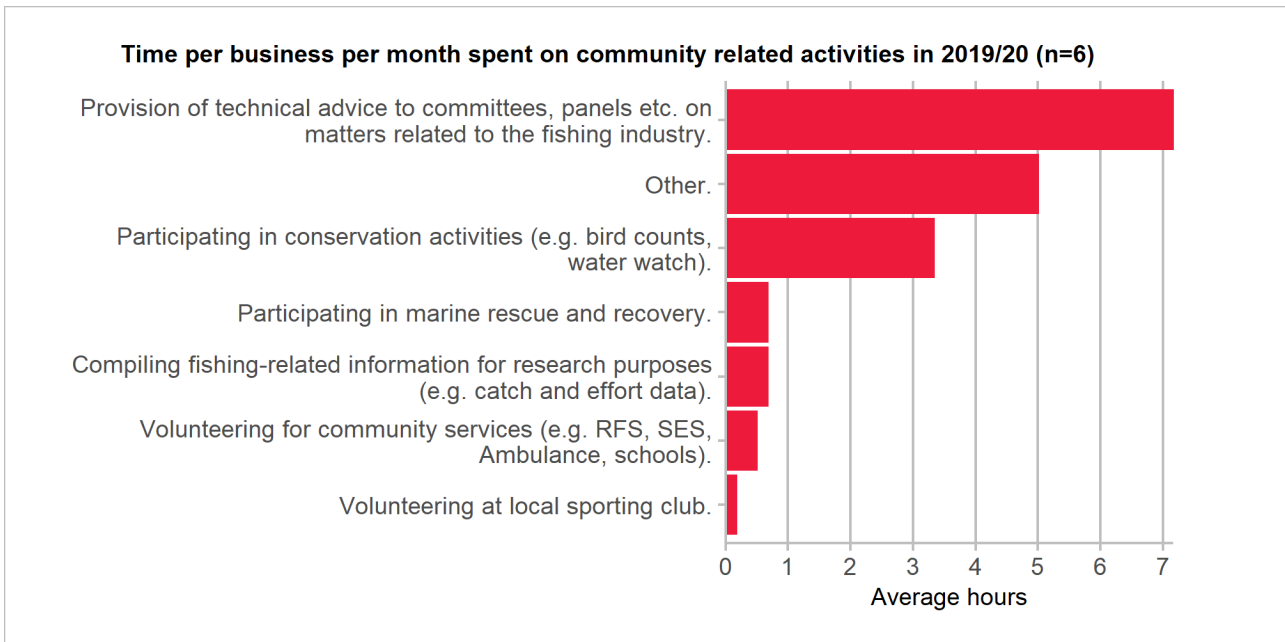
8.3. Community Contribution

Figure 8-5 and Figure 8-6 presents the perceptions of fishers community connectedness and contribution.

About three quarters of fishers who access the Mud Crab Gulf of Carpentaria fishery indicated that it was important to them to continue the tradition of commercial fishing. However, over half also indicated that they did not feel positive about the future of commercial fishing in their region. In contrast to most fisheries, over half of fishers who access the Mud Crab Gulf of Carpentaria fishery indicated that they would encourage young people to choose commercial fishing as a career.

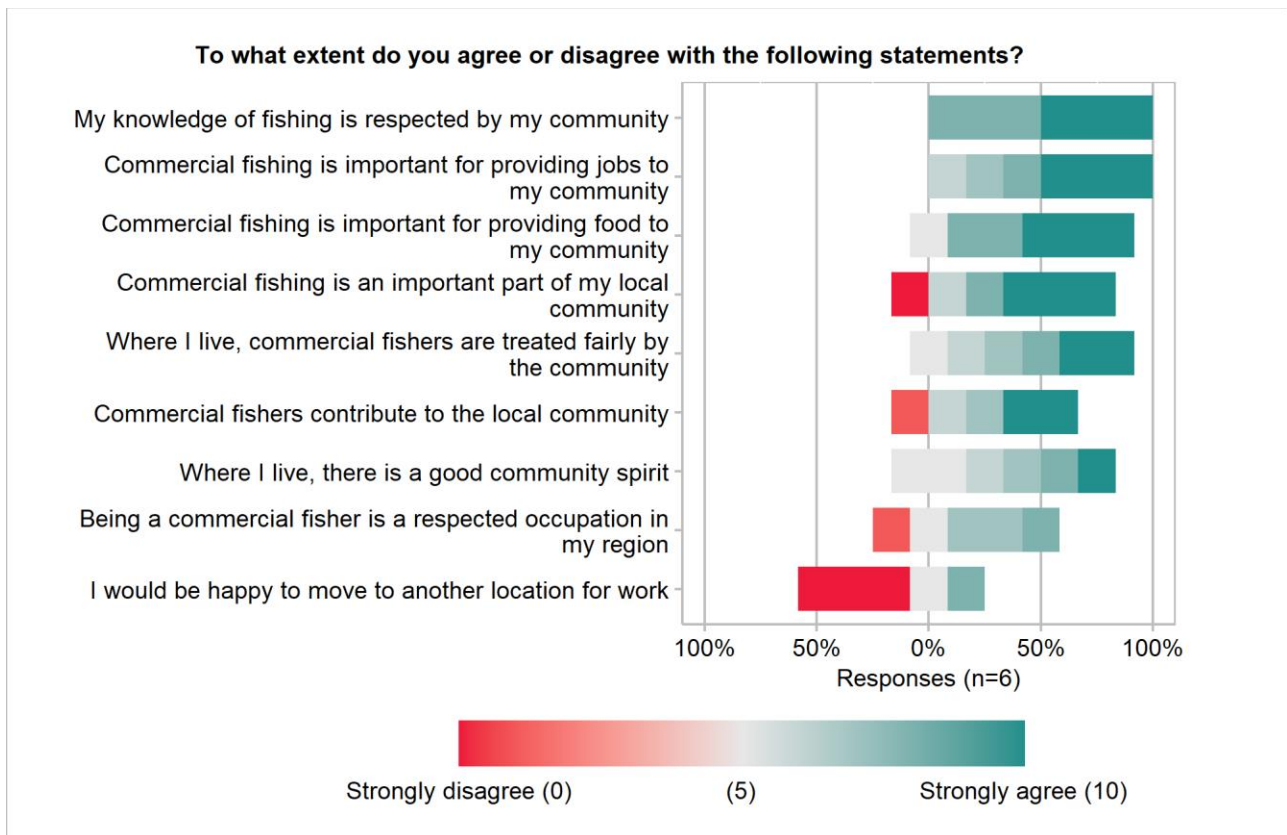
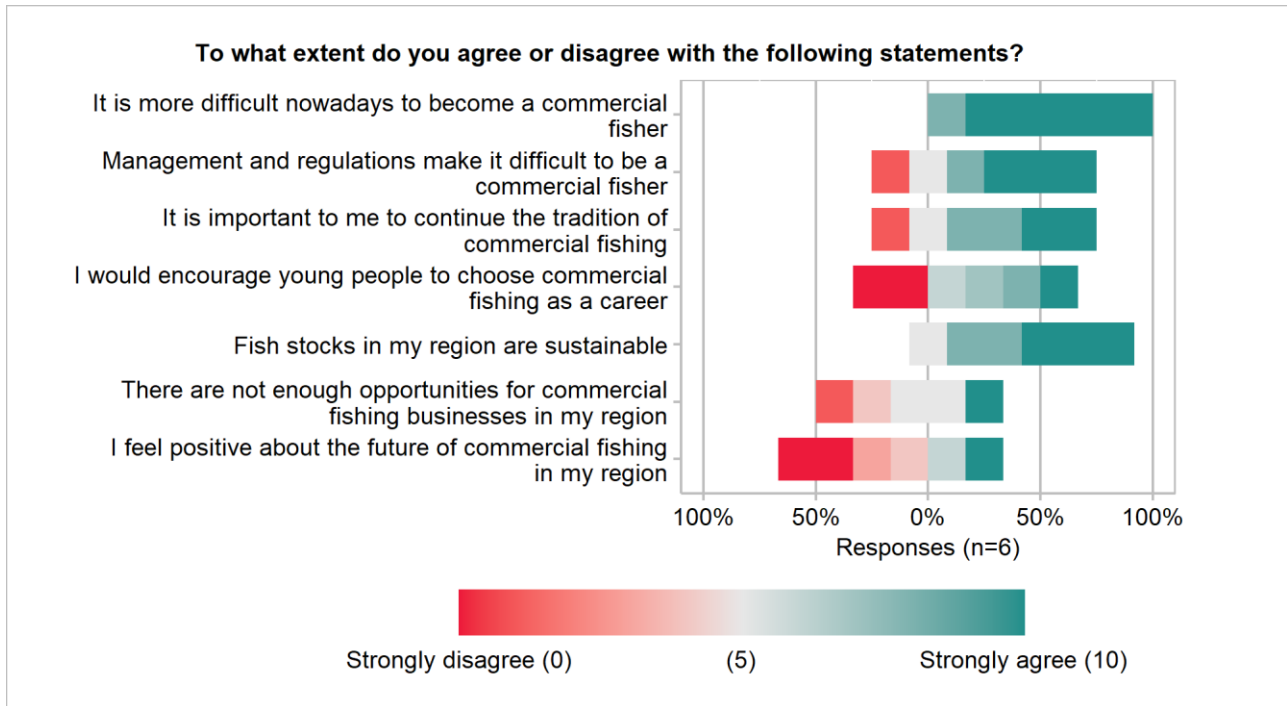
Fishers who access the Mud Crab Gulf of Carpentaria fishery indicated that they make a contribution to the community. The main area of this contribution was an average of approximately 7hrs per month spent providing technical advice related to the fishing industry (Figure 8-5).

Figure 8-5 Community contribution by fishing businesses in the Mud Crab Gulf of Carpentaria fishery (2019/20 financial year)



Source: BDO EconSearch analysis

Figure 8-6 Perceptions of community connectedness in the Mud Crab Gulf of Carpentaria fishery (2019/20 financial year)



Source: BDO EconSearch analysis

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The nature and scope of work has been determined by agreement between BDO and the Client. This consulting engagement does not meet the definition of an assurance engagement as defined in the 'Framework for Assurance Engagements', issued by the Auditing and Assurances Standards Board, Section 10.

Except as otherwise noted in this report, we have not performed any testing on the information provided to confirm its completeness and accuracy. Accordingly, we do not express such an audit opinion and readers of the report should draw their own conclusions from the results of the review, based on the scope, agreed-upon procedures carried out and findings.



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