SUMMARY ECONOMIC AND SOCIAL INDICATORS FOR QUEENSLAND'S COMMERCIAL FISHERIES IN 2019/20

A Report for Fisheries Queensland

27 April 2022

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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 depreciation[1].

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 income[2]. 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).

ABBREVIATIONS

ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
FRDC	Fisheries Research and Development Corporation
fte	full time equivalent
FY	financial year
GOS	Gross Operating Surplus
GRP	gross regional product
GSP	gross state product
GVP	gross value of production
PWI	Personal Wellbeing Index
QLD	Queensland
SFS	Sustainable Fisheries Strategy

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In the preparation of the economic and social indicators for the 2019/20 financial year, and preceding two years, BDO has relied heavily on the voluntary cooperation of fishing operators in providing data for the surveys and are particularly grateful for the time and cooperation generously provided by fishing businesses in responding to the rather lengthy questionnaire. BDO is also indebted to various individuals and institutions for providing the necessary information to supplement the survey data. Industry representatives and Fisheries Queensland officers provided assistance, were supportive of the data collection and offered valuable advice.

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SUMMARY

This report presents an updated set of economic and social indicators for Queensland's commercial fisheries for the 2019/20 financial year. This forms the third consecutive financial year of annual indicators. This report summarises the indicators across the fisheries and presents the statewide aggregates and comparisons between the financial years. The stout whiting fishery is not included here because of unique business confidentiality reasons. A survey based estimate of the impact of COVID-19 on the commercial fisheries is also presented. Detailed results for each of 14 commercial fisheries are published as separate reports.

Table ES-1 Summary of indicators for the 2017/18 to 2019/20 financial years for Queensland's commercial fisheries

Indicator	2017/18	2018/19	2019/20
Catch as reported by weight (t)	16,929t	14,885t	14,553t
Catch reported in numbers (not included in weights)	2,143,000	2,238,000	2,815,000
Gross value of production (beach price) ($m)	$261.1m	$239.6m	$245.1m
Value sold to the domestic market ($m)	$229.7m	$206.1m	$222.5m
Value exported directly by fishing businesses ($m)	$31.4m	$33.5m	$22.8m
Value exported directly or indirectly[a] ($m)	na	na	$45.8m
Active businesses	1,145 businesses	1,096 businesses	1,044 businesses
Management cost/gross value of production (%)	8.1%	9.3%	10.2%
Gross state product (direct + flow-on) ($m)	$453.3m	$413.1m	$346.2m
Employment (direct + flow-on) (fte)	4,229 fte jobs	3,988 fte jobs	3,317 fte jobs
Rate of Return on Fishing Gear and Equipment at Full Equity[b]	8.5%	4.9%	7.6%
Rate of Return on Total Capital at Full Equity[b]	5.1%	2.9%	4.2%
Net Economic Return ($m)	-$24.4m	-$38.2m	-$22.5m

[a] This estimate is made by fishing businesses. It is their understanding of total exports by all businesses (e.g. themselves and seafood processors) at beach price (see Section 2.4). This was not collected in 2017/18 and 2018/19.

[b] Fishing Gear and Equipment and Total Capital each include the capitalised value of leased equipment and transferred quota.

Overview of Approach

Businesses that operate in a commercial fishery in Queensland tend to operate in multiple fisheries. For this reason, a business level modelling approach was used rather than an aggregate or fishery level approach. This involved the following steps:

1. Collect fishery monitoring and administrative data
2. Survey fishing businesses
3. Model structure and activity of surveyed businesses
4. Impute non-surveyed businesses at the business level
5. Attribute operating costs, employment and capital value to the relevant fisheries
6. Calculate indicators for each fishery.

Across all fisheries, a total of 229 usable responses including financial information were received from active businesses, representing just over one in every five active commercial fishing business, and 28 per cent of total GVP in 2019/20. The sample represented between 18 and 26 per cent of active businesses in each region and between 14 and 31 per cent of active businesses in each fishery. As a proportion of GVP, the sample represented between 17 and 40 per cent of GVP in each region, and between 17 and 72 per cent of GVP in each fishery. The confidentiality of responses was made clear to respondents including that no individual response would be identifiable in reporting or provided to Fisheries Queensland and that any statistic published would be based on at least five responses.

Catch, Price, Value and Exports

The total catch in Queensland's commercial fisheries for 2019/20 was 14,553t as well as 2,815,000 individual animals or pieces of coral. The individual animals or pieces of coral are not included in the weight estimate. Gross value of production generated directly by fishing businesses for this catch was $245.1m at beach prices and was sold to domestic and international markets. The value of international exports by commercial fishing businesses plus their understanding of the proportion of the catch that was ultimately exported by the supply chain was equivalent to $45.8m at their beach price.

Management Costs

Estimated total management costs for Queensland's commercial fisheries were $25.1m in 2019/20. As a proportion of GVP total management costs were 9.5 per cent in 2019/20.

Business Financial Indicators

A broad range of business profitability was observed within and between fisheries in 2019/20. Average rate of return on total capital at full equity varied between -32.0 per cent (Line Fishery (rocky reef)) and 38.2 per cent (Gulf of Carpentaria Inshore).

The average level of equity that fishers have in their businesses varied across fisheries from 81 per cent (Moreton Bay Commercial Trawl) to 93 per cent (Moreton Bay Commercial Other).

Economic Contribution

In 2019/20, Queensland's commercial fisheries contributed an estimated $346.2m in gross state product and 3,317 full-time equivalent jobs to the Queensland economy. This contribution included $154.3m (1,641 fte jobs) directly from fishing activity, $3.8m (45 fte jobs) from capital expenditure by fishing businesses, $19.9m (223 fte jobs) from associated processing and $168.1m (1,408 fte jobs) from flow-on effects in other sectors of the Queensland economy (primarily in the retail trade, personal and other services, and processed seafood products sectors).

Net Economic Return

Net economic return is a fishery level indicator and is defined as the long-run profit from a fishery after all costs have been met.

Determining the opportunity cost of capital (a cost component of net economic return) involves an assessment of the degree of financial risk involved in the activity. 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. For this analysis a range of 7 to 15 per cent was used for opportunity cost of capital.

Net economic return was estimated to be in the range of -$14.7m to -$35.7m in 2019/20 for the state as a whole. There was a wide range of levels of return across the fisheries ranging from $11.4m in the Gulf of Carpentaria Inshore fishery to -$21.2m in the East Coast Trawl Fishery.

Social Indicators

The results of the survey indicate that there are barriers to Queensland commercial fisher stewardship of fisheries resources because of low understanding of fisheries management. This is associated with higher costs of management and compliance activities, and a lower ability to achieve ecological sustainability. However, most Queensland commercial fishers are satisfied with many aspects of being a commercial fisher, except for current fishing regulations and the predictability of their income. Overall, the survey results indicate that fishing activities are making a significant, positive contribution to the satisfaction and personal wellbeing of Queensland commercial fishers. Respondents indicated that they had high levels of personal wellbeing, although just under half of respondents indicated that they were dissatisfied with their future security.

Impact of COVID-19

Effects from COVID-19 occurred in Queensland from March 2020, impacting the last 4 months of the 2019/20 financial year. To estimate this impact on Queensland's commercial fisheries, the business survey collected fishers' perceptions on how COVID-19 impacted various aspects of their activities and what kinds of financial support were received.

In general, fishing businesses indicated that both revenue and costs were lower due to COVID, but that revenue decreased by more than costs. The decrease in revenue was due to both a decrease in catch and price received for products.

The estimated impact on GVP at state level implies that COVID-19 reduced GVP by approximately $26.7m from $271.7m to the actual value of $245.1m for 2019/20. This counter-factual non-COVID-19 estimate of GVP of $271.7m is plausible but high compared to recent years (GVP was $261.1m in 2017/18 and $239.6m in 2018/19). With many factors contributing to changes in supply and demand over this period, it is difficult to attribute changes directly to COVID-19 and fishers may have overestimated for this reason. Based on this estimate, the impact on state-wide net economic return was -$23.1m, reducing net economic return from an estimated $0.5m without COVID-19, down to the actual -$22.5m with COVID-19.

The analysis suggests that COVID-19 reduced the economic contribution of Queensland's commercial fisheries to Gross State Product by approximately $31.1m and reduced the employment supported by the fisheries by approximately 127 fte jobs. By fishery, the largest negative impact of COVID-19 was identified by fishers in the East Coast Trawl fishery (loss of $11.7m gross state product and 61 fte jobs). By region, the largest negative impacts were identified by fishers in the South East with gross regional product reducing by approximately $19.4m and employment by 53 fte jobs.

Future Opportunities

These surveys of fishing businesses are developing economic and social indicators and building a valuable annual timeseries measuring the economic activity of Queensland commercial fisheries. As it grows, this timeseries of economic indicators will improve the ability of management and industry to understand the economics of the fisheries and better respond to changing economic situations. This is especially important during times when industries undergo significant change and the economic impacts of those changes need to be understood, as demonstrated by the COVID-19 impact analysis presented in this report.

Regular economic reporting across a range of industries is current practice in other states and territories around Australia. For example, annual economic indicators have been reported for commercial fisheries in South Australia for more than 20 years (BDO EconSearch 2022a) and a similar monitoring program began in New South Wales in 2021. This provides an important time series of economic information that all fishery stakeholders can draw upon. Annual collection of economic information is current practice in the Queensland aquaculture industry producing the aquaculture production summary series which commenced in 2005 (Department of Agriculture and Fisheries, 2020). Economic information is also published regularly for other agriculture sectors such as the Dairy Farm Monitor Project (Dairy Australia 2021).

1. INTRODUCTION

This report presents economic and social indicators for the Queensland commercial fisheries for the 2019/20 financial year.

The Queensland Sustainable Fisheries Strategy 2017-2027 (SFS) sets out a comprehensive reform plan for the future. Within the SFS there are 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 indicators from Queensland's professional fishers (i.e. commercial fishers and charter operators) and directly related stakeholders (e.g. fish processors, wholesalers, community groups). BDO established a method for creating a consistent time series of economic information in 2020 and provided economic indicators for 2017/18 and 2018/19. These economic 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) 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.

The Queensland fishing industry is diverse. Like many other industries, there are specialists that have a specific focus and more flexible businesses that change between activities depending on markets and circumstances. Some fishing businesses target only one species with one type of equipment, while others target a narrow range of different species according to season or price (e.g. trawlers choosing to target either prawns or scallops). Then there are businesses with a wider range of target species, such as those trawling for prawns, but sometimes line fishing for mackerel or snapper, using quite different equipment for each.

Considering the diverse nature of Queensland fisheries, management decision making involves a complex mix of biological, economic and social considerations. There is a need to identify and explore cost-effective and efficient ways to incorporate economic and social information in harvest strategies and decision-making processes.

The economic indicators reports for the 2018, 2019 and 2020 financial years are part of a project to develop economic and social indicators and begin building an annual timeseries. A timeseries of indicators will improve the ability of management and industry to respond to changing economic situations. This is especially important during times when industries undergo significant change and the economic impacts of those changes need to be understood, as demonstrated by the COVID-19 impact analysis presented in Section 6.

Regular economic reporting across a range of industries is current practice in other states and territories around Australia. For example, annual economic indicators have been reported for commercial fisheries in South Australia for more than 20 years (BDO EconSearch 2022a) and a similar monitoring program began in New South Wales in 2021. This provides an important time series of economic information that all fishery stakeholders can draw upon. Annual collection of economic information is current practice in the Queensland aquaculture industry producing the aquaculture production summary series which commenced in 2005 (Department of Agriculture and Fisheries 2020). Economic information is also published regularly for other agriculture sectors such as the Dairy Farm Monitor Project (Dairy Australia 2021) and the Queensland forest and timber industry economic snapshot (University of Canberra and the Queensland Government 2018).

1.1. Background

Queensland's commercial fisheries target a diverse range of species with a diverse range of methods and business structures. Fisheries can be defined in various ways but are usually based on a combination of target species, fishing method and fishing region.

For the purpose of developing economic and social indicators for fisheries regulated by Fisheries Queensland, commercial fishing activity has been aggregated into the 14 commercial fisheries identified in the 'Fishery name' column of Table 1-1. A separate results report was produced for each of the 14 fisheries to present more detailed economic and social information for the 2019/20 financial year (BDO EconSearch 2022c-p). Indicators for the Charter fishery have not been included in this report but have been published in a separate report (BDO EconSearch 2022b).

Two fisheries specific to Moreton Bay are included which require further explanation. The Moreton Bay Commercial Trawl Fishery includes all otter trawl activity in Moreton Bay (i.e. M1 and M2 symbols) and the Moreton Bay Commercial Other includes all commercial fishing activity in the Moreton Bay Marine Park, excluding otter trawl. These Moreton Bay activities are also entirely included in some of the other fisheries (e.g. east coast trawl) to provide a complete picture of those larger fisheries. For this reason, the activities (i.e. catch or effort, GVP) across all fisheries identified in Table 1-1 cannot be summed to provide a statewide total. The statewide totals that are provided have removed any double counting. The economic indicators for the Charter fishing sector are provided in a separate report.

Table 1-1 Fisheries included in this report and their components

Reporting Sector	Fishery name	Components of fishery
Commercial Fisheries	Blue Swimmer Crab	Blue Swimmer Crab
	Coral Harvest and Marine Aquarium Fishery	Coral Harvest
		Marine Aquarium Fish
	Line Fishery (reef)	Line Fishery (reef)
		Deepwater Fin Fish Fishery
	East Coast Inshore Fin Fish	East Coast Inshore Fin Fish
	East Coast Spanish Mackerel	East Coast Spanish Mackerel
	East Coast Trawl	East Coast Otter Trawl
		River & Inshore Beam Trawl
	Gulf of Carpentaria Inshore Fishery	Gulf of Carpentaria Inshore
		Gulf of Carpentaria Line
	Moreton Bay Commercial Other	Moreton Bay Commercial Other
	Moreton Bay Commercial Trawl	Moreton Bay Commercial Trawl
	Mud Crab East Coast	Mud Crab East Coast
	Mud Crab Gulf of Carpentaria	Mud Crab Gulf of Carpentaria
	Other Harvest Fishery	Beachworm
		Bloodworm
		Crayfish and Rock lobster
		Eel (adult)
		Eel (juvenile)
		Pearl
		Sea Cucumber
		Trochus (east coast)
		Yabby
	Line Fishery (rocky reef)	Line Fishery (rocky reef)
	Spanner Crab	Spanner Crab

1.2. Report Structure

Provided in Section 2 of this report are the method of analysis and a description of the survey of fishing businesses.

Indicators are presented in Sections 3 to 5 for the 2019/20 financial year and include:

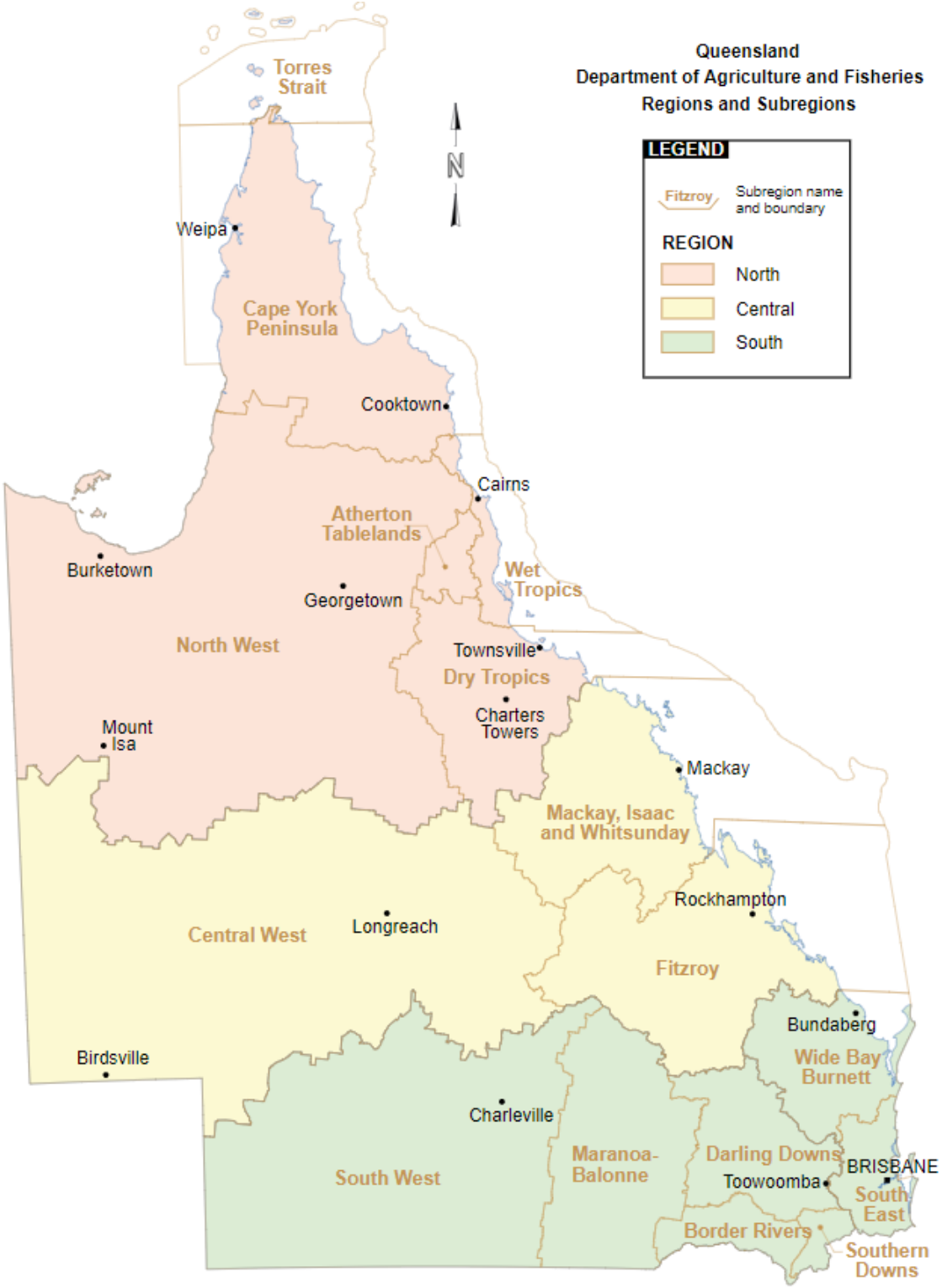
- Economic indicators
  - Business financial indicators
  - Economic contribution indicators
  - Fishery economic indicators
- Social indicators
  - Perceptions of management
  - Lifestyle, satisfaction and personal wellbeing
  - Community contribution.

Section 6 presents an estimate of the economic impact of COVID-19 on Queensland's commercial fishing industry.

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 (Figure 1-1). 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.

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



Source: Business Queensland (2019)

2. METHOD OF ANALYSIS

2.1. Indicator Analysis

Businesses that operate in a commercial fishery in Queensland tend to operate in multiple fisheries. This makes calculating indicators for any single fishery difficult as fishery activity is comprised of a combination of business types (full and part-time, single and multiple fishery operators). Since this research produces indicators for all commercial fisheries in Queensland, a business level modelling approach was used rather than an aggregate or fishery level approach.

In a business level approach, the overall activity of each business is proportionally attributed to each fishery at the business level then total activity for each fishery is estimated by aggregating the business activities attributable to each fishery across all businesses. The method of analysis is described below in stages.

Stage 1: Collect fishery monitoring and administrative data

Data were requested from Fisheries Queensland's monitoring and administrative systems to build a business level understanding of fishing activity in the commercial fisheries. This included 2019/20 financial year data on the following:

- business contact information
- business level catch and effort data from logbooks detailing species caught, quantities, dates and locations
- business level landings data for quota managed species including quantities, dates and landing locations
- business level symbol and quota holding and trading data
- business level licence fees paid to Fisheries Queensland
- fishery level cost of management data.

Stage 2: Survey fishing businesses

A survey of fishing businesses was undertaken (see Section 2.3 for detail) to collect various data items that are not held by Fisheries Queensland but are required to calculate economic and social indicators. This included:

- species prices, disposal locations and fishers' understanding of species ultimately processed or exported overseas further down the supply-chain
- operating costs
- own business seafood processing activity
- employment (including unpaid)
- symbol and quota values and leasing costs
- capital value and depreciation of boats, equipment and other physical capital
- demographic information
- perceptions of management, lifestyle and other social matters.

Data were collected respecting the confidentiality of fishing businesses and were used by BDO to produce the economic and social indicator reports. The data were not distributed outside of BDO and may not be provided to Fisheries Queensland without prior permission from the businesses in question.

Stage 3: Model structure and activity of surveyed businesses

Fishery monitoring and administrative data and business survey data were combined to model the structure and activity of each individual fishing business that participated in the business survey. The model describes each business in terms of all data items identified above in stages 1 and 2, such that they can be combined to understand how costs, capital use and employment relate to fishing activity. For example, combining logbook catch data with species price data allows for an estimate of the value of catch taken by species by region.

The set of business level models was validated through a series of plausibility checks to ensure that each survey response was matched to the correct records in the monitoring and administrative data and that each survey response itself was internally coherent. For example, calculated revenue based on species prices and logbook catch were compared to total revenues stated in survey responses, and distributions of various financial indicators were examined to identify outliers to be investigated.

Stage 4: Impute non-surveyed businesses at the business level

The structure and activity of each non-surveyed businesses was imputed using the business level models (as described in Stage 3) of the most similar five surveyed businesses. This involved matching, imputation and adjustment.

1. **Matching:** involved calculating a similarity matrix describing the similarity of each non-surveyed business to each surveyed business. The matrix used dimensions of 'revenue by fishery' and 'days fished by fishery', which were normalised to give them equal weighting in the calculation of similarity. Similarity was calculated as the lowest sum of squared errors across both dimensions. In a practical sense, this assumes that businesses are similar if they catch a similar value of product in a similar mix of fisheries and all with similar efficiency (i.e. catch per unit effort).
2. **Imputation:** involved imputing the capital, employment and operating costs of the non-surveyed businesses as the average of the five most similar businesses, where the average was weighted by the relative similarity to each surveyed business. This assumes that similar businesses (as described above) use similar capital and have similar operating costs and employment.
3. **Adjustment:** involved making marginal adjustments to the variable operating costs and employment of imputed businesses based on the differences between the imputed business and the weighted average of its five most similar businesses in terms of revenue and days fished. For example, fuel and provisions were adjusted based on the relative difference in effort, and crew and skipper income was adjusted based on the relative difference in revenue.

The output from Stage 4 was a business level synthetic population of the operating and financial characteristics of each fishing business that accesses Queensland's commercial fisheries.

Stage 5: Attribute operating costs, employment and capital value to the relevant fisheries

Where possible, symbol and quota values at the business level were attributed directly to their relevant fisheries (such as attributing the value of SM quota to the East Coast Spanish Mackerel Fishery). Where direct attribution was not possible, values were attributed based on relative revenue earned in each fishery (such as attributing an L1 symbol between various line fisheries). Operating costs and employment were also attributed across fisheries based on relative proportion of income earned in each. This assumes a similar rate of return in each fishery that a business accesses under the assumption that businesses maximise return across multiple fisheries by adjusting their effort between them over time. It also implies that physical capital (such as a boat) can generally be used to access multiple fisheries. Rates of return do vary between

fisheries but this assumption is considered reasonable for an individual business and is necessary to avoid asking businesses to provide separate sets of financial, capital and employment details for each individual fishery that each business accesses.

Stage 6: Calculate indicators for each fishery

Business activity was grouped based on the fishery attribution described in Stage 5 before calculating indicators for each fishery. The definitions of indicators are presented in the Glossary. For some indicators, business activity was further attributed to regions or other groupings prior to calculation:

- Business level financial indicators such as revenues, costs and profitability were reported by region, level of return on investment, level of activity (days fished) and proportion of total business revenue earned in the fishery in question (i.e. level of specialisation).
- Fishery level economic indicators such as net economic return and management costs were reported at the fishery level.
- Economic contribution indicators were reported for Queensland and for each of the coastal DAF Subregions (Figure 1-1) with all business activity attributed across regions in proportion to the value of catch landed in each.
- Social indicators were reported as unweighted averages at the fishery level for all businesses that accessed the relevant fishery in 2019/20.

2.2. Impact of COVID-19 Analysis

Effects from COVID-19 occurred in Queensland from March 2020, impacting the last 4 months of the 2019/20 financial year. To estimate this impact on Queensland's commercial fisheries, the business survey collected fishers' perceptions on how COVID-19 impacted various aspects of their activities and what kinds of financial support were received. The factors were selected based on background research and included:

- Price received for products
- Volume of catch
- Business revenue
- Cost of a day of commercial fishing (wages only)
- Cost of a day of commercial fishing (non-wage costs).

Respondents estimated a percentage change due to COVID-19 for each aspect. To estimate the impact, the percentages provided for revenue and costs were applied to business' modelled revenue and costs for the COVID-19 period. The estimated percentage change in wages was also applied to business employment.

Once the estimates of change were applied, a plausibility check was undertaken to compare the counter-factual as described by survey respondents with previous production levels and the effects observed more broadly in the industry. The same business level matching and imputation process described in Section 2.1 was used to impute the changes in these factors for non-surveyed businesses, by assuming that similar businesses were similarly impacted by COVID-19. The economic indicators were then recalculated and compared between the actuals (with COVID-19) and the counter-factual (without COVID-19) to estimate the impact of COVID-19 on the commercial fisheries. Results are presented in Section 6 by fishery, in terms of net economic return and state and regional economic contribution.

2.3. Survey of Fishing Businesses

The survey of fishing businesses to collect information on the 2019/20 financial year was done between May and July in 2021. Non-survey data were obtained from Fisheries Queensland for the 2019/20 financial year.

The survey involved collecting data from fishing businesses for the 2019/20 financial year. Data were collected on species prices and markets, operating costs, processing activity, employment (including unpaid), endorsement values/leasing costs, capital value and depreciation, impact of COVID-19, and social and demographic information. The survey used a questionnaire that was developed in collaboration with Fisheries Queensland and with industry representatives when preparing the 2017/18 and 2018/19 financial year indicators. The questionnaire was refined for the 2019/20 survey. Businesses were asked to include only the amounts that were attributable to their Queensland fishing business. If exact figures were not available (e.g. from a tax return), then they were asked to provide careful estimates.

Businesses were invited to participate through multiple email and phone call invitations as well as through the endorsement of various industry groups. They were invited to respond through an online form or over the phone. Almost all responses were provided over the phone.

The confidentiality of responses was made clear to respondents including that no individual response would be identifiable in reporting or provided to Fisheries Queensland and that any statistic published would be based on at least five responses. This 'five boat rule' is commonly used to maintain confidentiality when reporting commercial fishing statistics, including by Fisheries Queensland. The matching approach used to impute non-responding business activity uses information from at least 5 responding businesses, which may or may not include the businesses in the group being reported. This means that even if fewer than 5 businesses in a group responded to the survey, information from at least 5 boats would be used to generate the relevant indicators via the imputation process and no confidential information would be extractable from those indicators. Regions with fewer than 5 active businesses have been excluded to ensure the confidentiality of survey respondents.

The sample size from the survey for the 2019/20 financial year is summarised in the tables below by region (Table 2-1) and by fishery (Table 2-2). Across all fisheries, a total of 282 usable[3] responses were received, and 229 included complete financial information for the 2019/20 financial year. The sample represented just over one in every five active commercial fishing business, and 28 per cent of GVP in the 2019/20 financial year. The sample of financial information represented between 18 per cent (Wide Bay Burnett) and 26 per cent (Mackay, Isaac and Whitsunday) of active businesses in each region and between 14 per cent (Other Harvest Fishery) and 31 per cent (Coral Harvest and Marine Aquarium Fishery) of active businesses in each fishery. As a proportion of GVP, the sample represented between 17 per cent (South East) and 40 per cent (Mackay, Isaac and Whitsunday) of GVP in each region, and between 17 per cent (Gulf of Carpentaria Inshore) and 72 per cent (Other Harvest) of GVP in each fishery.

While this sample was sufficient to prepare the economic and social indicators, a larger sample would be required to further disaggregate results with confidence. Data were collected from businesses with different levels of activity, specialisation and profitability.

[3] All questions in the questionnaire were optional and some participants chose not to respond to some sections. Responses could only be used to estimate indicators if they were complete for the relevant section. For example, a response that included capital values but not operating costs could not be used to estimate economic indicators. However, if it included species prices and responses to demographic and social questions it could still be used to estimate species prices and social indicators.

Table 2-1 Survey sample for the 2019/20 financial year in the Queensland commercial fisheries, by region

Fishing Region	Active Businesses	Sample Size	% of Active Businesses Sampled	Fishery GVP ($m)	Sampled GVP ($m)	% of GVP Sampled
Cape York Peninsula	146	33	22.6%	43.3	11.9	27.5%
Dry Tropics	148	34	23.0%	12.3	3.9	31.4%
Fitzroy	273	62	22.7%	41.0	12.1	29.5%
Mackay, Isaac and Whitsunday	228	59	25.9%	34.0	13.5	39.8%
North West	49	12	24.5%	7.4	2.4	31.7%
South East	378	80	21.2%	47.0	7.9	16.9%
Wet Tropics	225	52	23.1%	29.4	11.2	38.1%
Wide Bay Burnett	318	57	17.9%	30.7	6.4	20.8%
Queensland	**1,044**	**229**	**21.9%**	**245.1**	**69.3**	**28.3%**

[a] The sum of active businesses across the fishing regions does not equal the number of active businesses for Queensland as some businesses operate in more than one fishing region and have been counted against each.

Source: BDO EconSearch analysis

Table 2-2 Survey sample for the 2019/20 financial year in the Queensland commercial fisheries, by fishery

Fishery	Active Businesses	Sample Size	% of Active Businesses Sampled	Fishery GVP ($m)	Sampled GVP ($m)	% of GVP Sampled
Blue Swimmer Crab	85	23	27.1%	2.5	0.8	31.0%
Coral Harvest and Marine Aquarium	35	11	31.4%	21.8	13.1	60.0%
Line Fishery (reef)	248	61	24.6%	34.5	9.0	26.1%
East Coast Inshore Fin Fish	460	107	23.3%	15.0	4.6	30.3%
East Coast Trawl	295	62	21.0%	95.0	18.1	19.0%
Gulf of Carpentaria Inshore	60	15	25.0%	23.6	4.1	17.5%
Moreton Bay Commercial Other	178	49	27.5%	11.2	4.1	36.3%
Moreton Bay Commercial Trawl	73	19	26.0%	8.1	2.4	30.1%
Mud Crab East Coast	258	54	20.9%	17.8	3.6	19.9%
Mud Crab Gulf of Carpentaria	36	6	16.7%	2.6	0.4	14.2%
Other Harvest	50	7	14.0%	14.5	10.5	72.0%
Line Fishery (rocky reef)	249	63	25.3%	0.5	0.1	18.5%
Spanner Crab	32	6	18.8%	12.9	3.6	28.1%
East Coast Spanish Mackerel	184	52	28.3%	4.4	1.6	36.1%
Queensland[b]	**1,044**	**229**	**21.9%**	**245.1**	**69.3**	**28.3%**

[a] The sum of active businesses across fisheries does not equal the number of active businesses in Queensland as some businesses operate in more than one fishery and have been counted against each.

[b] The sum of value across individual fisheries is greater than the Queensland total as the Moreton Bay fisheries are subsets of other fisheries.

Source: BDO EconSearch analysis

2.4. Summary of Method Changes

A number of method changes occurred between the previous publication of economic and social indicators (for 2017/18 and 2018/19) and this report to improve the indicators and establish a more accurate and efficient method for building a timeseries of indicators. Table 2-3 explains each of the changes and the impact on the indicator results.

Table 2-3 Summary of changes to the analysis since the 2017/18 and 2018/19 financial year indicators

Area	Description
Matching method (Stage 4 of Section 2.1)	Previously, the matching process used the sum of relative errors as a metric for similarity. Matching accuracy has been improved by instead using the sum of squared errors.
Imputation method (Stage 4 of Section 2.1)	Previously, the imputation method estimated the business structure and activity of non-responding businesses as the simple average of the five most similar businesses. The accuracy of imputation has been improved by instead using a weighted average of the five most similar businesses where weights are provided by the relative similarity of the 5 businesses.
Total export value	In the survey for the 2017/18 and 2018/19 financial years, fishing businesses were asked for the location of the markets that they sell to, including overseas. This led to an estimate of export value generated directly by the fishing businesses and did not include the value of products exported further down the supply-chain. In the 2019/20 survey, fishers were additionally asked for their understanding of the proportion of catch that is ultimately exported overseas, whether by themselves or other parties. This is labelled "total export value" in the 2019/20 indicators and is valued at beach price. "Total export value" is larger than "direct exports" as it includes a value for product exported further down the supply chain.
Assets, liability and equity	Consultations nationally have suggested that fisheries reforms may lead to indebtedness of fishing businesses as access to fisheries has the potential to become more commoditised and fishing businesses may borrow funds to purchase access rights from other fishers. Additional indicators have been included in the "Business Financial Indicators" category of indicators to monitor values of assets, liabilities and equity of fishing businesses at the fishery level.
No face-to-face interviews	The survey for the 2017/18 and 2018/19 financial years included a substantial amount of face-to-face interviews with fishers, though most interviews were conducted over the phone with trained interviewers. Due to the risk of research interruption associated with COVID-19 management actions, face-to-face interviews were not offered in the 2019/20 survey and almost all responses were collected over the phone. This did not appear to affect the survey materially but has the potential to bias the results away from fishers who are more comfortable with face-to-face consultation.
Endorsement value attribution to fisheries	In the 2017/18 and 2018/19, some types of endorsement that can be used across multiple fisheries were attributed proportionally across all fisheries that a business accessed based on revenue. In the 2019/20 analysis, the attribution to fisheries was improved by allocating each endorsement type only to the relevant fisheries that it was actively utilised in.
Personal Wellbeing Index benchmarking	Data for the personal wellbeing index (PWI) were collected in surveys for the 2017/18 and the 2018/19 financial years. This was repeated in the survey for the 2019/20 financial year. Additional in the latter survey, a PWI index value was calculated and compared to published national and state benchmarks.

3. SUMMARY OF ECONOMIC INDICATORS

3.1. Catch, Price, Value and Exports

The total catch, shown in Table 3-1, in Queensland's commercial fisheries was 14,553t and 2,815,000 individuals in 2019/20. Gross value of production sold directly by commercial fishers to domestic and international markets for this catch was $245.1m at beach prices. The estimated total export value of product exported directly by fishing businesses and by the supply chain at beach price was $45.8m in 2019/20.

In the 2017/18 and 2018/19 indicators, only the value of product directly exported by fishing businesses was reported as exports; estimates of exports by the supply chain were not included. A different approach was used for the 2019/20 indicators. For the 2019/20 indicators the total export value includes the commercial fishers' estimate of the beach price value of product that is ultimately exported either directly by them or at any point down the supply-chain (Table 3-1).

Table 3-1 Queensland commercial fisheries' gross value of production, catch and export value in the 2019/20 financial year

	Catch			
Fishery	tonnes (t)	number ('000)	GVP ($m)	Total Export Value ($m)
Blue Swimmer Crab	241	0	2.5	0.0
Coral Harvest and Marine Aquarium[a]	9	670	21.8	16.3
Line Fishery (reef)	1,231	0	34.5	12.1
East Coast Inshore Fin Fish	2,519	0	15.0	0.3
East Coast Trawl	6,589	0	95.0	0.2
Gulf of Carpentaria Inshore	1,754	0	23.6	0.0
Moreton Bay Commercial Other[a]	1,659	1,156	11.2	2.0
Moreton Bay Commercial Trawl	682	0	8.1	0.0
Mud Crab East Coast	566	0	17.8	0.0
Mud Crab Gulf of Carpentaria	76	0	2.6	0.1
Other Harvest[a]	479	2,144	14.5	12.0
Line Fishery (rocky reef)	48	0	0.5	0.0
Spanner Crab	747	0	12.9	4.8
East Coast Spanish Mackerel	295	0	4.4	0.0
Queensland[b]	**14,553**	**2,815**	**245.1**	**45.8**

[a] For these fisheries a component of the catch is reported as number of individuals/pieces and not as kilograms. For this report complete weight conversions have not been done because they are either not necessary or inappropriate.

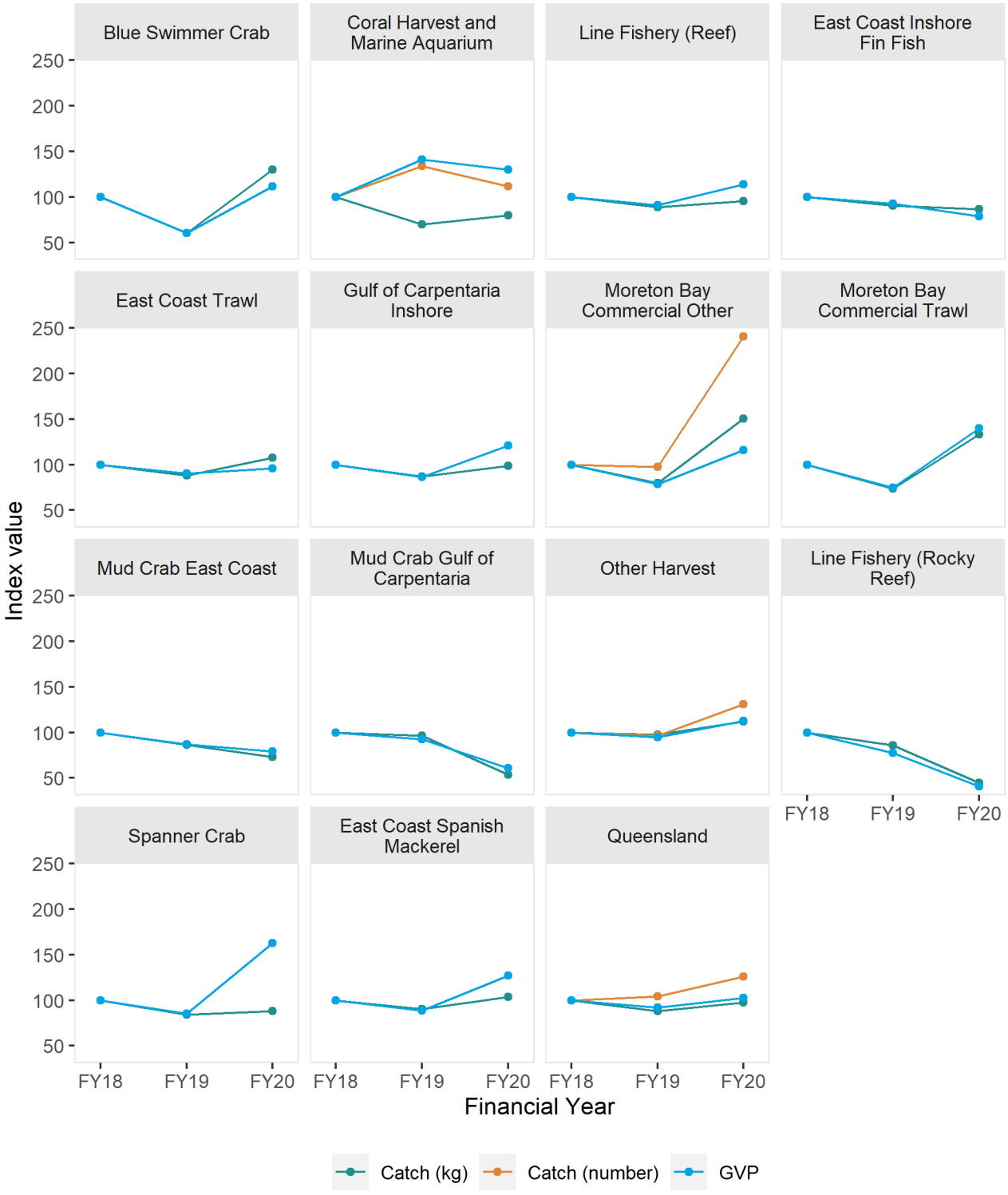
[b] The sum of individual fisheries is greater than the Queensland total as the Moreton Bay fisheries are subsets of other fisheries.

Source: Fisheries Queensland and 2019 survey

Change in catch and GVP for the three financial years to 2019/20 is illustrated using an index for each commercial fishery in Figure 3-1. The index is calculated such that the 2017/18 catch and GVP are equal to 100 and the values in subsequent years show the change relative to 2017/18. For example, an increase in the index value for GVP from 100 to 110 indicates that GVP increased by 10 per cent. This focuses attention on the direction and scale of relative change over time and allows the drivers of change in GVP to be understood. For example, GVP in the Blue Swimmer Crab fishery moved closely in line with catch over the three years, implying that price has been relatively stable and catch was behind the fluctuations in GVP.

On the other hand, GVP in the Spanner Crab Fishery increased sharply to 2019/20 while catch remained relatively stable, implying a sharp increase in price was behind the increase in GVP.

Figure 3-1 Catch[a] and GVP trends, 2017/18 to 2019/20 financial years



[a] Catch of each species is expressed either as 'kg' or by 'number' of individuals depending on how fishers price the species and how it is recorded in logbooks. This means that some fisheries include both kg and number and others only kg.

Source: BDO EconSearch analysis and BDO EconSearch 2020

Species specific information across all commercial fisheries is presented in Table 3-2. All species for which at least five fishing businesses provided information are included in the table. All other species are grouped into 'other species' at the bottom of the table. Species are ordered by GVP with the highest figure at the top. Coral Harvest and Marine Aquarium species are grouped into categories.

Table 3-2 Catch, GVP and markets for the Queensland commercial fisheries in the 2019/20 financial year

					Market Destination			
Species	Catch	Price per Unit	Unit	GVP ($m)	QLD	Interstate	Direct overseas	Total overseas
Prawn - eastern king	2,685,285	$14.92	Kg	$40.05	91.5%	8.5%	0.0%	0.0%
Coral trout	765,964	$35.21	Kg	$26.97	86.5%	10.3%	3.2%	42.6%
Crab - Mud	641,373	$31.93	Kg	$20.48	33.0%	67.0%	0.0%	0.4%
Aquarium Coral	584,792	$32.68	Number	$19.11	14.0%	33.7%	52.3%	80.3%
Prawn - tiger	1,186,363	$14.52	Kg	$17.23	98.1%	1.9%	0.0%	0.0%
Crab - spanner	746,598	$17.29	Kg	$12.91	64.3%	1.2%	34.5%	37.3%
Barramundi	632,951	$18.36	Kg	$11.62	98.2%	1.8%	0.0%	0.0%
Mackerel - grey	773,063	$10.07	Kg	$7.78	59.9%	40.1%	0.0%	0.0%
Mackerel - Spanish	515,990	$14.19	Kg	$7.32	91.2%	8.3%	0.5%	0.5%
Prawn - banana	540,343	$11.84	Kg	$6.40	100.0%	0.0%	0.0%	0.0%
Prawn - red spot king	184,837	$18.42	Kg	$3.41	90.9%	9.1%	0.0%	0.0%
Crab - blue swimmer	279,134	$10.48	Kg	$2.92	100.0%	0.0%	0.0%	0.0%
Prawn - endeavour	365,701	$7.58	Kg	$2.77	99.0%	1.0%	0.0%	0.0%
Prawn - blue leg king	184,583	$15.00	Kg	$2.77	100.0%	0.0%	0.0%	0.0%
Threadfin - king	205,723	$13.21	Kg	$2.72	80.0%	20.0%	0.0%	0.1%
Mullet - unspecified	1,079,589	$2.13	Kg	$2.30	65.0%	35.0%	0.0%	12.5%
Emperor - red throat	132,149	$17.17	Kg	$2.27	98.3%	1.7%	0.0%	0.0%
Squid - unspecified	151,706	$11.85	Kg	$1.80	98.5%	1.5%	0.0%	0.0%
Scallop - saucer	244,454	$5.79	Kg	$1.42	100.0%	0.0%	0.0%	17.3%
Aquarium Fish	52,901	$23.39	Number	$1.24	14.7%	52.4%	32.9%	58.0%
Whiting - unspecified	121,512	$8.73	Kg	$1.06	90.5%	9.5%	0.0%	0.0%
Bugs - Balmain	70,032	$15.14	Kg	$1.06	100.0%	0.0%	0.0%	0.0%
Threadfin - blue	113,394	$8.06	Kg	$0.91	100.0%	0.0%	0.0%	0.0%
Mackerel - school	73,410	$11.28	Kg	$0.83	100.0%	0.0%	0.0%	0.0%
Emperor - spangled	59,205	$12.74	Kg	$0.75	100.0%	0.0%	0.0%	0.0%
Nannygai - large mouth	62,795	$10.84	Kg	$0.68	100.0%	0.0%	0.0%	0.0%
Trevally - unspecified	95,397	$6.22	Kg	$0.59	99.1%	0.9%	0.0%	0.0%
Garfish - unspecified	88,614	$5.63	Kg	$0.50	44.8%	55.2%	0.0%	0.0%
Emperor - red	32,191	$14.65	Kg	$0.47	100.0%	0.0%	0.0%	0.0%
Bream - unspecified	65,448	$5.48	Kg	$0.36	97.6%	2.4%	0.0%	0.0%
Cuttlefish	45,022	$7.43	Kg	$0.33	94.1%	5.9%	0.0%	0.0%
Tailor	43,570	$7.30	Kg	$0.32	58.2%	41.8%	0.0%	0.0%
Flathead - unspecified	26,805	$9.62	Kg	$0.26	100.0%	0.0%	0.0%	0.0%
Other species[a]	1,593,806	$18.78	Kg	$29.93	95.9%	3.7%	0.4%	19.6%
Other species[a]	787,737	$1.21	Number	$0.95	40.6%	53.1%	6.4%	6.4%
Fishery Total	**14,553,346**	**$15.24**	**Kg**	**$245.08**	**76.3%**	**14.6%**	**9.1%**	**18.7%**
Fishery Total	**2,814,864**	**$8.28**	**Number**					

[a] Catch of each species is expressed either as 'kg' or by 'number' of individuals depending on how fishers price the species and how it is recorded in logbooks. An 'Other species' and 'Fishery Total' is presented separately for each of these unit types. For this report complete weight conversions have not been done because they are either not necessary or inappropriate.

Source: BDO EconSearch analysis

3.2. 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 3-3, for Queensland's commercial fisheries were $25.1m in 2019/20. As a proportion of GVP total management costs were 10.2 per cent in 2019/20.

Table 3-3 Cost of management in Queensland's commercial fisheries in the 2019/20 financial year

Fishery	Management Costs ($m)	GVP ($m)	Management Costs/GVP (%)
Blue Swimmer Crab	1.6	2.5	62.5%
Coral Harvest and Marine Aquarium	1.3	21.8	5.8%
Line Fishery (reef)	2.0	34.5	5.9%
East Coast Inshore Fin Fish	3.8	15.0	25.1%
East Coast Trawl	1.9	95.0	2.0%
Gulf of Carpentaria Inshore	1.5	23.6	6.5%
Moreton Bay Commercial Other	1.3	11.2	11.4%
Moreton Bay Commercial Trawl	1.5	8.1	19.0%
Mud Crab East Coast	1.9	17.8	10.7%
Mud Crab Gulf of Carpentaria	1.2	2.6	46.2%
Other Harvest	3.1	14.5	21.0%
Line Fishery (rocky reef)	1.1	0.5	240.7%
Spanner Crab	1.6	12.9	12.4%
East Coast Spanish Mackerel	1.3	4.4	30.5%
Queensland[a]	**25.1**	**245.1**	**10.2%**

[a] The sum of GVP across individual fisheries is greater than the Queensland total as the Moreton Bay fisheries are subsets of other fisheries.

Source: Fisheries Queensland and BDO EconSearch analysis

3.3. Financial Indicators

The major measures of the financial performance of active businesses in Queensland's commercial fisheries for 2019/20 are presented across three tables in this section (Table 3-4, Table 3-5 and Table 3-6). The assets, liabilities and equity of fishing businesses is presented in Table 3-7.

3.3.1. Financial performance

This section presents a series of tables that describe the average financial performance of businesses' operations in the Queensland commercial fisheries in 2019/20. The average business refers to the average activity within a 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 two fisheries will have its business activity (employment, expenditure, capital values, etc.) split between the financial indicators tables of the two fisheries.

The estimates of financial performance include businesses that participated in the survey and non-responding businesses modelled at the business level as described in Section 2. The estimates of financial performance are for the average business activity in the fishery for the 2019/20 financial year. Average financial performance masks significant variation within fisheries across types of businesses and their activities. To describe this variation, the same indicators are presented in individual fishery results reports (see Section 1.1) with businesses disaggregated by number of days fished in the fishery, return on investment, level of specialisation in the fishery, and fishing region.

Table 3-4 Financial performance in commercial fisheries in the 2019/20 financial year, average per business - part 1

Indicator		Fishery				
		Blue Swimmer Crab	Coral Harvest and Marine Aquarium	Line Fishery (reef)	East Coast Inshore Fin Fish	East Coast Trawl
Fishing Businesses						
	Active Businesses	85	35	248	460	295
	Sample Size	23	11	61	107	62
Fishing Activity						
	Catch (kg)	2,839	247	4,962	5,476	22,335
	Catch (no.)	-	19,156	-	-	-
	Days Fished	72	55	40	40	125
	Prop. of Revenue Earned in this Fishery	24%	100%	66%	21%	96%
Employment						
	Total Jobs	0.6	7.2	1.6	1.0	2.7
	FTE Jobs	0.3	2.8	1.0	0.4	2.3
(1)	**Gross Income**	$29,340	$622,854	$138,993	$32,661	$322,075
Variable Costs						
	Bait & Ice	$2,923	$1,254	$9,662	$1,654	$2,128
	Fuel	$6,115	$61,990	$15,680	$4,729	$94,217
	Labour - paid	$10,261	$116,999	$41,630	$9,306	$78,054
(2)	Labour - unpaid	$2,857	$5,502	$5,896	$2,872	$9,788
	Other	$101	$1,137	$198	$148	$426
	Provisions	$309	$6,129	$4,494	$912	$6,842
(3)	Total Variable Cost	$22,566	$193,013	$77,559	$19,620	$191,455
Fixed Costs						
	Insurance	$926	$14,428	$4,274	$1,118	$17,056
(4)	Interest	$712	$8,187	$535	$319	$5,237
(5)	Labour - unpaid	$307	$6,996	$2,651	$977	$3,958
(6)	Leasing fees - other	$4	$38,902	$1,166	$974	$2,302
(6)	Leasing fees - Quota	$0	$771	$16,901	$1,072	$0
(6)	Leasing fees - Symbol	$625	$156	$783	$244	$1,165
	Legal & Accounting	$313	$7,506	$1,107	$570	$3,730
	Licence fees	$1,674	$3,243	$1,884	$1,394	$6,313
	Office & Admin	$861	$12,776	$1,045	$740	$3,532
	Repairs & Maintenance	$3,998	$47,134	$12,401	$4,349	$57,449
	Slipping & Mooring	$652	$9,284	$4,622	$605	$15,783
	Telephone etc.	$309	$6,598	$1,055	$421	$2,172
	Travel	$478	$3,440	$625	$218	$1,209
	VMS costs	$211	$1,144	$1,077	$334	$797
(7)	Total Fixed Cost	$11,070	$160,566	$50,127	$13,335	$120,705
(8)	Total Costs (3+7)	$33,636	$353,579	$127,686	$32,956	$312,159
Profitability						
	Gross Margin (1-3)	$6,774	$429,841	$61,433	$13,041	$130,620
(9)	Total Unpaid Labour (2+5)	$3,165	$12,498	$8,547	$3,849	$13,746
	Gross Operating Surplus (1-8+9)	-$1,131	$281,773	$19,854	$3,555	$23,662
(10)	Business Profit before Depreciation (1-8)	-$4,296	$269,275	$11,306	-$294	$9,916
(11)	Depreciation	$5,094	$43,244	$14,533	$12,115	$48,660
	Business Profit (10-11)	-$9,390	$226,031	-$3,227	-$12,409	-$38,744
	Profit at Full Equity[a]	-$7,784	$259,342	$15,766	-$10,039	-$30,029
Capital						
	Fishing Gear and Equipment	$36,392	$584,070	$100,039	$85,039	$391,698
	Licence and Quota Value	$29,869	$1,173,547	$43,712	$36,687	$109,631
	Total Capital	$66,261	$1,757,617	$143,750	$121,727	$501,330
Rate of Return at Full Equity						
	Rate of Return on Fishing Gear and Equipment at Full Equity[a]	-18.6%	24.3%	13.7%	-10.1%	-6.9%
	Rate of Return on Total Capital at Full Equity[a]	-10.0%	11.5%	4.7%	-6.7%	-5.4%

[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 3-5 Financial performance in commercial fisheries in the 2019/20 financial year, average per business – part 2

Indicator		Fishery				
		Gulf of Carpentaria Inshore	Moreton Bay Commercial Other	Moreton Bay Commercial Trawl	Mud Crab East Coast	Mud Crab Gulf of Carpentaria
Fishing Businesses						
	Active Businesses	60	178	73	258	36
	Sample Size	15	49	19	54	6
Fishing Activity						
	Catch (kg)	29,240	9,319	9,347	2,192	2,103
	Catch (no.)	-	6,497	-	-	-
	Days Fished	108	74	54	106	73
	Prop. of Revenue Earned in this Fishery	90%	34%	43%	62%	23%
Employment						
	Total Jobs	2.0	1.3	1.4	1.5	1.1
	FTE Jobs	1.4	0.5	1.3	0.6	0.3
(1)	**Gross Income**	$392,549	$62,820	$110,856	$69,147	$73,340
Variable Costs						
	Bait & Ice	$1,935	$3,988	$1,366	$3,893	$1,810
	Fuel	$26,978	$10,682	$39,004	$8,789	$9,631
	Labour - paid	$56,401	$25,885	$56,632	$11,248	$10,660
(2)	Labour - unpaid	$10,836	$4,830	$5,451	$5,616	$7,165
	Other	$904	$222	$228	$200	$360
	Provisions	$4,960	$1,259	$2,970	$554	$1,753
(3)	Total Variable Cost	$102,014	$46,866	$105,651	$30,300	$31,380
Fixed Costs						
	Insurance	$3,046	$1,620	$6,853	$847	$1,088
(4)	Interest	$1,255	$569	$2,704	$733	$508
(5)	Labour - unpaid	$2,419	$1,075	$1,937	$1,449	$801
(6)	Leasing fees - other	$884	$584	$572	$140	$993
(6)	Leasing fees - Quota	$78	$0	$0	$0	$0
(6)	Leasing fees - Symbol	$1,042	$509	$1,491	$1,129	$1,324
	Legal & Accounting	$1,209	$648	$1,772	$742	$473
	Licence fees	$6,218	$2,211	$1,754	$2,265	$1,324
	Office & Admin	$3,047	$1,633	$1,352	$1,057	$1,351
	Repairs & Maintenance	$17,164	$6,567	$27,086	$4,693	$3,479
	Slipping & Mooring	$2,405	$1,004	$8,060	$180	$799
	Telephone etc.	$2,087	$617	$901	$784	$701
	Travel	$1,424	$417	$446	$197	$439
	VMS costs	$1,098	$389	$512	$345	$256
(7)	Total Fixed Cost	$43,376	$17,843	$55,440	$14,563	$13,537
(8)	Total Costs (3+7)	$145,390	$64,709	$161,091	$44,863	$44,917
Profitability						
	Gross Margin (1-3)	$290,535	$15,954	$5,204	$38,846	$41,961
(9)	Total Unpaid Labour (2+5)	$13,255	$5,905	$7,388	$7,065	$7,967
	Gross Operating Surplus (1-8+9)	$260,414	$4,016	-$42,847	$31,349	$36,390
(10)	Business Profit before Depreciation (1-8)	$247,159	-$1,889	-$50,235	$24,284	$28,424
(11)	Depreciation	$23,079	$15,359	$21,879	$9,742	$7,028
	Business Profit (10-11)	$224,080	-$17,248	-$72,115	$14,542	$21,396
	Profit at Full Equity[a]	$227,362	-$15,353	-$67,251	$16,692	$23,787
Capital						
	Fishing Gear and Equipment	$168,372	$115,911	$151,498	$65,806	$45,572
	Licence and Quota Value	$397,176	$49,517	$51,515	$52,160	$48,646
	Total Capital	$565,548	$165,428	$203,014	$117,966	$94,218
Rate of Return at Full Equity						
	Rate of Return on Fishing Gear and Equipment at Full Equity[a]	121.9%	-11.6%	-40.8%	23.3%	41.9%
	Rate of Return on Total Capital at Full Equity[a]	38.2%	-8.2%	-29.1%	12.4%	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 3-6 Financial performance in commercial fisheries in the 2019/20 financial year, average per business – part 3

Indicator		Fishery				
		Other Harvest	Rocky Reef Fin Fish	Spanner Crab	East Coast Spanish Mackerel	Queensland
Fishing Businesses						
	Active Businesses	50	249	32	184	1,044
	Sample Size	7	63	6	52	229
Fishing Activity						
	Catch (kg)	9,580	195	23,331	1,605	13,940
	Catch (no.)	42,888	-	-	-	2,696
	Days Fished	107	12	71	23	108
	Prop. of Revenue Earned in this Fishery	99%	1%	96%	12%	100%
Employment						
	Total Jobs	2.5	0.1	1.5	0.5	2.7
	FTE Jobs	1.4	0.0	0.9	0.4	1.6
(1)	**Gross Income**	$290,113	$1,836	$403,490	$23,753	$234,749
Variable Costs						
	Bait & Ice	$12,808	$701	$6,258	$1,386	$6,257
	Fuel	$36,131	$830	$31,271	$3,638	$42,590
	Labour - paid	$90,857	$442	$102,611	$4,989	$55,673
(2)	Labour - unpaid	$18,710	$1,058	$10,126	$4,926	$10,433
	Other	$1,884	$19	$243	$57	$505
	Provisions	$6,455	$158	$2,229	$424	$4,605
(3)	Total Variable Cost	$166,845	$3,207	$152,738	$15,420	$120,064
Fixed Costs						
	Insurance	$7,172	$146	$3,886	$945	$7,972
(4)	Interest	$13,915	$49	$622	$899	$3,206
(5)	Labour - unpaid	$226	$182	$2,305	$3,077	$3,630
(6)	Leasing fees - other	$559	$38	$10	$408	$2,889
(6)	Leasing fees - Quota	$6,721	$0	$41,921	$1,395	$6,370
(6)	Leasing fees - Symbol	$415	$45	$243	$150	$1,128
	Legal & Accounting	$4,150	$37	$834	$384	$2,415
	Licence fees	$4,367	$179	$4,031	$1,179	$4,637
	Office & Admin	$2,927	$149	$1,077	$552	$2,859
	Repairs & Maintenance	$34,738	$623	$11,353	$3,726	$28,084
	Slipping & Mooring	$829	$97	$4,170	$562	$6,689
	Telephone etc.	$743	$72	$470	$375	$1,768
	Travel	$866	$11	$1,159	$157	$993
	VMS costs	$1,790	$58	$803	$249	$1,009
(7)	Total Fixed Cost	$79,416	$1,686	$72,884	$14,058	$73,650
(8)	Total Costs (3+7)	$246,260	$4,893	$225,622	$29,478	$193,714
Profitability						
	Gross Margin (1-3)	$123,268	-$1,371	$250,752	$8,333	$114,686
(9)	Total Unpaid Labour (2+5)	$18,936	$1,240	$12,431	$8,003	$14,064
	Gross Operating Surplus (1-8+9)	$62,788	-$1,817	$190,299	$2,278	$55,099
(10)	Business Profit before Depreciation (1-8)	$43,852	-$3,057	$177,868	-$5,725	$41,035
(11)	Depreciation	$18,099	$1,158	$25,153	$6,641	$31,465
	Business Profit (10-11)	$25,753	-$4,215	$152,715	-$12,366	$9,570
	Profit at Full Equity[a]	$47,618	-$4,091	$195,748	-$9,601	$22,522
Capital						
	Fishing Gear and Equipment	$218,469	$10,440	$183,723	$61,491	$251,391
	Licence and Quota Value	$282,692	$1,374	$250,484	$20,419	$161,839
	Total Capital	$501,162	$11,814	$434,207	$81,910	$413,229
Rate of Return at Full Equity						
	Rate of Return on Fishing Gear and Equipment at Full Equity[a]	20.3%	-37.1%	103.8%	-14.1%	7.6%
	Rate of Return on Total Capital at Full Equity[a]	8.1%	-31.8%	22.7%	-9.2%	4.2%

[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

3.3.2. 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, which can be expressed in dollar terms or as a percentage of total asset value. Table 3-7 presents a simple average of the equity of all surveyed businesses that access each of Queensland's commercial fisheries. The averages are of whole businesses, unlike the financial indicator tables above which present averages of proportions of businesses that access each fishery. The average level of equity that fishers have in their businesses varied across fisheries from 81 per cent (Moreton Bay Commercial Trawl) to 93 per cent (Moreton Bay Commercial Other).

Table 3-7 Average assets, liabilities and equity of fishing businesses by fishery in the 2019/20 financial year

Fishery	Licence and quota ($m)	Plant and equipment ($m)	Other assets ($m)	Total liabilities ($m)	Total assets ($m)	Total equity ($m)	Equity / Total assets (%)
Blue Swimmer Crab	0.14	0.36	0.28	0.09	0.78	0.69	88%
Coral Harvest and Marine Aquarium	1.71	1.22	0.71	0.58	3.65	3.06	84%
Line Fishery (reef)	0.14	0.25	0.09	0.06	0.49	0.43	88%
East Coast Inshore Fin Fish	0.13	0.24	0.19	0.06	0.55	0.50	90%
East Coast Trawl	0.10	0.41	0.21	0.11	0.73	0.62	85%
Gulf of Carpentaria Inshore	0.11	0.19	0.07	0.06	0.37	0.31	84%
Moreton Bay Commercial Other	0.16	0.34	0.38	0.06	0.88	0.82	93%
Moreton Bay Commercial Trawl	0.10	0.17	0.05	0.06	0.32	0.26	81%
Mud Crab East Coast	0.13	0.22	0.20	0.07	0.55	0.48	87%
Mud Crab Gulf of Carpentaria	0.11	0.18	0.10	0.04	0.39	0.35	90%
Line Fishery (rocky reef)	0.15	0.25	0.08	0.05	0.48	0.44	91%
Spanner Crab	0.67	0.44	0.10	0.12	1.21	1.09	90%
East Coast Spanish Mackerel	0.09	0.18	0.07	0.03	0.35	0.32	91%
Queensland	**0.17**	**0.29**	**0.18**	**0.07**	**0.64**	**0.57**	**88%**

Source: BDO EconSearch analysis

3.4. State and Regional Economic Contribution

Estimates of the economic contribution of Queensland's commercial fisheries to the Queensland and regional economies in 2019/20 are outlined in this section.

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 has utilised the detailed industry specific data reported above in combination with other regional/state data that highlight the current linkages that exist within the economy to estimate indicators such as gross regional product and employment. The analysis has been undertaken within a modelling framework known as input-output analysis, with the purpose being to determine how much direct and indirect economic activity is associated with the fishery. This is because the contribution of the fishery extends beyond the initial round of output, income and employment generated by the fishery. These indirect or flow-on effects are part of the contribution of fishing related businesses to the economy and must be added to the direct effects in order to get a full appreciation of the economic contribution of the fishery. This method was recommended by

the National Fisheries and Aquaculture Industry Contributions Study (FRDC project 2017-210) (BDO EconSearch 2019).

The terms 'contribution', and 'impact' are often used interchangeably, particularly in the context of regional economic analysis where decision makers wish to use the results from such analyses to inform policy decisions, to facilitate industry development or support a particular business strategy. However, they are distinctly different types of analysis. At the most basic level, a contribution analysis can be thought of as a 'footprint' or 'snapshot' analysis of economic activity, whereas an impact analysis can be thought of as an analysis of a change in economic activity. An economic impact analysis is an appropriate approach 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. Economic impact analysis will generally require more data than a contribution analysis and may require more sophisticated models, such as an extended input-output model or a properly specified computable general equilibrium model, or means to estimate people's likely behaviour in response to the change (Watson et al. 2014).

3.4.1. Measuring 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 limited local processing.

Each of these activities generates flow-on effects to other sectors through purchases of inputs and the employment of labour. As noted above, these flow-on effects have been estimated using input-output analysis.

Local processing includes the first value-adding step after product is landed by fishing businesses, this may be carried out by the same fishing business that landed the product or another business. Processing activities include cleaning, filleting, cooking, smoking, freezing, and packaging for retail or export.

In order to compile a representative cost structure for the fishing sector, costs per boat were derived from survey data provided by operators in the fishery (for detail see Section 2). On an item-by-item basis, the expenditures were allocated between those occurring in the fishing region, those occurring in Queensland and those goods and services imported from outside the state.

Estimates of the net value of local (i.e. regional and state) processing activity and capital expenditure per fishing business were derived from the survey of fishing businesses and regional economic models.

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

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

3.4.2. Economic contribution to Queensland and its regions

Estimates of the economic contribution to Queensland generated in 2019/20 by Queensland's commercial fisheries combined are outlined in Table 3-8.

Direct contribution measures fishing activities, associated seafood processing and capital expenditure. Flow-on contribution measures the economic effects in other sectors of the economy (retail and wholesale trade, manufacturing, etc.) generated by direct activities, that is, the multiplier effects. Flow-on effects are disaggregated by industry with the top 10 industries shown separately in the table. Capital expenditures are assumed to be the same as depreciation 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.

Value of Output (Direct)

The value of fishing activity output at beach price (also known as fishery GVP) generated directly in Queensland's commercial fisheries was $245.1m in 2019/20. Other direct output generated by capital expenditure and processing summed to $92.8m. Flow-on output is a biased indicator of economic contribution due to double-counting of values and is not interpreted further here.

Employment

Queensland's commercial fisheries were responsible for the direct employment of 1,641 full-time equivalent (fte) jobs in 2019/20 in the activity of fishing. Other direct activities (capital expenditure and limited processing) supported employment of an additional 268 fte jobs. Flow-on business activity was estimated to support a further 1,408 fte jobs state-wide. These jobs were concentrated in the retail trade, personal and other services, and processed seafood products sectors. The total employment contribution to Queensland was estimated to be 3,317 fte jobs in 2019/20.

Household Income

Personal income of $72.8m was earned in 2019/20 in Queensland's commercial fisheries (wages of employees and estimated drawings by owner/operators). A further $11.7m of income was earned from other direct activities. An additional $100.6m was earned by wage earners in other businesses in Queensland from the flow-on effects of fishing and associated activities. The total household income contribution in Queensland was $185.1m in 2019/20.

Contribution to GSP and GRP

As noted above, 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. Total commercial fisheries related contribution to GSP in Queensland was $346.2m in 2019/20, with $154.3m generated by fishing directly, $23.7m generated by other direct activities and $168.1m supported in other sectors of the state economy.

Table 3-8 Economic contribution of Queensland's commercial fisheries to Queensland in the 2019/20 financial year

Sector	Output ($m)	Gross State Product ($m)	Household Income ($m)	Employment (fte)	Employment (total)
Direct					
Fishing	245.1	154.3	72.8	1,641	2,776
Other direct					
CAPEX	7.9	3.8	2.8	45	48
Processing	84.9	19.9	8.9	223	210
Total Direct	**337.8**	**178.1**	**84.5**	**1,909**	**3,034**
Flow-on					
Retail Trade	23.5	14.2	10.3	212	246
Personal & Other Services	23.1	13.2	11.9	183	190
Admin Support Services	13.2	8.6	8.3	134	137
Professional, Scientific & Technical Services	19.6	10.8	10.4	109	102
Health & Community Services	11.3	7.8	7.4	96	107
Food & Beverage Services	9.7	5.1	3.9	93	121
Education & Training	9.5	6.5	5.9	85	89
Construction Services	23.6	8.5	8.1	84	75
Wholesale Trade	14.3	8.0	6.3	76	66
Insurance & Other Financial Services	16.6	7.8	4.9	58	54
Other Sectors	150.4	77.6	23.2	277	257
Total Flow-on	**314.7**	**168.1**	**100.6**	**1,408**	**1,444**
Total Contribution	**652.5**	**346.2**	**185.1**	**3,317**	**4,478**

Source: BDO EconSearch analysis

Estimates of the economic contribution of each commercial fishery to the Queensland economy are presented in Table 3-9. All direct activity is combined in the upper section of the table, all flow-on effects are combined in the middle section, and the two sections are summed together to calculate total economic contribution presented in the lower section.

The economic contribution of all Queensland commercial fisheries combined to each region in Queensland is presented in Table 3-10. The interpretation of the table is similar to Table 3-9. Direct economic contribution includes fishing activity, associated seafood processing and capital expenditure. Flow-on effects include all other economic activity in the region supported by direct activity, and total economic contribution is the sum of direct and flow-on activity. Flow-on economic activity was estimated separately for each region and the state. The flow-on activity within any one region excludes inter-regional flow-on effects, but the Queensland level estimate includes inter-regional flow-on effects within Queensland. The sum of flow-on (and total) economic contribution across all regions in Table 3-10 is slightly smaller than the flow-on economic contribution for Queensland in the same table because of this difference in estimation method.

Table 3-9 Economic contribution of each commercial fishery to Queensland in the 2019/20 financial year

Fishery	Output ($m)	Gross Regional Product ($m)	Household Income ($m)	Employment (fte)	Employment (total)
Direct					
Blue Swimmer Crab	2.7	1.4	1.2	29	48
Coral Harvest and Marine Aquarium	22.4	15.7	4.7	103	256
Line Fishery (reef)	37.2	23.6	12.7	250	391
East Coast Inshore Fin Fish	28.1	12.2	7.4	195	480
East Coast Trawl	167.7	62.8	36.3	897	989
Gulf of Carpentaria Inshore	24.6	20.8	4.4	89	122
Moreton Bay Commercial Other	14.8	7.9	6.1	104	243
Moreton Bay Commercial Trawl	10.2	3.1	5.1	101	113
Mud Crab East Coast	17.9	13.9	4.7	155	398
Mud Crab Gulf of Carpentaria	2.6	2.2	0.7	11	40
Other Harvest	15.6	10.4	5.7	74	131
Line Fishery (rocky reef)	0.5	<0.1	0.4	9	30
Spanner Crab	13.3	11.5	3.8	30	49
East Coast Spanish Mackerel	5.3	3.6	2.5	68	99
Queensland[a]	**337.8**	**178.1**	**84.5**	**1,909**	**3,034**
Flow-On					
Blue Swimmer Crab	4.9	2.6	1.5	22	22
Coral Harvest and Marine Aquarium	16.5	8.8	5.2	76	78
Line Fishery (reef)	40.7	21.5	12.5	181	185
East Coast Inshore Fin Fish	22.7	12.5	7.8	105	109
East Coast Trawl	163.9	87.4	53.2	728	745
Gulf of Carpentaria Inshore	11.3	6.1	3.6	52	54
Moreton Bay Commercial Other	20.0	10.7	6.2	88	91
Moreton Bay Commercial Trawl	21.3	11.2	6.5	92	94
Mud Crab East Coast	17.0	8.9	5.1	75	77
Mud Crab Gulf of Carpentaria	1.9	1.0	0.6	9	9
Other Harvest	17.1	9.1	5.2	76	78
Line Fishery (rocky reef)	2.0	1.0	0.6	9	9
Spanner Crab	9.4	5.1	2.8	41	43
East Coast Spanish Mackerel	7.4	4.0	2.4	34	35
Queensland[a]	**314.7**	**168.1**	**100.6**	**1,408**	**1,444**
Total					
Blue Swimmer Crab	7.6	4.0	2.7	51	70
Coral Harvest and Marine Aquarium	38.9	24.5	10.0	179	334
Line Fishery (reef)	77.9	45.0	25.2	431	577
East Coast Inshore Fin Fish	50.7	24.7	15.2	300	589
East Coast Trawl	331.6	150.1	89.5	1,625	1,734
Gulf of Carpentaria Inshore	35.9	27.0	8.0	141	176
Moreton Bay Commercial Other	34.8	18.6	12.2	192	333
Moreton Bay Commercial Trawl	31.5	14.4	11.6	193	207
Mud Crab East Coast	34.9	22.9	9.9	230	475
Mud Crab Gulf of Carpentaria	4.5	3.2	1.2	20	49
Other Harvest	32.7	19.5	10.9	150	209
Line Fishery (rocky reef)	2.5	1.1	1.0	18	39
Spanner Crab	22.7	16.6	6.6	71	92
East Coast Spanish Mackerel	12.6	7.6	4.8	102	134
Queensland[a]	**652.5**	**346.2**	**185.1**	**3,317**	**4,478**

[a] The sum of individual fisheries is greater than the Queensland total as the Moreton Bay fisheries are subsets of other fisheries.

Source: BDO EconSearch analysis

Table 3-10 Economic contribution of Queensland's commercial fisheries to 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	7.3	5.8	1.7	42	62
Cape York Peninsula	47.5	34.4	11.6	217	312
Wet Tropics	29.2	17.0	8.2	227	474
Dry Tropics	6.6	3.8	1.5	42	83
Mackay, Isaac and Whitsunday	27.7	17.8	8.1	163	292
Fitzroy	47.5	25.7	11.0	262	422
Wide Bay Burnett	50.7	22.7	10.6	242	383
South East	121.3	51.0	31.9	714	1,007
Queensland[a]	**337.8**	**178.1**	**84.5**	**1,909**	**3,034**
Flow-On					
North West	2.7	1.5	0.8	12	12
Cape York Peninsula	16.0	9.6	5.1	76	77
Wet Tropics	25.9	14.0	8.3	125	128
Dry Tropics	4.5	2.5	1.4	21	21
Mackay, Isaac and Whitsunday	17.9	9.4	5.1	75	75
Fitzroy	32.3	16.6	8.7	128	130
Wide Bay Burnett	40.6	21.7	13.5	191	195
South East	146.4	77.1	46.5	651	664
Queensland[a]	**314.7**	**168.1**	**100.6**	**1,408**	**1,444**
Total					
North West	9.9	7.2	2.4	53	74
Cape York Peninsula	63.5	43.9	16.7	293	389
Wet Tropics	55.1	31.1	16.5	352	602
Dry Tropics	11.1	6.2	2.9	63	105
Mackay, Isaac and Whitsunday	45.6	27.2	13.3	238	367
Fitzroy	79.9	42.3	19.7	390	552
Wide Bay Burnett	91.3	44.4	24.1	433	578
South East	267.7	128.2	78.3	1,366	1,671
Queensland[a]	**652.5**	**346.2**	**185.1**	**3,317**	**4,478**

[a] Flow-on and total contributions for Queensland do not equal the sum of regions the 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.

Source: BDO EconSearch analysis

3.5. 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 return to the value of the natural resource itself.

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 (Table 3-11) with sensitivity analysis at 7 and 15 per cent (Table 3-12). 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.

Assuming an opportunity cost of capital of 10 per cent, net economic return generated in Queensland's commercial fisheries was estimated to be -$22.5m in 2019/20 (Table 3-11). The sensitivity analysis shows that, with the varying assumptions about opportunity cost of capital, net economic return was likely in the range of -$14.7m to -$35.7m in 2019/20 (Table 3-12).

With a sustained negative net economic return, the market value of licences can be expected to decrease over time, however, there is anecdotal evidence from the survey that the market value of licences have not decreased over time while net economic return under the above assumptions has remained significantly negative. Further, the existence of lease payments to access fisheries suggests that the short-term economic return may be positive, although it is possible that these leases only occur in the more profitable areas of the diverse fisheries. This suggests that either the profits of the industry are underestimated, or the opportunity cost of capital and labour may be lower than the value assumed in the sensitivity analysis. If either of these are the case, then the estimated net economic return would be higher. An alternative explanation may lie in non-economic drivers (e.g. lifestyle choices or an inability/reluctance to seek alternative activities) causing people to enter or remain in the industry (see Section 5.2). Building a time series of economic indicators and increasing participation in the data collection phase, would provide evidence to adjust these assumptions away from the broadly standard values used for commercial fishing.

Table 3-11 Net economic return in Queensland's commercial fisheries in the 2019/20 financial year

Fishery	GVP ($m)	Labour Cost ($m)	Materials & Services ($m)	Management Cost ($m)	Depreciation ($m)	Opp. Cost of Capital (10%) ($m)	Net Economic Return ($m)
Blue Swimmer Crab	2.5	1.1	1.5	1.6	0.4	0.3	-2.4
Coral Harvest and Marine Aquarium	21.8	4.5	7.4	1.3	1.5	2.0	5.0
Line Fishery (reef)	34.5	12.4	14.2	2.0	3.6	2.5	-0.3
East Coast Inshore Fin Fish	15.0	6.1	7.7	3.8	5.6	3.9	-12.0
East Coast Trawl	95.0	27.1	61.3	1.9	14.4	11.6	-21.2
Gulf of Carpentaria Inshore	23.6	4.2	4.0	1.5	1.4	1.0	11.4
Moreton Bay Commercial Other	11.2	5.7	5.3	1.3	2.7	2.1	-5.8
Moreton Bay Commercial Trawl	8.1	4.7	6.7	1.5	1.6	1.1	-7.5
Mud Crab East Coast	17.8	4.7	5.8	1.9	2.5	1.7	1.2
Mud Crab Gulf of Carpentaria	2.6	0.7	0.8	1.2	0.3	0.2	-0.5
Other Harvest	14.5	5.5	5.6	3.1	0.9	1.1	-1.6
Line Fishery (rocky reef)	0.5	0.4	0.7	1.1	0.3	0.3	-2.3
Spanner Crab	12.9	3.7	2.0	1.6	0.8	0.6	4.2
East Coast Spanish Mackerel	4.4	2.4	2.4	1.3	1.2	1.1	-4.1
Queensland[a]	**245.1**	**72.8**	**113.4**	**22.3**	**32.8**	**26.2**	**-22.5**

[a] The sum of individual fisheries is greater than the Queensland total as the Moreton Bay fisheries are subsets of other fisheries.

Source: BDO EconSearch analysis

Table 3-12 Sensitivity analysis of opportunity cost of capital on Net Economic Return in Queensland's commercial fisheries in the 2019/20 financial year

Opportunity Cost of Capital (%)	7%	10%	15%
Opp. Cost of Capital ($m)	18.4	26.2	39.4
Net Economic Return ($m)	**-14.7**	**-22.5**	**-35.7**

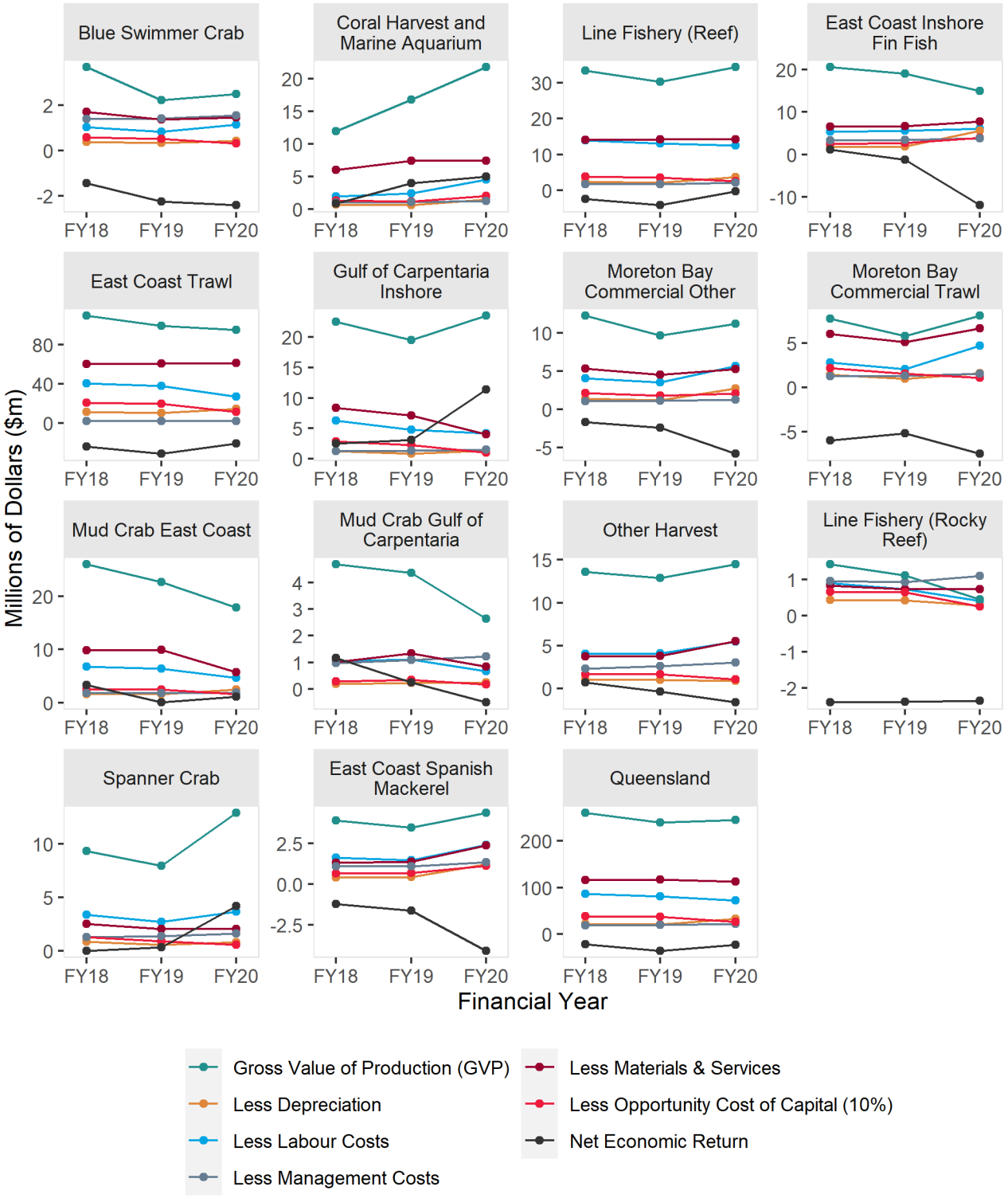
Source: BDO EconSearch analysis

The net economic return for Queensland's commercial fisheries (assuming a 10% opportunity cost of capital) improved from -$24.4m in 2017/18 and -$38.2m in 2018/29 to -$22.5m in 2019/20. The change in net economic return and its components for each commercial fishery over the three financial years to 2019/20 is illustrated in Figure 3-2. Each fishery is represented by a small chart in the figure and each has an independent vertical axis to focus attention on changes in net economic return and its components within each fishery rather than comparing between fisheries. For example, the vertical axis for the Blue Swimmer Crab fishery is limited to $2m whereas the vertical axis for the East Coast Trawl fishery is limited to $80m. Net economic return is represented by the black line on each chart.

Net economic return increases as GVP increases (green line) and decreases as all of the other coloured lines (which represent different costs) increase. The movement in the coloured lines therefore explains the movement in net economic return. For example, between 2018/19 and 2019/20 in the Blue Swimmer Crab fishery, labour costs (blue line) increased and there were only small changes in other costs and GVP so net economic return decreased. On the other hand, net economic return increased in the Spanner Crab fishery as GVP (green line) increased sharply, there was also an increase in labour costs (blue line) which moderated the increase in net economic return slightly. In the East Coast Spanish Mackerel fishery, GVP increased

(Figure 3-1 shows that this was due to increased catch and price) but all costs increased as well (by more than GVP when combined), leading to a decrease in net economic return.

Figure 3-2 Net economic return and associated revenue and cost trends, 2017/18 to 2019/20 financial years assuming an opportunity cost of capital of 10%

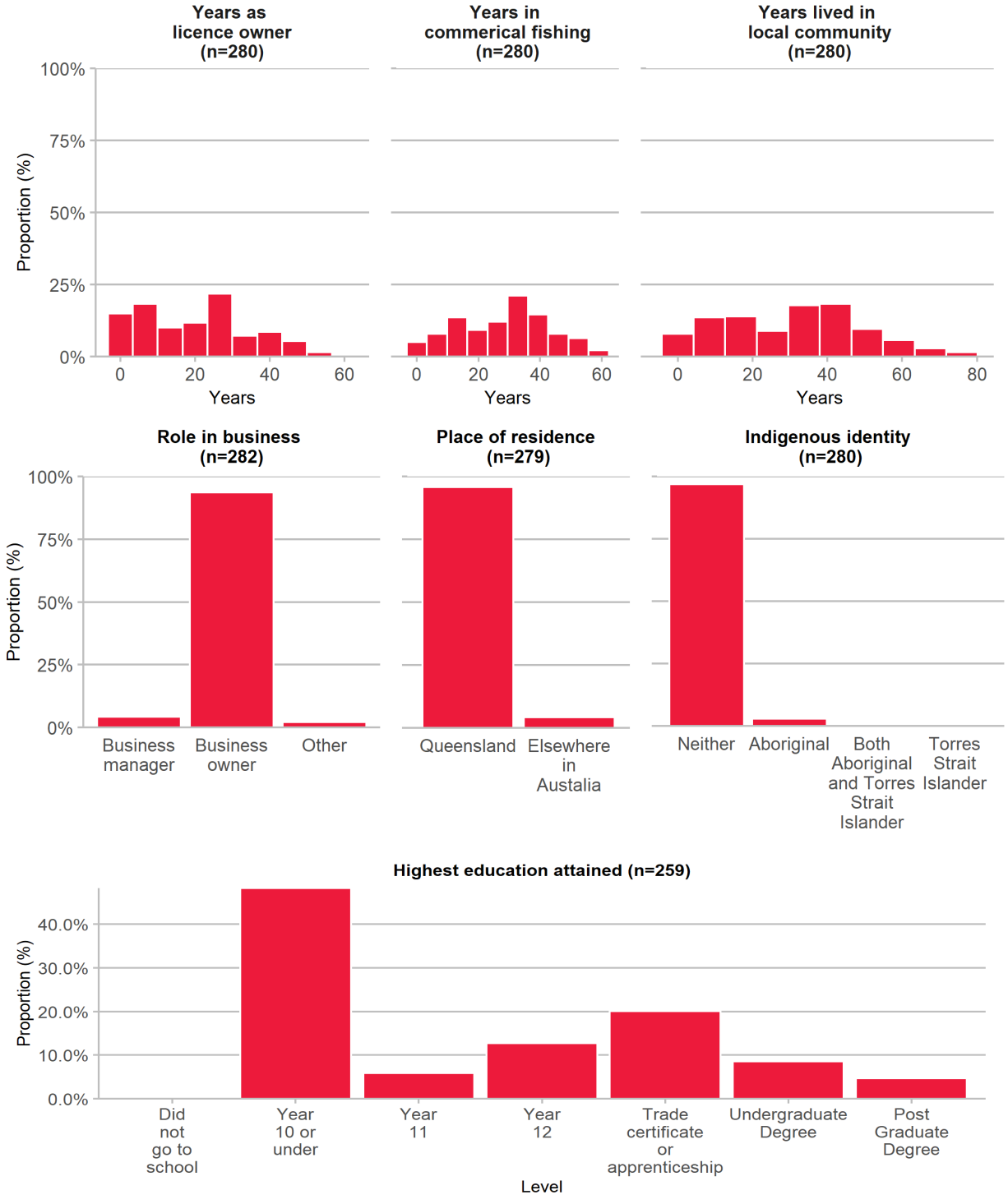


Source: BDO EconSearch analysis and BDO EconSearch 2020

4. DEMOGRAPHIC INDICATORS

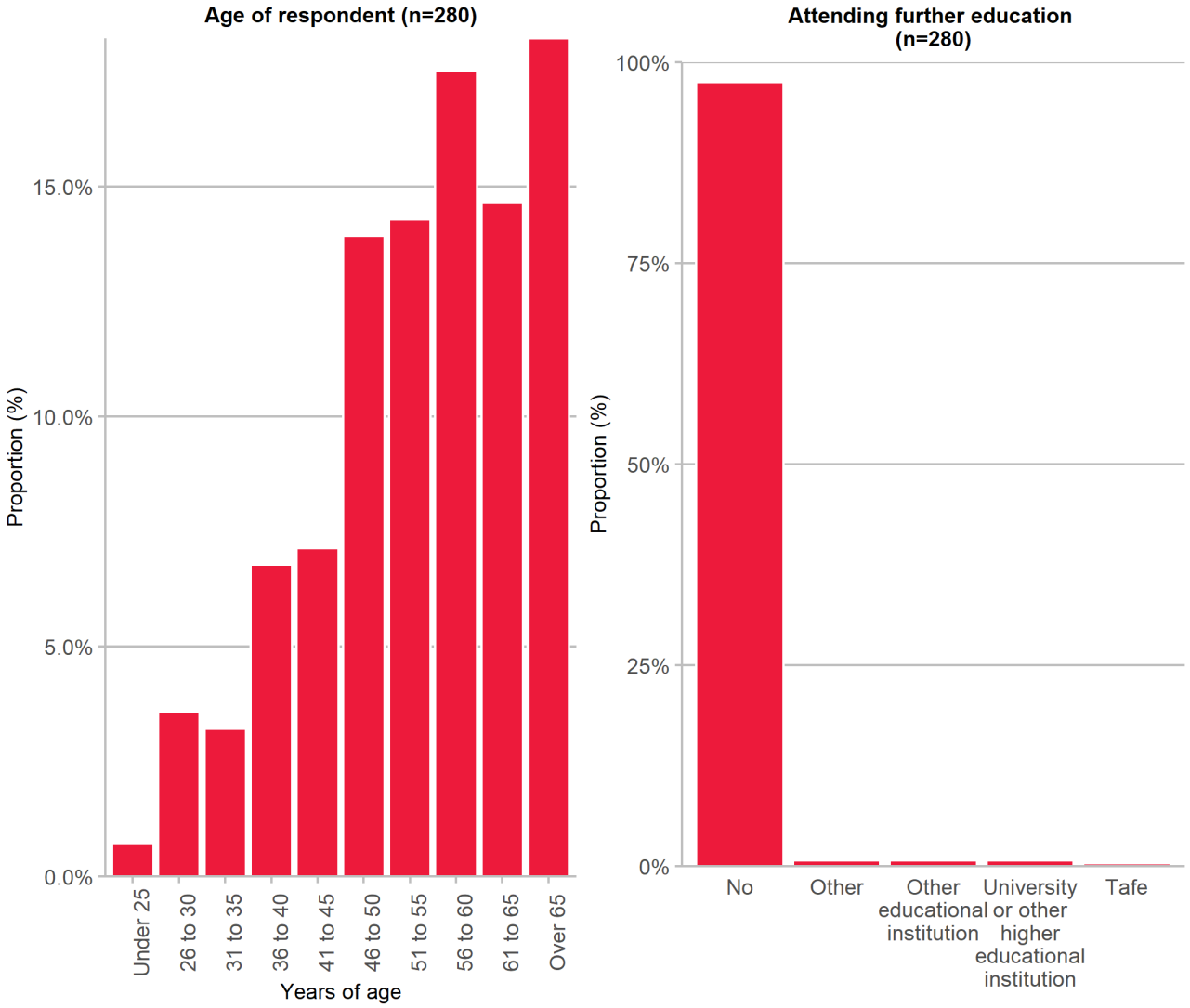
Figure 4-1 to Figure 4-3 present a demographic profile of fishers who accessed the commercial fisheries in Queensland in 2019/20. These are raw sample data and have not been expanded to the fishery level.

Figure 4-1 Demographic profile of Queensland's commercial fisheries in the 2019/20 financial year - part 1



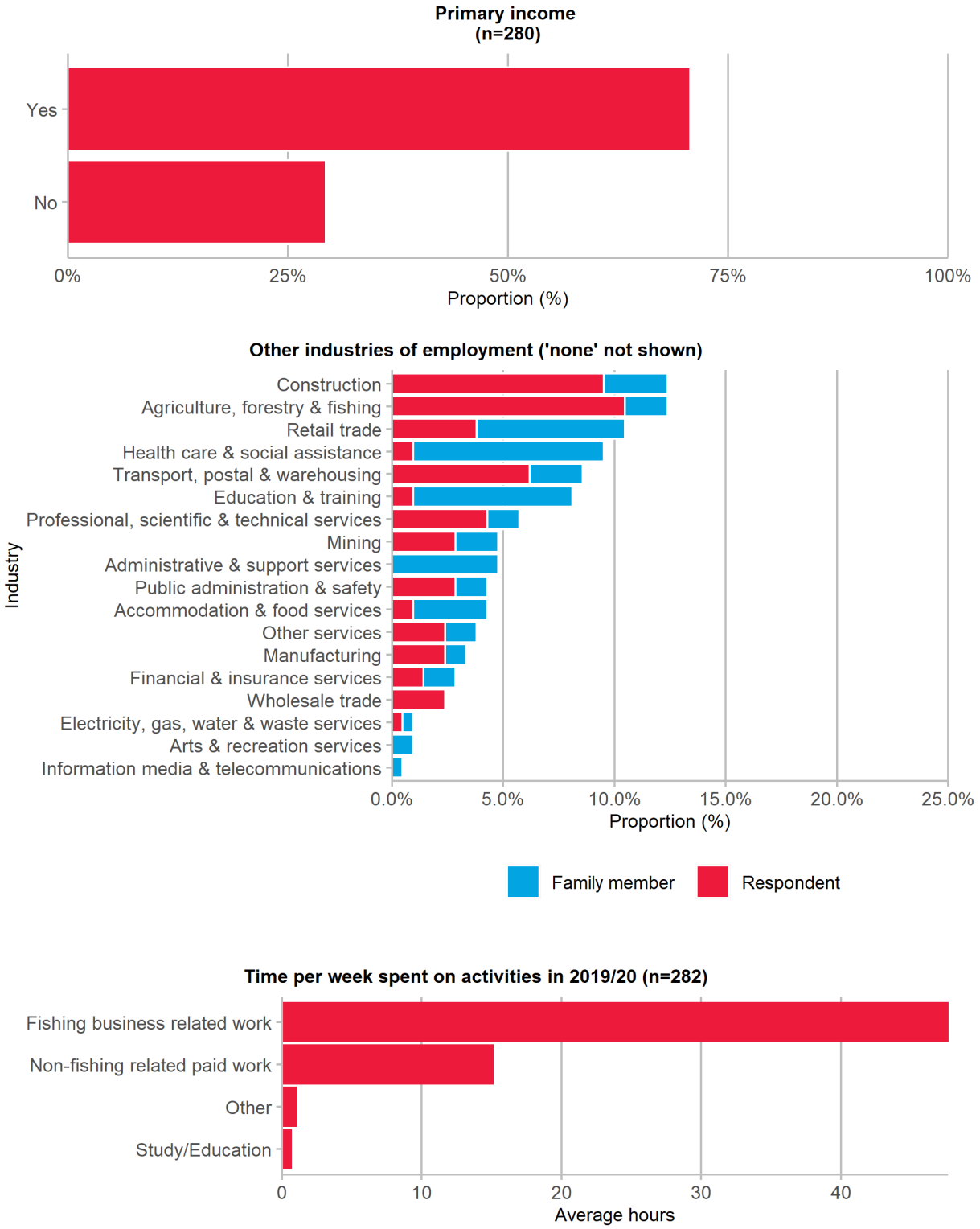
Source: BDO EconSearch analysis

Figure 4-2 Demographic profile of Queensland's commercial fisheries in the 2019/20 financial year - part 2



Source: BDO EconSearch analysis

Figure 4-3 Demographic profile of Queensland's commercial fisheries in the 2019/20 financial year - part 3



Source: BDO EconSearch analysis

5. SOCIAL INDICATORS

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

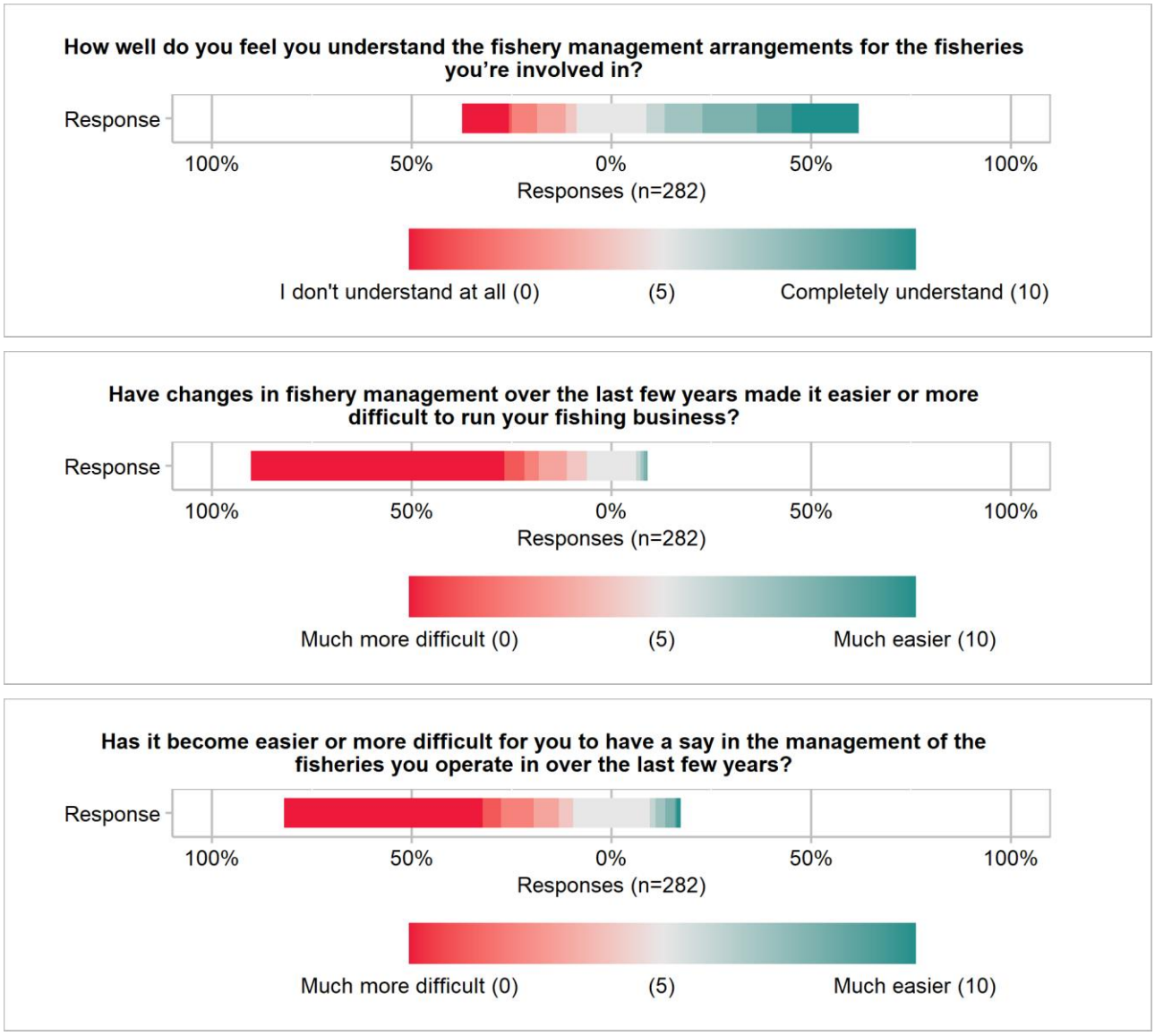
- Perceptions of management
- Lifestyle, satisfaction and personal wellbeing
- Community contribution.

5.1. Perceptions of Management

The charts below present 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 5-1 shows that about half of QLD commercial fishers feel that they understand the fishery management arrangements for the fisheries they are involved in. However, around three quarters felt that changes in fishery management in the last few years have made it more difficult to run their business and that it has become more difficult to have a say in management. Overall, this suggests that QLD commercial fishers perceive fishery management to be difficult to comply with, difficult to have a say in and may be associated with higher costs of management and compliance activities.

Figure 5-1 Perceptions of fishery management in the commercial fisheries (2019/20 financial year)



Source: BDO EconSearch analysis

5.2. Lifestyle, Satisfaction and Personal Wellbeing

The charts below present indicators of satisfaction and wellbeing and the social costs and benefits of being a commercial fisher in Queensland fisheries.

Figure 5-2 shows that Queensland commercial fishers were satisfied with many aspects of being a commercial fisher, particularly being on the water and working outdoors. However, it also shows that just under three quarters were dissatisfied with current fishing regulations and over half were dissatisfied with the predictability of their income.

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 5-3 below though the charts themselves also provide useful information about the levels of different domains of wellbeing for fishers that access the Commercial fisheries. The PWI for Queensland fisheries is compared against the average for Australia, Queensland and regional Queensland, as reported in the Regional Wellbeing Survey (UC 2020), below:

- Australia: 70.4
- Queensland: 69.2
- Regional Queensland: 71.5
- Queensland fisheries: 74.3.

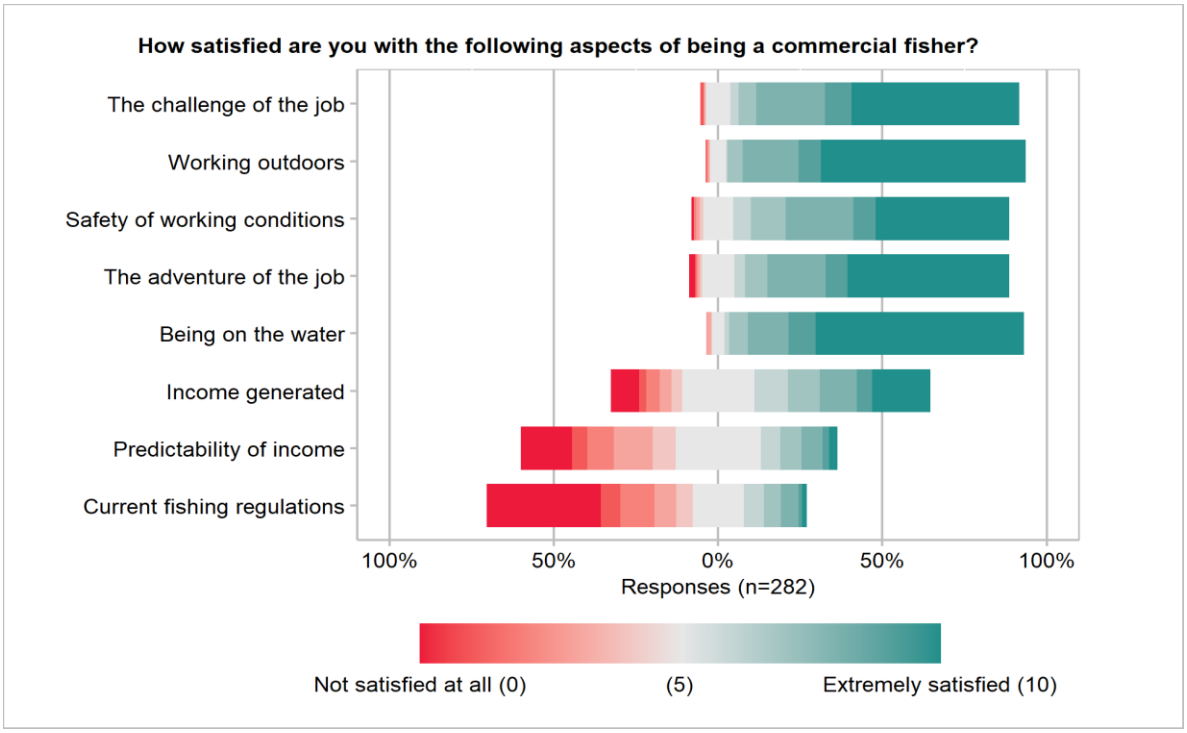
Figure 5-4 shows that over three quarters of Queensland commercial fishers felt that fishing is an important aspect of their lives and lifestyle. Moreover, around three quarters indicated that, if given the opportunity, they would not choose to do a different job. A similar proportion also indicated that commercial fishing is a rewarding job that makes fishers feel that they are doing something worthwhile. Queensland commercial fishers indicated that they had high levels of personal wellbeing across all personal wellbeing index (PWI) domains. However, almost half indicated that they were dissatisfied with their future security (Figure 5-3). The average PWI of Queensland commercial fishers is significantly higher than the Australian and Queensland average. Overall, these results indicate that fishing activities are making a significant, positive contribution to the overall satisfaction and personal wellbeing of Queensland commercial fishers.

Figure 5-4 shows that most Queensland commercial fishers agree 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. Importantly, over half of respondents indicated that being a commercial fisher has negative mental health impacts on them and just under three quarters do not feel secure in their job.

These results suggest that although Queensland commercial fishers enjoy their role as commercial fishers, the uncertainty around regulations and their income and job security has a negative impact on their wellbeing.

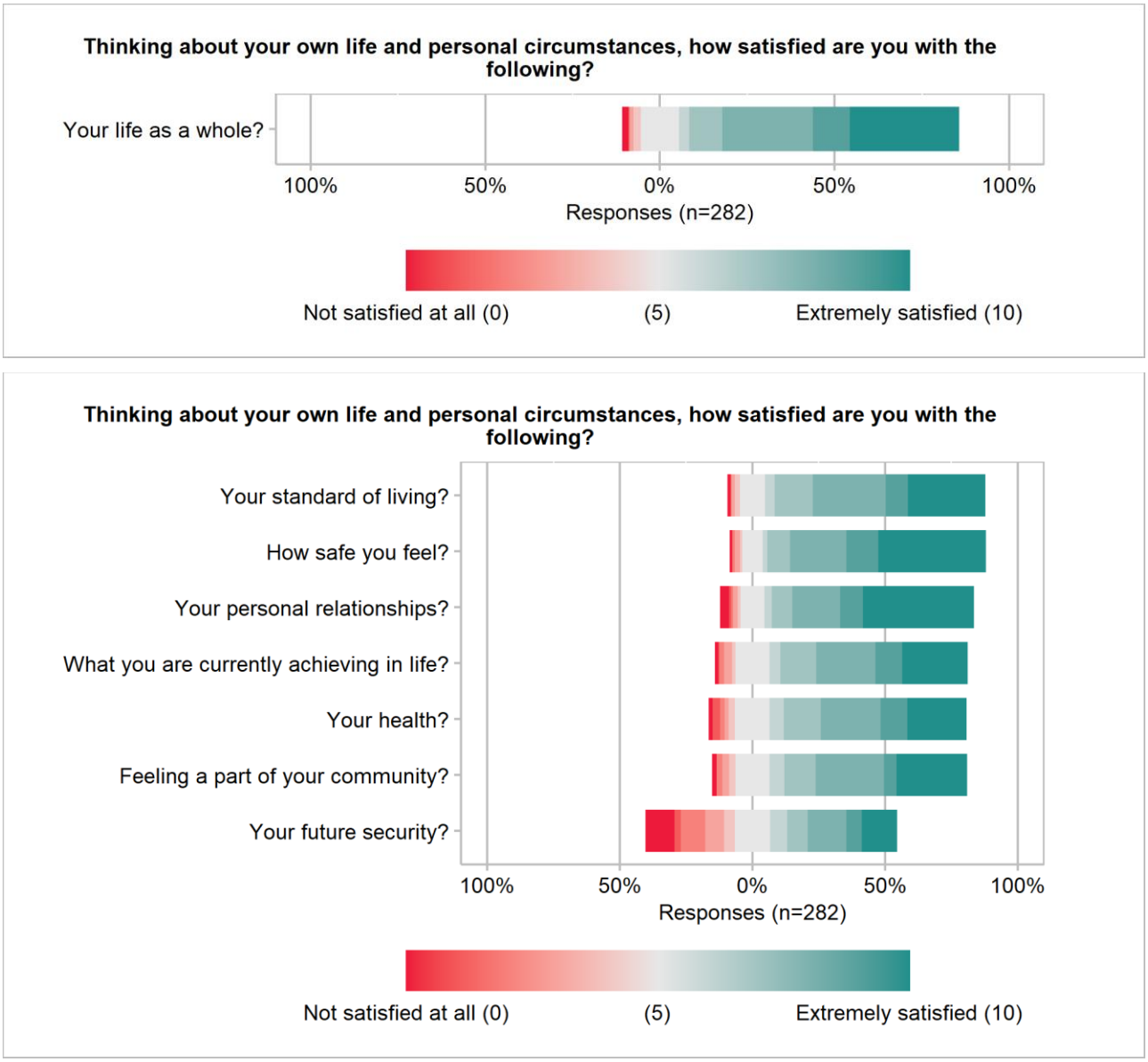
Fishers may derive non-financial benefits or costs from commercial fisheries. Figure 5-4 below present the perceptions of fishers about these benefits and costs.

Figure 5-2 Satisfaction in the commercial fisheries (2019/20 financial year)



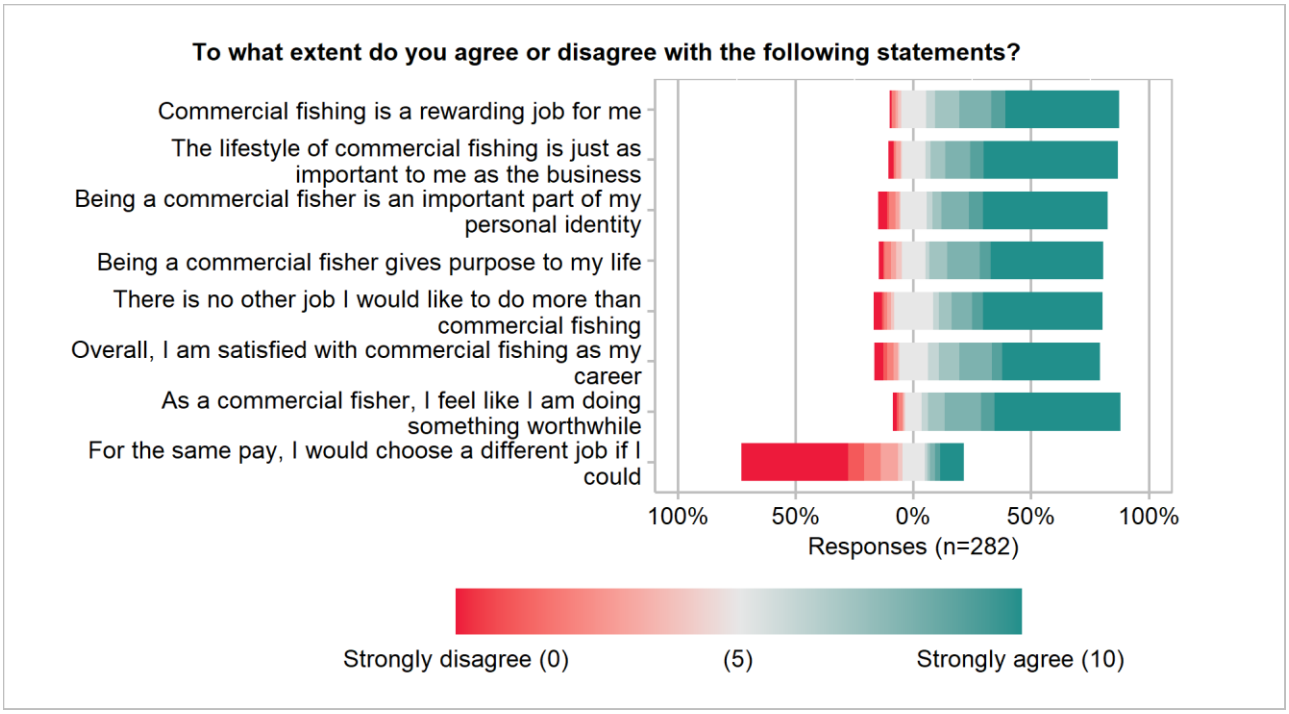
Source: BDO EconSearch analysis

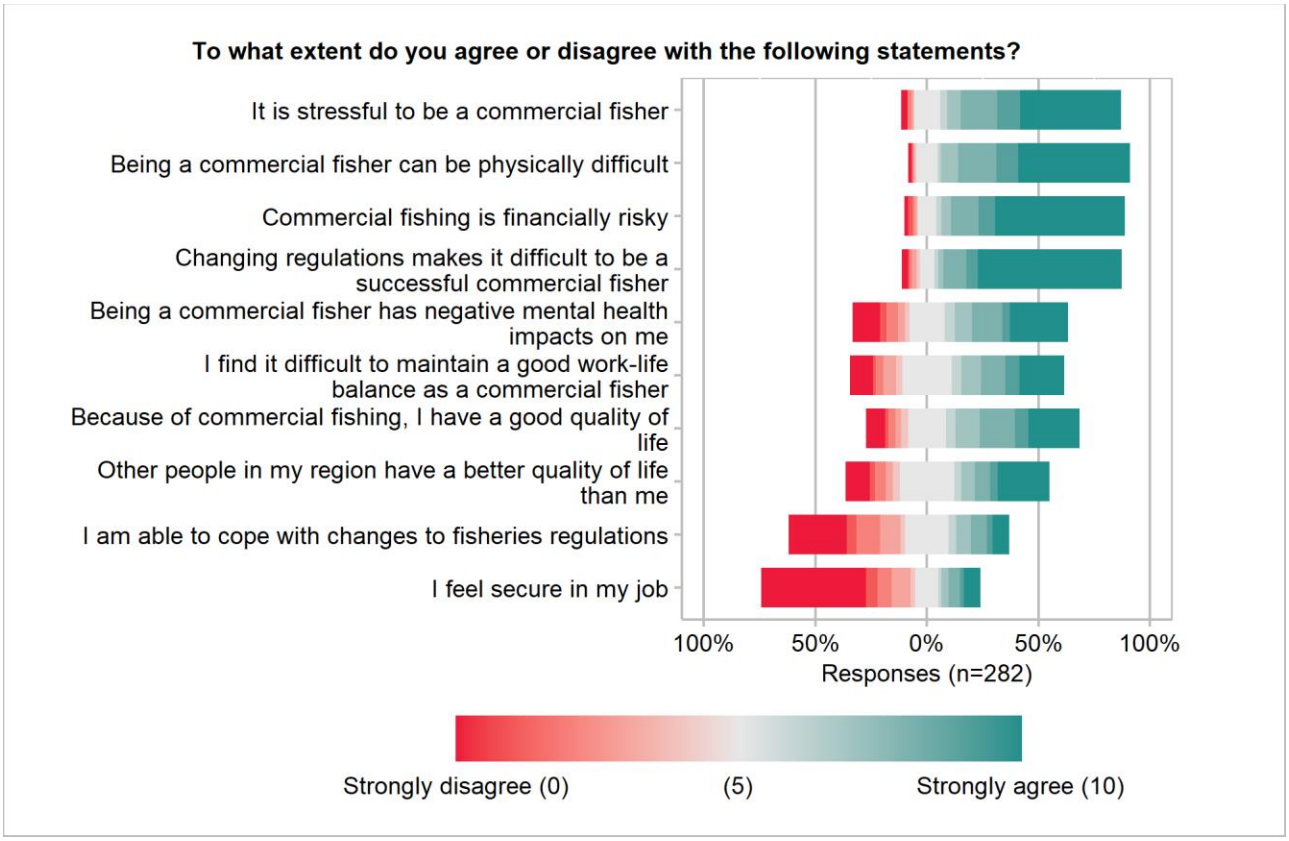
Figure 5-3 Personal wellbeing in the commercial fisheries (2019/20 financial year)



Source: BDO EconSearch analysis

Figure 5-4 Social costs and benefits to wellbeing in the commercial fisheries (2019/20 financial year)





Source: BDO EconSearch analysis

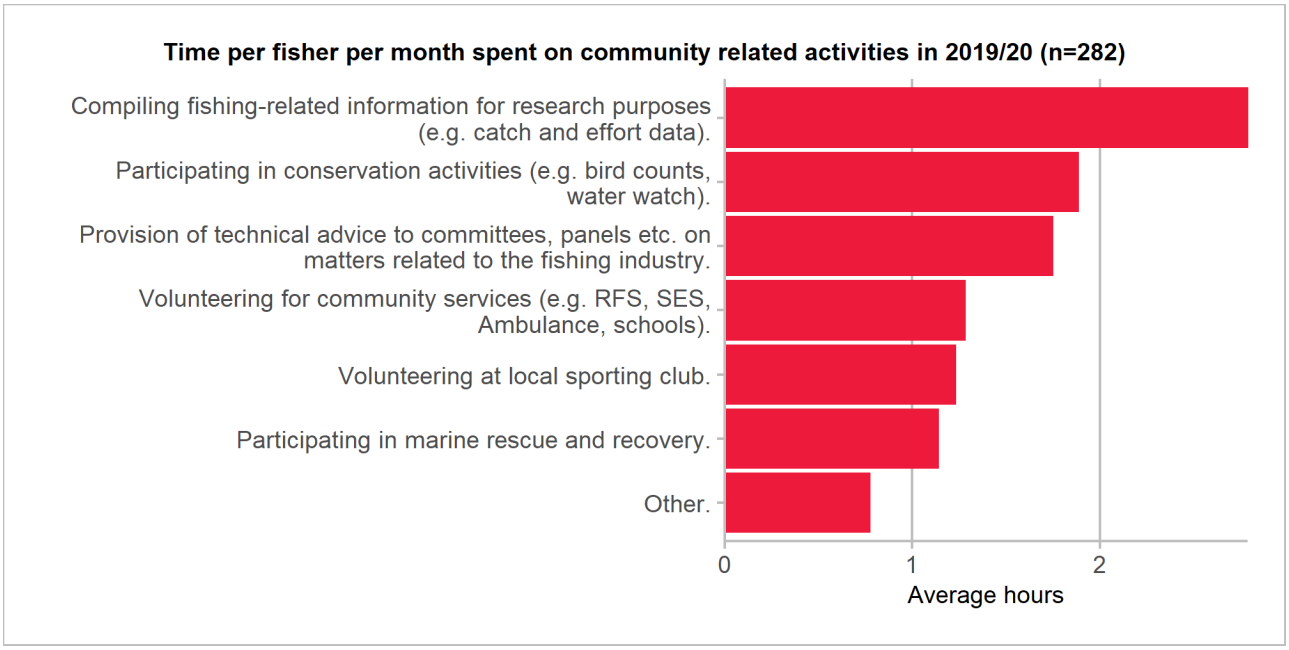
5.3. Community Contribution

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

As shown in Figure 5-5, Queensland commercial fishers indicated that they make a contribution to the community. The main area of the contribution was an average of approximately 2.5 hrs per month spent compiling fishing related information for research (e.g. catch and effort data).

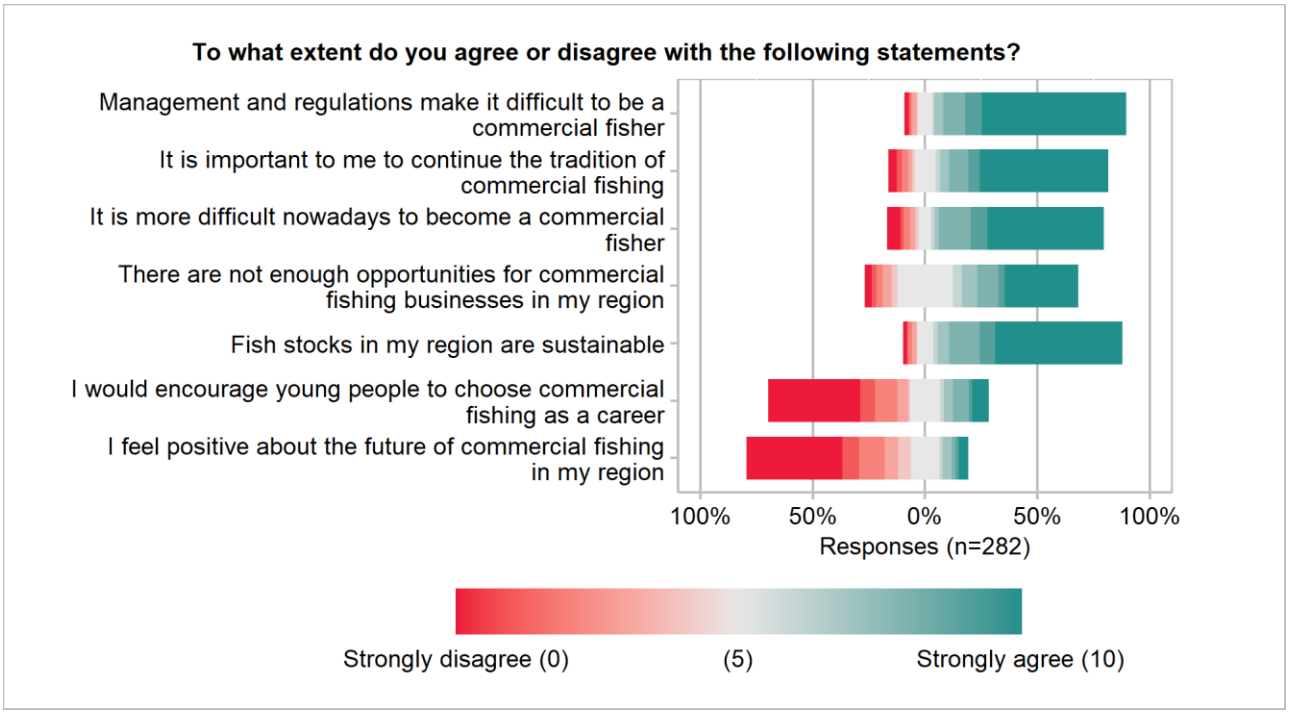
Figure 5-6 shows that around three quarters of Queensland commercial fishers indicated that it was important to them to continue the tradition of commercial fishing. However, a similar proportion also indicated that they did not feel positive about the future of commercial fishing in their region and that they would not encourage young people to choose commercial fishing as a career.

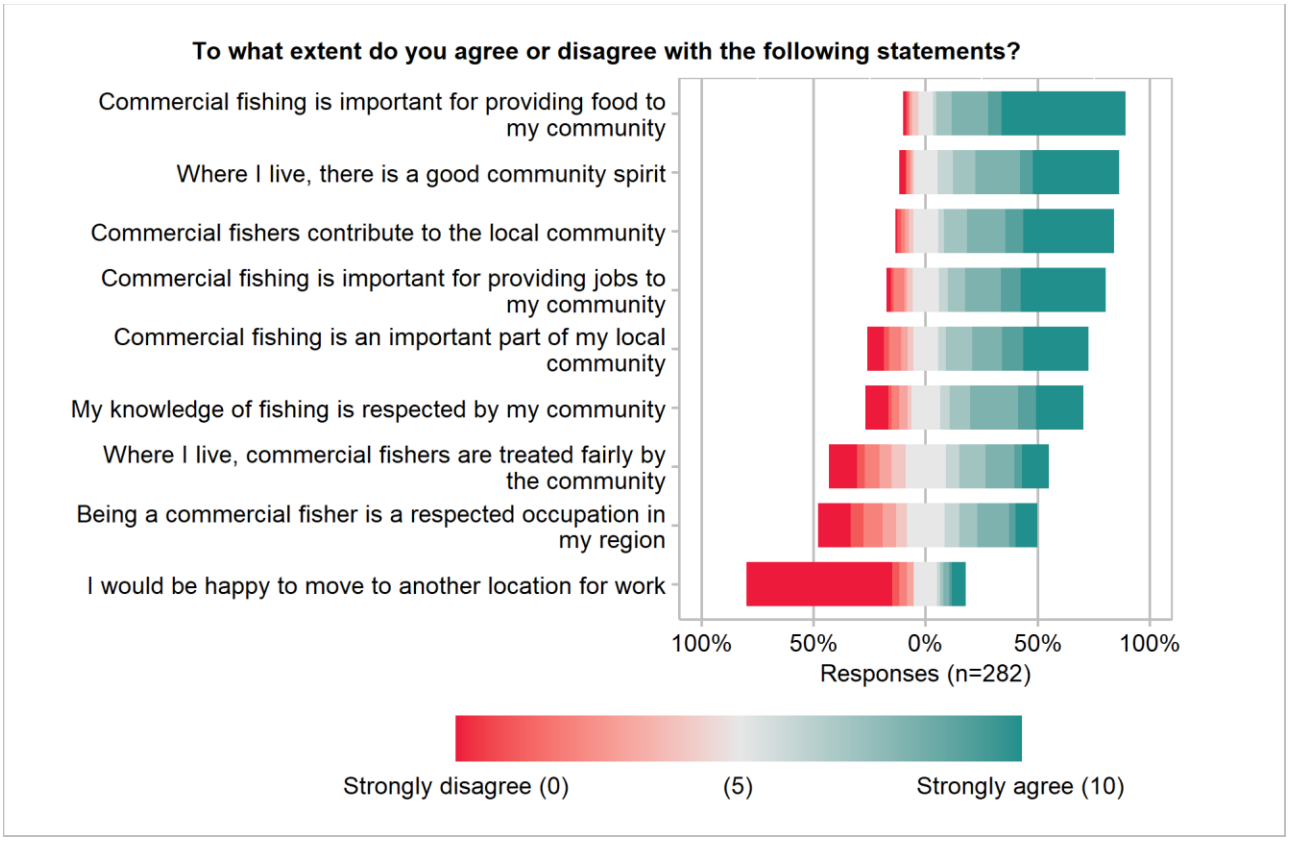
Figure 5-5 Community contribution in the commercial fisheries (2019/20 financial year)



Source: BDO EconSearch analysis

Figure 5-6 Perceptions of community connectedness in the commercial fisheries (2019/20 financial year)





Source: BDO EconSearch analysis

6. IMPACT OF COVID-19

Effects from COVID-19 occurred in Queensland from March 2020, impacting the last 4 months of the 2019/20 financial year. To estimate this impact on Queensland's commercial fisheries, the business survey collected fishers' perceptions on how COVID-19 impacted various aspects of their activities over this COVID-19 affected period and what kinds of financial support were received.

Weighted average responses for each factor in each commercial fishery and region are presented in Table 6-1. In general, fishing businesses indicated that both revenue and costs were lower due to COVID, but that revenue decreased by more than costs. The decrease in revenue was due to both a decrease in catch and price received for products. However, this is just the average of the effect on businesses. The changes beneath these averages are broadly distributed at the business level which is evident in the varying effects on the economic indicators presented later in this section.

Table 6-1 Weighted average of perceived impact of COVID-19 on fishing business activity by fishery and region, for the months of March-June 2020

	Price	Catch	Revenue	Wage costs	Other fishing costs
Fishery					
Blue Swimmer Crab	-37%	-35%	-41%	-2%	-1%
Coral Harvest and Marine Aquarium	-27%	-54%	-49%	0%	0%
Line Fishery (reef)	-44%	-23%	-36%	-7%	-4%
East Coast Inshore Fin Fish	-21%	-21%	-26%	-9%	-8%
East Coast Trawl	-37%	-19%	-26%	-9%	-7%
Gulf of Carpentaria Inshore	-14%	-28%	-29%	-21%	-5%
Moreton Bay Commercial Other	-19%	-18%	-23%	-5%	-5%
Moreton Bay Commercial Trawl	-41%	-27%	-32%	-11%	-5%
Mud Crab East Coast	-21%	-19%	-25%	-12%	-8%
Mud Crab Gulf of Carpentaria	-21%	-28%	-28%	-3%	-4%
Other Harvest	-8%	-12%	-11%	0%	0%
Line Fishery (rocky reef)	-35%	-27%	-41%	-12%	-8%
Spanner Crab	-38%	-32%	-37%	-1%	-1%
East Coast Spanish Mackerel	-27%	-24%	-30%	-12%	-10%
Subregion					
North West	-19%	-28%	-32%	-20%	-4%
Cape York Peninsula	-22%	-23%	-26%	-12%	-4%
Wet Tropics	-32%	-30%	-32%	-8%	-5%
Dry Tropics	-33%	-21%	-28%	-8%	-6%
Mackay, Isaac and Whitsunday	-35%	-24%	-31%	-7%	-5%
Fitzroy	-30%	-23%	-30%	-7%	-5%
Wide Bay Burnett	-36%	-22%	-29%	-7%	-5%
South East	-33%	-22%	-28%	-8%	-5%

Source: BDO EconSearch analysis

In addition to the impacts on fishing activities, fishing businesses were asked about different types of financial support they received such as grants and fee waivers. The weighted average values for different types of support are presented in Table 6-2 by fishery and region.

Table 6-2 Weighted average of COVID-19 support received by fishing businesses by fishery and region in the 2019/20 financial year

	Job Keeper	Small Business Grants	Other grants	Fisheries Queensland fee waiver	Other fee waivers	TOTAL
Fishery						
Blue Swimmer Crab	$3,006	$722	$825	$129	$76	**$4,758**
Coral Harvest and Marine Aquarium	$60,488	$22,546	$788	$829	$773	**$85,424**
Line Fishery (reef)	$4,099	$940	$12	$717	$22	**$5,791**
East Coast Inshore Fin Fish	$5,600	$863	$1,752	$494	$137	**$8,845**
East Coast Trawl	$20,668	$19,468	$465	$527	$82	**$41,210**
Gulf of Carpentaria Inshore	$3,184	$2,869	$514	$211	$27	**$6,806**
Moreton Bay Commercial Other	$4,512	$815	$1,417	$221	$102	**$7,067**
Moreton Bay Commercial Trawl	$13,499	$9,548	$1,317	$497	$12	**$24,874**
Mud Crab East Coast	$4,333	$915	$122	$221	$180	**$5,770**
Mud Crab Gulf of Carpentaria	$2,074	$383	$535	$870	$8	**$3,870**
Other Harvest	$2,121	$0	$7,934	$153	$0	**$10,209**
Line Fishery (rocky reef)	$3,102	$849	$235	$483	$24	**$4,693**
Spanner Crab	$6,835	$0	$0	$244	$0	**$7,079**
East Coast Spanish Mackerel	$3,350	$994	$314	$428	$11	**$5,097**
Subregion						
North West	$2,848	$863	$1,206	$414	$22	**$5,353**
Cape York Peninsula	$5,981	$5,744	$1,028	$405	$49	**$13,207**
Wet Tropics	$22,958	$15,415	$825	$763	$77	**$40,038**
Dry Tropics	$10,756	$5,115	$586	$410	$125	**$16,993**
Mackay, Isaac and Whitsunday	$13,931	$5,313	$1,128	$537	$211	**$21,120**
Fitzroy	$24,771	$9,892	$642	$421	$332	**$36,058**
Wide Bay Burnett	$16,846	$10,245	$337	$385	$91	**$27,904**
South East	$15,547	$17,654	$730	$531	$45	**$34,506**

Source: BDO EconSearch analysis

6.1. Impact of COVID-19 on Net Economic Return

Net economic return is a helpful measure for understanding economic impact as it captures all revenues and costs associated with the operation of the fishery. Examining the components of net economic return can help to unpack the effects beneath this impact.

Table 6-3 presents the net economic return and its components for each fishery for the 'with COVID-19' scenario (upper section), the 'without COVID-19' scenario (middle section), and the change (lower section). The largest change identified by fishers across all fisheries was a decrease in GVP (which decreases net economic return), this was paired with a decrease in labour costs for most fisheries (softening the decrease in net economic return). However, there were exceptions such as the Coral Harvest and Marine Aquarium fishery and the Spanner Crab fishery where each estimated no change to costs so the increase in net economic return was not softened by reduced costs.

It was assumed that depreciation, management costs and opportunity cost of capital was not affected by COVID-19 in this analysis. Since these costs did not change, they had no effect on net economic return.

The estimated impact on GVP at state level implies that GVP would likely have been approximately $271.7m without COVID-19, $26.7m more than the actual for 2019/20 ($245.1m). This counter-factual GVP is plausible but high compared to recent years (GVP was $261.1m in 2017/18 and $239.6m in 2018/19). With many factors contributing to changes in supply and demand over this period, it is difficult to attribute changes directly to COVID-19 and fishers may have overestimated for this reason. Based on this estimate, the impact on state-wide net economic return was -$23.1m, reducing net economic return from an estimated $0.5m without COVID-19, down to the actual -$22.5m with COVID-19 (Table 6-3).

Table 6-3 Impact of COVID-19 on net economic return by fishery in the 2019/20 financial year

Fishery	GVP ($m)	Labour Cost ($m)	Materials & Services ($m)	Management Cost ($m)	Depreciation ($m)	Opp. Cost of Capital (10%) ($m)	Net Economic Return ($m)
With COVID-19							
Blue Swimmer Crab	2.5	1.1	1.5	1.6	0.4	0.3	-2.4
Coral Harvest and Marine Aquarium	21.8	4.5	7.4	1.3	1.5	2.0	5.0
Line Fishery (reef)	34.5	12.4	14.2	2.0	3.6	2.5	-0.3
East Coast Inshore Fin Fish	15.0	6.1	7.7	3.8	5.6	3.9	-12.0
East Coast Trawl	95.0	27.1	61.3	1.9	14.4	11.6	-21.2
Gulf of Carpentaria Inshore	23.6	4.2	4.0	1.5	1.4	1.0	11.4
Moreton Bay Commercial Other	11.2	5.7	5.3	1.3	2.7	2.1	-5.8
Moreton Bay Commercial Trawl	8.1	4.7	6.7	1.5	1.6	1.1	-7.5
Mud Crab East Coast	17.8	4.7	5.8	1.9	2.5	1.7	1.2
Mud Crab Gulf of Carpentaria	2.6	0.7	0.8	1.2	0.3	0.2	-0.5
Other Harvest	14.5	5.5	5.6	3.1	0.9	1.1	-1.6
Line Fishery (rocky reef)	0.5	0.4	0.7	1.1	0.3	0.3	-2.3
Spanner Crab	12.9	3.7	2.0	1.6	0.8	0.6	4.2
East Coast Spanish Mackerel	4.4	2.4	2.4	1.3	1.2	1.1	-4.1
Queensland	**245.1**	**72.8**	**113.4**	**22.3**	**32.8**	**26.2**	**-22.5**
Without COVID-19							
Blue Swimmer Crab	2.9	1.2	1.5	1.6	0.4	0.3	-2.0
Coral Harvest and Marine Aquarium	25.4	4.4	7.4	1.3	1.5	2.0	8.7
Line Fishery (reef)	39.2	12.8	14.4	2.0	3.6	2.5	3.8
East Coast Inshore Fin Fish	16.5	6.3	7.8	3.8	5.6	3.9	-10.9
East Coast Trawl	104.1	28.0	62.2	1.9	14.4	11.6	-14.0
Gulf of Carpentaria Inshore	26.2	4.4	4.1	1.5	1.4	1.0	13.7
Moreton Bay Commercial Other	12.2	5.8	5.3	1.3	2.7	2.1	-5.0
Moreton Bay Commercial Trawl	9.1	4.8	6.8	1.5	1.6	1.1	-6.8
Mud Crab East Coast	19.5	5.0	5.9	1.9	2.5	1.7	2.5
Mud Crab Gulf of Carpentaria	2.9	0.7	0.8	1.2	0.3	0.2	-0.3
Other Harvest	15.1	5.5	5.6	3.1	0.9	1.1	-1.0
Line Fishery (rocky reef)	0.5	0.4	0.7	1.1	0.3	0.3	-2.3
Spanner Crab	14.8	3.6	2.0	1.6	0.8	0.6	6.1
East Coast Spanish Mackerel	4.8	2.7	2.4	1.3	1.2	1.1	-3.9
Queensland	**271.7**	**74.9**	**114.9**	**22.3**	**32.8**	**26.2**	**0.5**
Impact of COVID-19 (change)							
Blue Swimmer Crab	-0.4	0.0	0.0	0.0	0.0	0.0	-0.4
Coral Harvest and Marine Aquarium	-3.6	0.1	0.0	0.0	0.0	0.0	-3.7
Line Fishery (reef)	-4.7	-0.4	-0.2	0.0	0.0	0.0	-4.1
East Coast Inshore Fin Fish	-1.4	-0.3	-0.1	0.0	0.0	0.0	-1.1
East Coast Trawl	-9.0	-0.9	-0.9	0.0	0.0	0.0	-7.2
Gulf of Carpentaria Inshore	-2.6	-0.3	0.0	0.0	0.0	0.0	-2.3
Moreton Bay Commercial Other	-1.0	-0.1	-0.1	0.0	0.0	0.0	-0.8
Moreton Bay Commercial Trawl	-1.0	-0.2	-0.1	0.0	0.0	0.0	-0.7
Mud Crab East Coast	-1.7	-0.3	-0.1	0.0	0.0	0.0	-1.3
Mud Crab Gulf of Carpentaria	-0.3	0.0	0.0	0.0	0.0	0.0	-0.2
Other Harvest	-0.6	0.0	0.0	0.0	0.0	0.0	-0.6
Line Fishery (rocky reef)	-0.1	0.0	0.0	0.0	0.0	0.0	0.0
Spanner Crab	-1.9	0.1	0.0	0.0	0.0	0.0	-2.0
East Coast Spanish Mackerel	-0.4	-0.3	0.0	0.0	0.0	0.0	-0.2
Queensland	**-26.7**	**-2.1**	**-1.5**	**0.0**	**0.0**	**0.0**	**-23.1**

Source: BDO EconSearch analysis

6.2. Impact of COVID-19 on Economic Contribution

The estimated impact of COVID-19 on the economic contribution of Queensland's commercial fisheries to Queensland and its regions is summarised in this section. Impacts are presented on a 'total contribution' basis, with direct and flow-on effects (such as fishing, capital expenditure, processing and spending on fuel, repairs and other business inputs) summed together. This means the tables summarise the impact of COVID-19 on the broader Queensland economy and its regions through its effects on commercial fishing businesses.

The impacts of COVID-19 on the economic contribution of each of Queensland's commercial fisheries is presented in Table 6-4. The analysis suggests that COVID-19 reduced the economic contribution of Queensland's commercial fisheries to gross state product by approximately $31.1m and reduced the employment supported by the fisheries by approximately 127 fte jobs. The largest negative impact of COVID-19 was identified by fishers in the East Coast Trawl fishery (loss of $11.7m gross state product and 61 fte jobs). Some employment impacts were near zero in some fisheries as costs and employment didn't decrease substantially in all fisheries so activity in the economy continued to be supported by the spending and employment of fishing businesses.

The impacts of COVID-19 on the economic contribution of all Queensland's commercial fisheries combined on regions of Queensland is presented in Table 6-5. By region, the largest negative impacts were identified by fishers in the South East with gross regional product reducing by approximately $19.4m and employment by 53 fte jobs.

Table 6-4 Impact of COVID-19 on total economic contribution to Queensland by fishery in the 2019/20 financial year

Fishery	Output ($m)	Gross Regional Product ($m)	Household Income ($m)	Employment (fte)	Employment (total)
With COVID-19					
Blue Swimmer Crab	7.6	4.0	2.7	51	70
Coral Harvest and Marine Aquarium	38.9	24.5	10.0	179	334
Line Fishery (reef)	77.9	45.0	25.2	431	577
East Coast Inshore Fin Fish	50.7	24.7	15.2	300	589
East Coast Trawl	331.6	150.1	89.5	1,625	1,734
Gulf of Carpentaria Inshore	35.9	27.0	8.0	141	176
Moreton Bay Commercial Other	34.8	18.6	12.2	192	333
Moreton Bay Commercial Trawl	31.5	14.4	11.6	193	207
Mud Crab East Coast	34.9	22.9	9.9	230	475
Mud Crab Gulf of Carpentaria	4.5	3.2	1.2	20	49
Other Harvest	32.7	19.5	10.9	150	209
Line Fishery (rocky reef)	2.5	1.1	1.0	18	39
Spanner Crab	22.7	16.6	6.6	71	92
East Coast Spanish Mackerel	12.6	7.6	4.8	102	134
Queensland	**652.5**	**346.2**	**185.1**	**3,317**	**4,478**
Without COVID-19					
Blue Swimmer Crab	8.0	4.4	2.7	51	71
Coral Harvest and Marine Aquarium	42.2	28.0	9.8	178	333
Line Fishery (reef)	83.7	50.1	25.8	447	601
East Coast Inshore Fin Fish	53.9	26.7	15.8	313	605
East Coast Trawl	349.8	161.8	92.2	1,687	1,797
Gulf of Carpentaria Inshore	39.0	29.8	8.4	152	183
Moreton Bay Commercial Other	36.3	19.8	12.5	198	340
Moreton Bay Commercial Trawl	33.1	15.5	11.9	200	213
Mud Crab East Coast	37.2	24.8	10.3	241	492
Mud Crab Gulf of Carpentaria	4.8	3.4	1.3	20	49
Other Harvest	33.3	20.1	10.9	150	210
Line Fishery (rocky reef)	2.6	1.2	1.1	19	41
Spanner Crab	24.4	18.3	6.5	70	92
East Coast Spanish Mackerel	13.6	8.5	5.2	116	144
Queensland	**692.6**	**377.2**	**190.0**	**3,443**	**4,618**
Impact of COVID-19 (change)					
Blue Swimmer Crab	-0.4	-0.4	0.0	0	-1
Coral Harvest and Marine Aquarium	-3.4	-3.5	0.2	1	1
Line Fishery (reef)	-5.8	-5.1	-0.7	-16	-24
East Coast Inshore Fin Fish	-3.2	-2.1	-0.6	-13	-16
East Coast Trawl	-18.3	-11.7	-2.7	-61	-64
Gulf of Carpentaria Inshore	-3.1	-2.9	-0.4	-11	-7
Moreton Bay Commercial Other	-1.5	-1.2	-0.3	-5	-7
Moreton Bay Commercial Trawl	-1.6	-1.2	-0.3	-6	-6
Mud Crab East Coast	-2.3	-1.9	-0.4	-11	-17
Mud Crab Gulf of Carpentaria	-0.3	-0.3	0.0	0	0
Other Harvest	-0.6	-0.6	0.0	0	0
Line Fishery (rocky reef)	-0.1	-0.1	0.0	-1	-2
Spanner Crab	-1.7	-1.8	0.1	1	0
East Coast Spanish Mackerel	-1.0	-0.9	-0.4	-15	-10
Queensland	**-40.1**	**-31.1**	**-4.9**	**-127**	**-140**

Source: BDO EconSearch analysis

Table 6-5 Impact of COVID-19 on total economic contribution to Queensland by region in the 2019/20 financial year

Region	Output ($m)	Gross Regional Product ($m)	Household Income ($m)	Employment (fte)	Employment (total)
With COVID-19					
North West	9.9	7.2	2.4	53	74
Cape York Peninsula	63.5	43.9	16.7	293	389
Wet Tropics	55.1	31.1	16.5	352	602
Dry Tropics	11.1	6.2	2.9	63	105
Mackay, Isaac and Whitsunday	45.6	27.2	13.3	238	367
Fitzroy	79.9	42.3	19.7	390	552
Wide Bay Burnett	91.3	44.4	24.1	433	578
South East	267.7	128.2	78.3	1,366	1,671
Queensland	**652.5**	**346.2**	**185.1**	**3,317**	**4,478**
Without COVID-19					
North West	10.9	8.2	2.6	58	77
Cape York Peninsula	68.3	47.9	17.1	303	399
Wet Tropics	59.0	34.7	17.1	373	625
Dry Tropics	11.9	6.6	3.0	66	108
Mackay, Isaac and Whitsunday	49.4	30.8	13.6	248	380
Fitzroy	85.9	41.1	20.1	404	570
Wide Bay Burnett	97.8	45.5	24.8	453	599
South East	282.9	147.5	80.7	1,418	1,727
Queensland	**692.6**	**377.2**	**190.0**	**3,443**	**4,618**
Impact of COVID-19 (change)					
North West	-1.0	-0.9	-0.1	-5	-3
Cape York Peninsula	-4.8	-4.0	-0.4	-10	-10
Wet Tropics	-3.9	-3.6	-0.6	-21	-22
Dry Tropics	-0.8	-0.3	-0.1	-3	-3
Mackay, Isaac and Whitsunday	-3.8	-3.6	-0.3	-10	-13
Fitzroy	-6.1	1.2	-0.5	-13	-18
Wide Bay Burnett	-6.5	-1.2	-0.8	-20	-21
South East	-15.1	-19.4	-2.4	-53	-56
Queensland	**-40.1**	**-31.1**	**-4.9**	**-127**	**-140**

Source: BDO EconSearch analysis

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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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