



Costs and Earnings 2004 and 2006 Methodology & Results

Presented at:

**Memorial University
May 19, 2010**



Presentation Outline

- Objectives of Presentation
- Purpose of Costs and Earnings Surveys (C&E)
- C&E Project and Methodology
- C&E Results
- Comparison 2004 and 2006 4R Shrimp
- General Comments about C&E
- Utility of C&E Dataset to MUN and CURRA
- Discussion

Objectives of Presentation

- Provide overview of 2004 and 2006 C&E projects and methodologies
- Detail operating and financial profiles for specific fishing fleets
- Facilitate understanding of costs associated with being an enterprise owner
- Explore how C&E information can be helpful in current CURRA and MUN research
- *Note: The statistical tables in this report present the average or arithmetic mean of the values reported by enterprise owners (i.e. total of a given variable divided by the number sampled and not the number that responded to a particular question)*

Purpose of Costs and Earnings Surveys

- C&E is a voluntary survey used by DFO to collect information on activities related to fishing operations including:
 - ✓ vessel characteristics
 - ✓ vessel acquisition costs
 - ✓ vehicle costs
 - ✓ on-shore facility costs
 - ✓ gear stock
 - ✓ licence acquisition
 - ✓ ownership arrangement
 - ✓ fishing effort
 - ✓ landings by species
 - ✓ fishing revenues
 - ✓ operating and maintenance expenses
 - ✓ alternate revenues
 - ✓ government transfers
 - ✓ Interest rates
 - ✓ long-term debt position

Purpose of Costs and Earnings Surveys

- C&E data:
 - Allows DFO to analyze fleet viability and economic performance
 - Informs socio-economic analysis related to DFO's environmental scans, policy development and legislative requirements
 - Provides the fishing industry with a profile of the economic and financial conditions faced by enterprise owners
- DFO NL Region conducted extensive annual C&Es for over a decade prior to the implementation of various fishery moratoria in the early 1990s
- Contact DFO's Regional Librarian, Annette Anthony at Annette.Anthony@dfo-pmo.gc.ca for information on past reports
- Visit DFO's WAVES on-line catalogue <http://inter01.dfo-mpo.gc.ca/waves2/search.html>

C&E Project & Methodology 2004

- Deputy Minister approved proposal to resurrect C&E research in fall 2003 with a budget of \$450,000
- DFO Ottawa established an inter-regional working group in spring 2004 to determine:
 - Methodology
 - Regional priority fleets
 - Budget
 - Project management
- Decision made that Ottawa would be responsible for inter-regional co-ordination; finalizing, printing and translating survey; data entry and generation, and writing final report
- DFO regions would be responsible for determining priority fleets and sample size; managing interview process; training interviewers and data validation

C&E Methodology 2004 – NL Region

- **Stage 1 – Development of Survey and Interviewer's Guide**
 - Inter-regional team representing the Atlantic Provinces and Quebec developed a common survey – British Columbia used different survey
 - Regions developed respective interviewer's guides which addressed difference in regional definitions, polices, etc.
- **Stage 2 - Determining Priority Fleets**
 - Established parameters of 'active fishing enterprise'
 - Categorized eligible fishing enterprises into three tiers according to Core and Non-Core status, length of largest vessel, independent operator, and company
 - Tier One: Core Enterprises < 65' (*77% of total landed value*)
 - Tier Two: Enterprises > 65' (*21% of total landed value*)
 - Tier Three: Non-Core Enterprises < 65' (*2% total landed value*)
 - Further stratified tiers into 12 priority fleets based on vessel length and fishing licence (i.e. crab, shrimp, other)
- **Stage 3 – Preliminary Population Sample**
 - DFO Ottawa determined preliminary sample sizes for the priority fleets
 - Based on a population of 4,763 eligible fishing enterprises, the required sample was 905

C&E Methodology 2004 – NL Region continued

- **Stage 4 – Choosing Priority Fleets**

- NL Region decided to sample Tier 1: Enterprises < 65'
 - Budget
 - Adequate sample sizes
 - Reliable data
 - Focus of regional economic analysis

- **Stage 5– Sampling Options**

- Using 2004 landed values, two variance scenarios were presented:
 - Option 1: 95% variability (+/- 10%, 19 times out of 20) (valid survey 790)
 - Option 2: 90% variability (+/- 10%, 18 times out of 20) (valid survey 566)

- **Stage 6 – Sample Selection**

- With a budget of \$100,000 and \$150 per interview, Option 2 was chosen
- Using random numbers generation, 566 enterprises were selected

C&E Methodology 2004 – NL Region continued

- **Stage 7 – Telephone Screening Process**
 - Completed during Winter 2005 by Fisheries Statistics Division
 - Purpose:
 - Introduce Costs and Earnings Survey
 - Verify contact information
 - Determine eligibility to participate
 - Verify contact information
 - Generate final survey sample
 - Approximately 50% declined to participate and 431 replacements were randomly selected (1,041 enterprise owners were contacted)
 - Final sample obtain was 527 (required sample was obtained for some fleets and not for others)
- **Stage 8 – Interview Process**
 - Conducted during winter/spring 2005 by 20 trained interviewers
 - Interviewers were assigned particular geographical regions and paid per completed interview

C&E Methodology 2004 – NL Region continued

- **Stage 9 – Interview Process** continued
 - Co-managed by contracted field supervisor and Policy and Economics Branch
 - 401 surveys were completed (76% response rate); 126 of the original sample refused to participate once contacted by the interviewer
- **Stage 10 – Data Entry and Validation**
 - Surveys were copied and sent to Ottawa for data entry
 - NL Region conducted extensive validation and edits during summer/fall 2005
 - Averages and thresholds were calculated for multiple variables and outliers were validated
- **Stage 11 – Generating Data and Final Report**
 - DFO Ottawa generated the data tables and completed the first draft
 - Regions provided edits and region-specific text

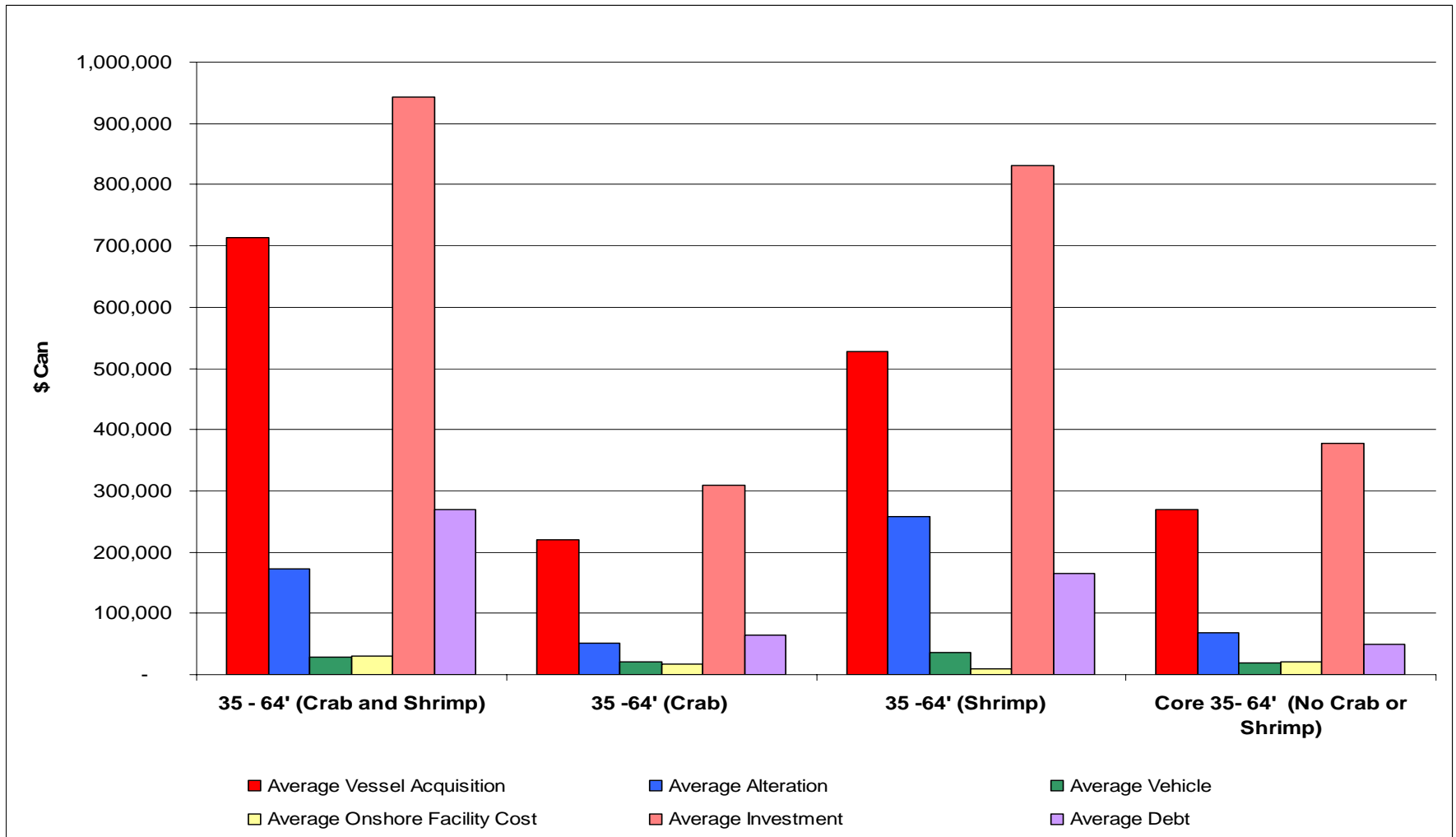
2004 Priority Fleets and Sample

2004 Costs and Earnings Survey - NL Region Final Survey Status					
Fleet #	Description	Required Sample	Survey Sample	Completed Surveys	Response Rate
1	35 - 64' - Crab & Shrimp	33	43	30	70%
2	35 - 64' - Crab	95	122	82	67%
3	35 - 64' - Shrimp	24	33	22	67%
4	35 - 64' - No Crab/Shrimp	44	18	10	56%
Subtotal 35-64'		196	216	144	67%
5	25 - 34' - Crab	89	129	109	84%
6	25 - 34' - No Crab	194	70	57	81%
7	Under 25' - Crab	33	64	50	78%
8	Under 25' - No Crab	54	48	41	85%
Subtotal < 34'		370	311	257	83%
Total		566	527	401	76%

2004 Results – Average Investment Characteristics 35-64'

Priority Fleet	Average Length of Primary Vessel	Average Acquisition Cost of all Vessels in Enterprise	Average Alterations Costs	Average Vehicle Costs	Average Onshore Facility Costs	Total Investment	Total Debt	Range Interest Rate
35 - 64' Crab and Shrimp	57	712,535	172,800	28,440	29,468	943,244	268,836	6-10%
35 -64' Crab	44	219,813	51,955	20,609	16,807	309,183	63,921	4-10%
35 -64' Shrimp	60	527,000	257,775	35,873	10,405	831,053	164,642	6-10%
35- 64' No Crab or Shrimp	49	269,754	68,438	18,975	21,250	378,417	48,682	6-8%

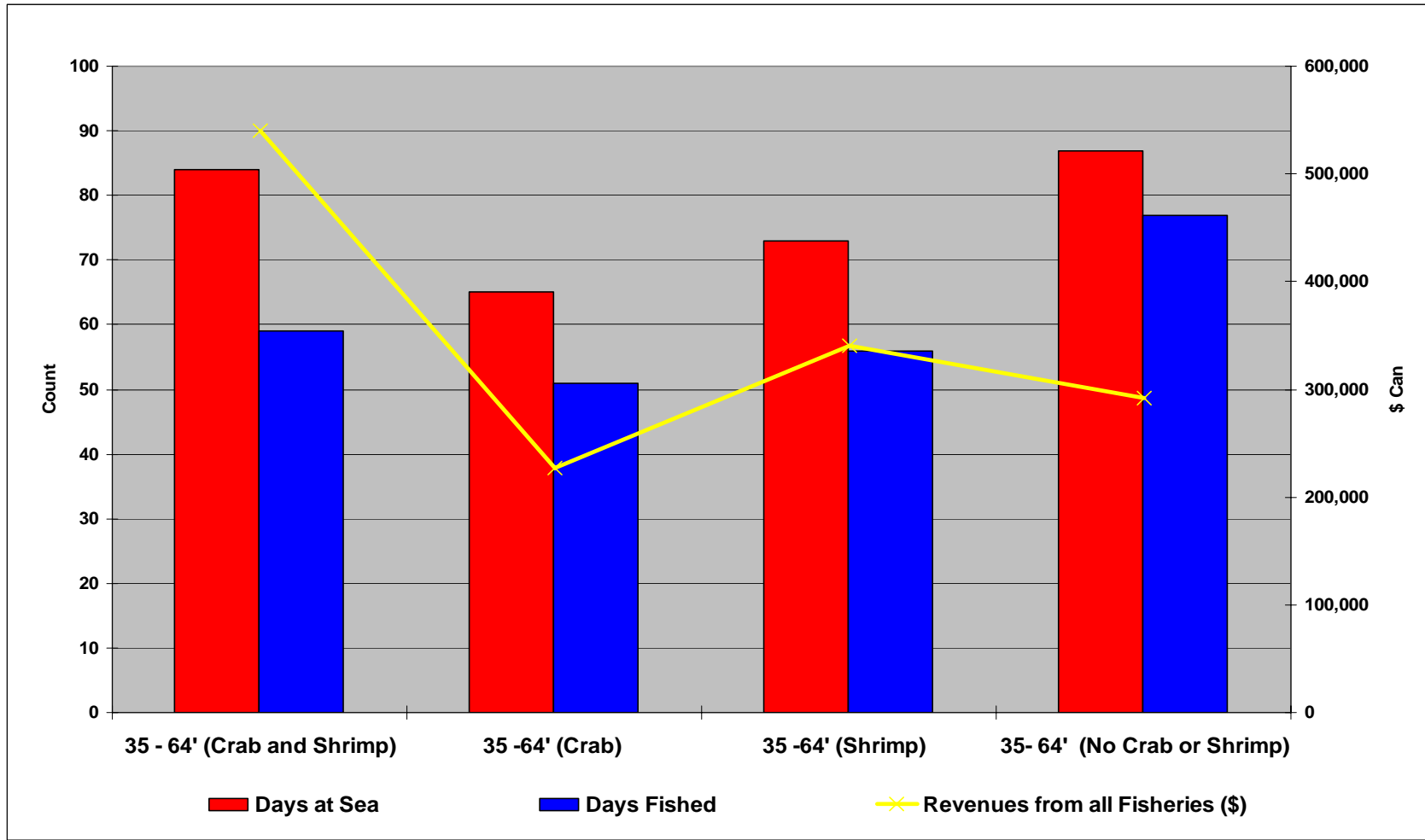
2004 Results – Average Investment Characteristics 35-64'



2004 Results – Fishing Effort Profile & Revenue 35-64'

Variable	35 - 64' (Crab and Shrimp)	35 -64' Crab	35 -64' Shrimp	35- 64' No Crab or Shrimp
Days at Sea	84	65	73	87
Days Fished	59	51	56	77
Average Crew size	6	5	5	5
Quantity Landed of Primary Species (kg)	60,257	32,514	287,906	279,215
Revenues from Landings of Primary Species (\$)	322,122	174,553	286,651	n/a
Average Price (\$/kg)	5.35	5.37	1.00	n/a
% of Fishing Revenues From Primary Species	60%	77%	85%	n/a
Revenues from all Fisheries (\$)	539,564	227,109	340,141	292,112

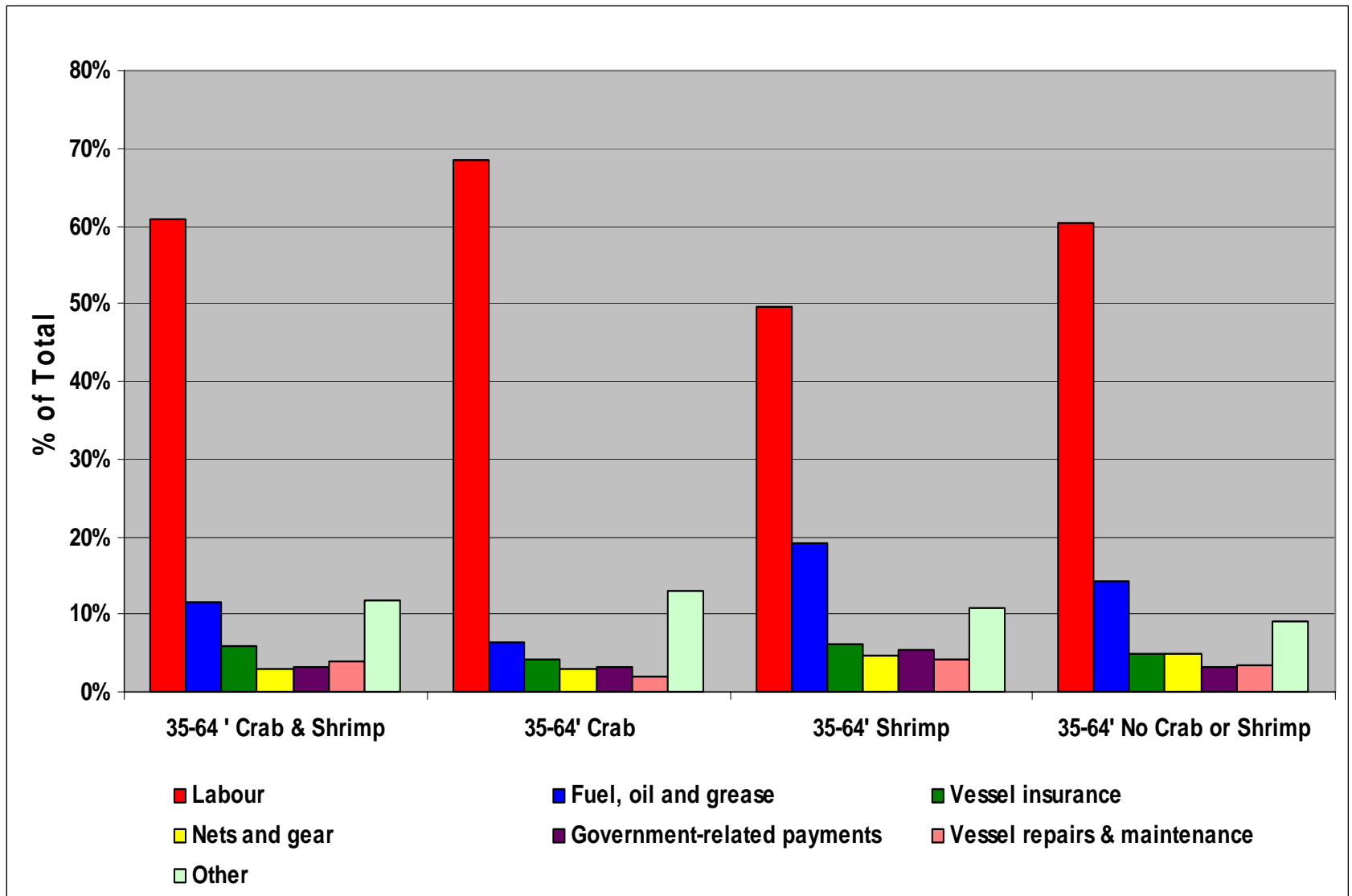
2004 Results – Fishing Effort Profile & Revenue 35-64'



2004 Results – Operating & Maintenance Expenses 35-64'

Expenses	35-64 ' Crab & Shrimp	35-64' Crab	35-64' Shrimp	35-64' No Crab or Shrimp
Labour	217,066	110,460	122,458	102,038
Fuel, oil and grease	41,567	10,135	47,552	23,813
Vessel insurance	21,039	6,683	15,121	8,309
Bait	12,933	7,328	2,727	1,588
Government-related payments	11,113	5,048	13,467	5,272
Nets and gear	10,539	4,903	11,322	8,332
Vessel repairs and maintenance	13,931	3,036	10,446	5,737
Vehicle expenses for fishing	8,245	4,743	9,529	3,857
Food	5,194	2,297	5,342	3,934
Leasing vessel, nets and/or gear	2,506	1,602	3,000	0
Professional and administrative fees	2,389	279	679	10
Accounting fees	2,268	803	2,091	1,155
On-shore facilities maintenance costs	1,994	578	863	285
Storage of boat and gear	1,562	498	805	655
Union or association dues	344	185	304	174
Other	4,406	2,525	1,591	3,553
Total	352,690	158,578	245,706	165,159

2004 Results – % Breakdown Operating & Maintenance Expenses 35-64'



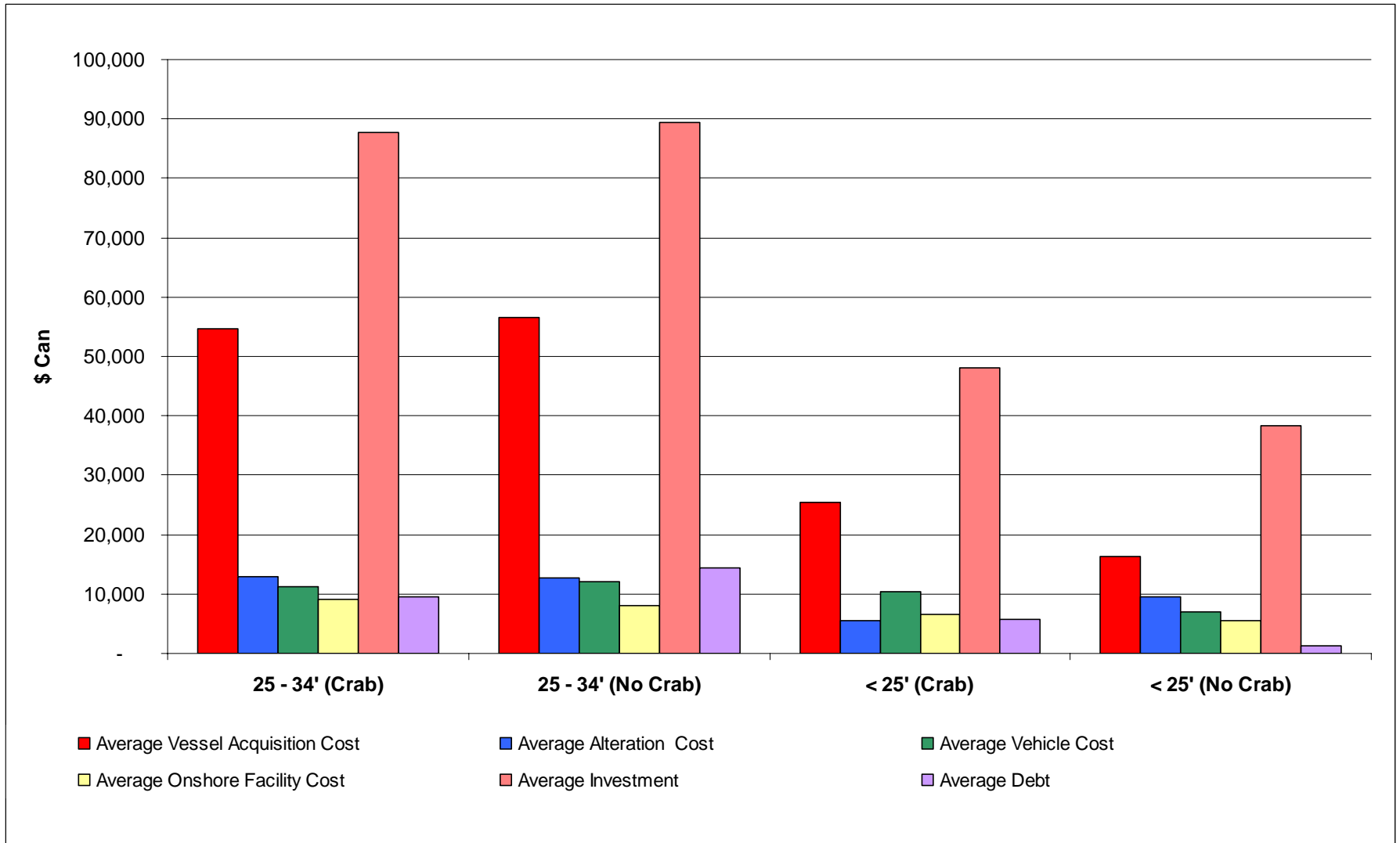
2004 Results – Financial Performance 35-64'

Variable	35-64 ' Crab & Shrimp	35-64' Crab	35-64' Shrimp	35-64' No Crab or Shrimp
Total fishing revenues (\$)	539,564	227,109	340,141	292,112
Total operating & maintenance expenses (\$)	357,095	161,105	247,297	168,707
Gross operating income (loss) (\$)	182,469	66,004	92,844	123,404
less: Depreciation (\$)	54,791	19,611	35,583	21,101
Net operating income (loss) (\$)	127,679	46,393	57,261	102,303
less: Interest expense (\$)	13,955	3,263	6,345	4,921
Net income before taxes (\$)	113,724	43,129	50,916	97,383

2004 Results – Average Investment Characteristics < 35'

Priority Fleets	Average Length of Primary Vessel	Average Acquisition Costs of all Vessels in Enterprise	Average Alterations Cost	Vehicle Cost	Onshore Facility Cost	Total Investment	Total Debt	Range Interest Rate
25 - 34' (Crab)	30	54,575	12,850	11,244	9,127	87,796	9,517	6 - 11%
25 - 34' (No Crab)	28	56,505	12,759	11,978	8,142	89,383	14,438	4 - 11%
< 25' (Crab)	23	25,473	5,569	10,449	6,526	48,016	5,779	1 - 10%
< 25' (No Crab)	21	16,277	9,467	7,019	5,539	38,302	1,263	6 - 9%

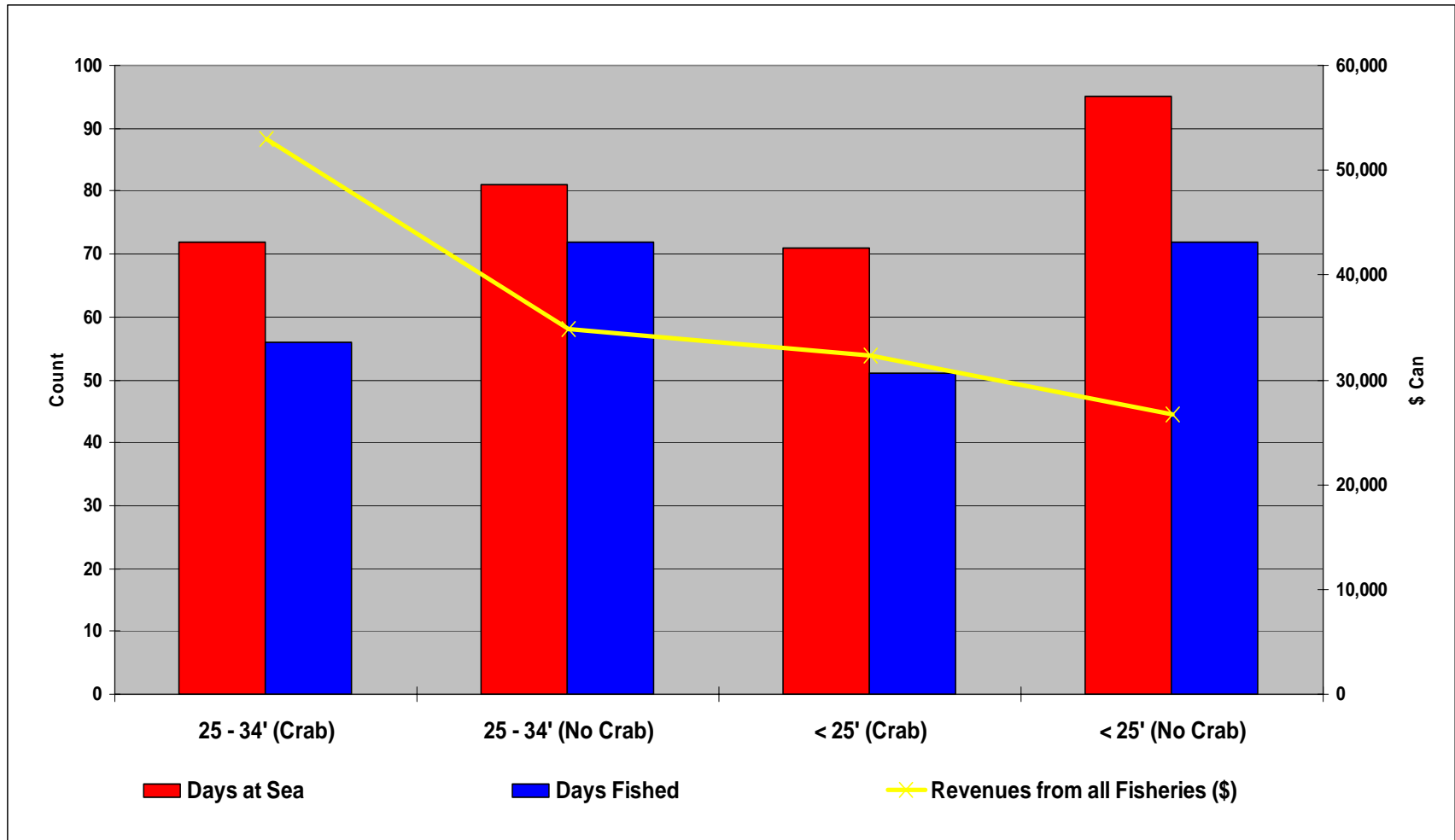
2004 Results – Average Investment Characteristics < 35



2004 Results – Fishing Effort Profile & Revenue < 35

Variable	25 - 34' Crab	25 - 34' No Crab	< 25' Crab	< 25' No Crab
Days at Sea	72	81	71	95
Days Fished	56	72	51	72
Average Crew size	3	2	2	2
Quantity Landed of Primary Species (kg)	7554	22,589	5,989	11,784
Revenues from Landings of Primary Species (\$)	37894	n/a	28,656	n/a
Average Price (\$/kg)	5.02	n/a	4.78	n/a
% of Fishing Revenues From Primary Species	72%	n/a	89%	n/a
Revenues from all Fisheries (\$)	52,911	34,800	32,339	26,766

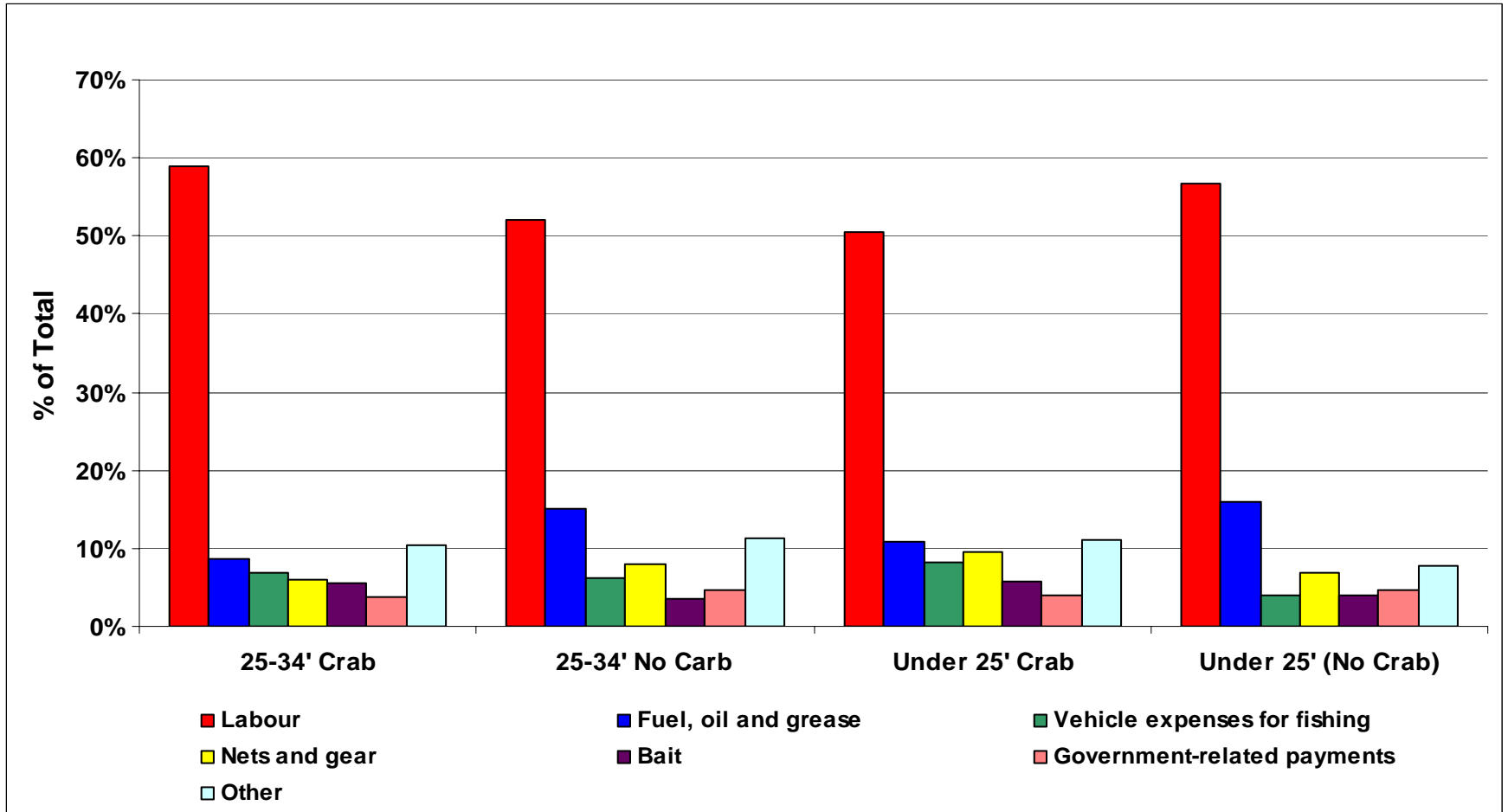
2004 Results – Fishing Effort Profile & Revenue < 35



2004 Results – Operating & Maintenance Expenses < 35

Expenses	25-34' Crab	25-34' No Crab	Under 25' Crab	Under 25' No Crab
Labour	20,930	12,107	9,864	9,762
Fuel, oil and grease	3,092	3,508	2,102	2,737
Vehicle expenses for fishing	2,453	1,428	1,593	688
Nets and gear	2,091	1,843	1,866	1,203
Bait	1,939	804	1,113	685
Government-related payments	1331	1067	798	816
Vessel repairs and maintenance	968	828	376	348
Food	632	503	113	480
On-shore facilities maintenance costs	582	303	187	155
Vessel insurance	387	450	65	5
Union or association dues	158	185	145	171
Leasing and rental of vessel, nets and/or gear	115	0	39	0
Storage of boat and gear	104	58	66	10
Accounting fees	105	113	76	58
Ice and salt	71	37	44	21
Other	621	147	1056	103
Total	35,579	23,381	19,503	17,242

2004 Results – % Breakdown Operating & Maintenance Expenses < 35'



2004 Results – Financial Performance < 35'

Variable	25-34' Crab	25-34' No Crab	Under 25' Crab	Under 25' No Crab
Total fishing revenues (\$)	52,911	34,800	32,339	26,766
Total operating & maintenance expenses (\$)	35,579	23,378	19,502	17,243
Gross operating income (loss) (\$)	17,332	11,422	12,837	9,523
less: Depreciation (\$)	5,628	4,858	3,091	2,263
Net operating income (loss) (\$)	11,704	6,564	9,746	7,260
less: Interest expense (\$)	506	1,094	15	73
Net income before taxes (\$)	11,198	5,470	9,731	7,186

C&E Project & Methodology 2006

- DFO NL Region conducted the 2006 C&E as a follow-up to the 2004 survey
- For consistency and comparative purposes, the 2006 C&E closely paralleled the 2004 methodology
- Notable changes included:
 - NL Region managed the entire process
 - Focused exclusively on active Core fishing enterprises 35-64' with landings >\$10,000
 - Questions pertaining to gear investment, share arrangements, ownership arrangements and licence acquisition were added
 - Buddy-up methodology was improved
 - Questions pertaining to species fished and depreciation were removed
 - No telephone-screening process was conducted, instead letter was sent out introducing the survey
 - More extensive data validation process conducted
 - Replacement sample was generated as needed and within timeframe allotted for the project

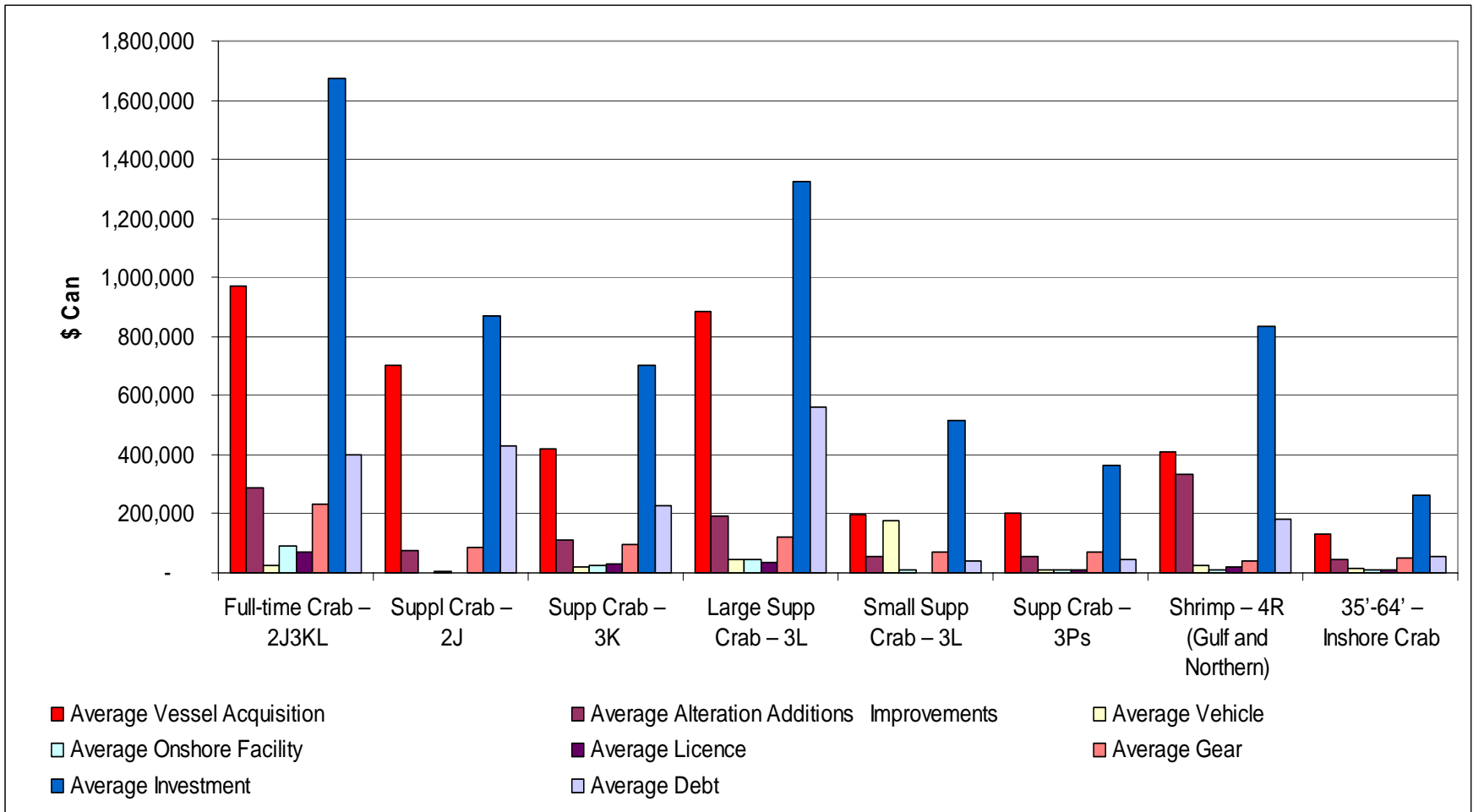
2006 Priority Fleets and Sample

Fleet #	Fleet Category	Required Sample	Survey Sample	Sample Replacement	Completed Surveys	Response Rate
1 *	Full-time Crab – 2J3K	16	16	5	10	63%
2 *	Full-time Crab – 3L	20	20	5	2	10%
3	Supplementary Crab – 2J	20	20	4	3	15%
4	Supplementary Crab – 3K	69	69	18	58	84%
5	Large Supplementary Crab – 3L	50	50	10	11	22%
6	Small Supplementary Crab – 3L	69	69	19	34	49%
7	Supplementary Crab – 3Ps	50	51	12	25	50%
8	Shrimp – 4R (Gulf and Northern)	35	35	10	22	63%
9	35'-64' – Inshore Crab	40	43	19	18	45%
10 *	35'-64' – Other	10	10	4	2	20%
TOTAL		379	383	106	185	49%

2006 Results – Fleet Characteristics 35-64'

Priority Fleet	Average Length of Primary Vessel	Average Acquisition Cost of Vessels in Enterprise	Average Alteration Additions Improvements Costs	Average Vehicle Costs	Average Onshore Facility Costs	Average Licence Costs	Average Gear Costs	Average Investment
Full-time Crab 2J3KL	62	972,675	287,216	24,588	90,750	68,333	231,185	1,674,747
Supplementary Crab 2J	49	703,833	74,333	0	5,000	0	86,567	869,733
Supplementary Crab 3K	51	420,582	110,784	18,025	24,574	29,462	97,684	701,110
Large Supplementary Crab 3L	61	883,164	192,273	43,436	47,773	34,255	123,060	1,323,959
Small Supplementary Crab 3L	44	197,686	57,519	19,188	9,082	2,485	72,510	516,288
Supplementary Crab 3Ps	44	199,787	57,311	10,723	12,280	10,921	71,610	362,632
Shrimp 4R (Gulf & Northern)	60	409,023	333,645	24,964	8,750	18,182	39,018	833,582
35'-64' Inshore Crab	44	132,778	47,572	13,773	11,050	10,354	48,399	263,926

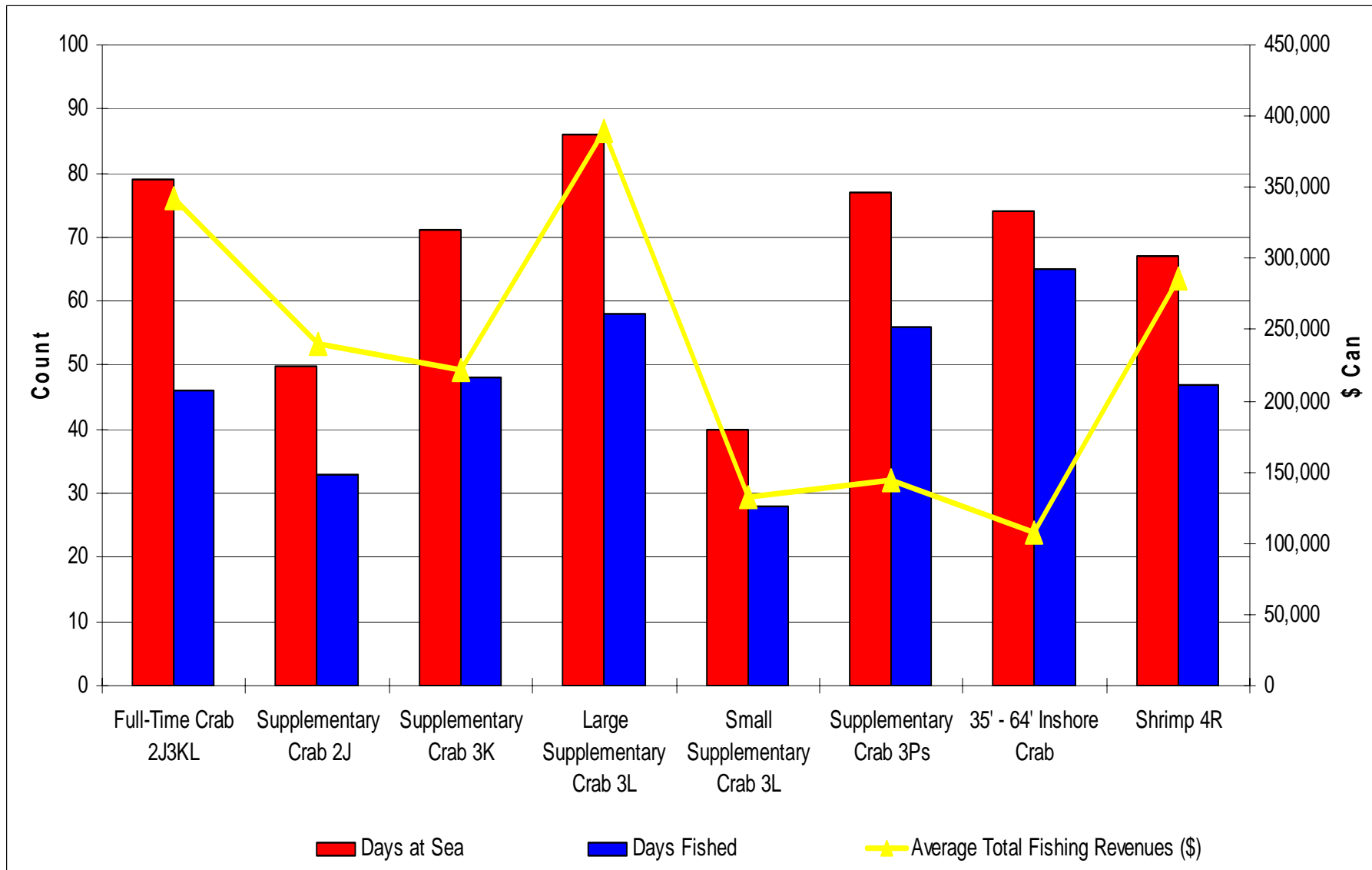
2006 Results – Fleet Characteristics 35-64'



2006 Results – Fishing Effort Profile & Revenue 35-64'

Variable /Fleet	Fleet 1	Fleet 2	Fleet 3	Fleet 4	Fleet 5	Fleet 6	Fleet 7	Fleet 8
	Full-Time Crab 2J3KL	Supp Crab 2J	Supp Crab 3K	Large Supp Crab 3L	Small Supp Crab 3L	Supp Crab 3Ps	35' - 64' Inshore Crab	Shrimp 4R
Days at Sea	79	50	71	86	40	77	74	67
Days Fished	46	33	48	58	28	56	65	47
Average Crew Size	5.8	3.7	4.3	5.2	3.7	3	3	4.7
Average Total Fishing Revenues (\$)	342,711	239,935	222,245	388,997	132,941	144,130	108,232	285,677
Landed Value of Primary Species (\$)	146,657	66,217	55,070	215,393	104,165	48,258	10,751	217,238
Average Price (\$/kg) of Primary Species	2.29	2.30	2.28	2.24	2.46	2.12	2.12	0.81
% Fishing Revenues from Primary Species	43%	28%	25%	55%	78%	33%	10%	76%

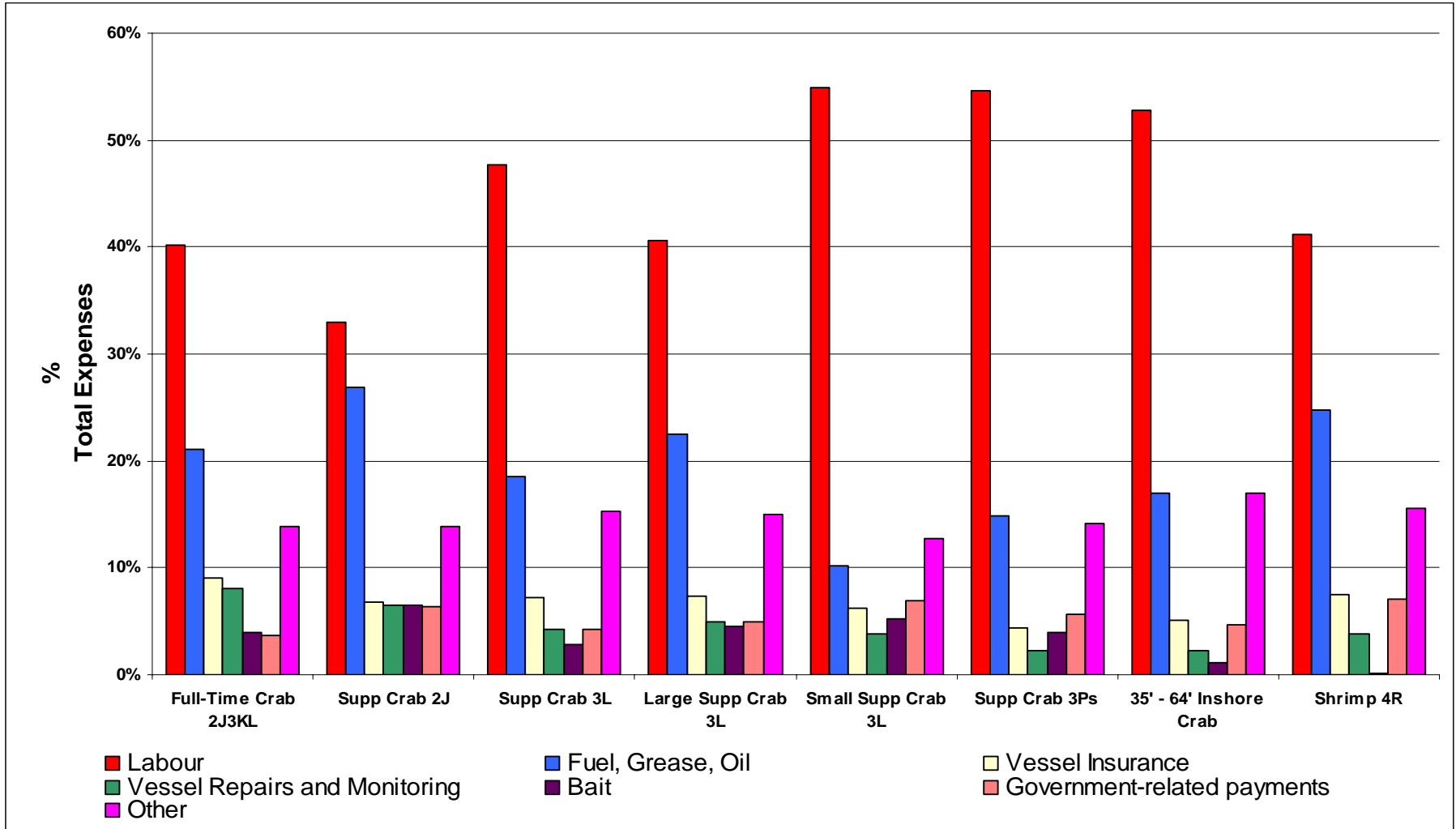
2006 Results – Fishing Effort Profile & Revenue 35-64'



2006 Results – Operating & Maintenance Expenses 35-64'

Expenses	Full-Time Crab 2J3KL	Supp Crab 2J	Supp Crab 3L	Large Supp Crab 3L	Small Supp Crab 3L	Supp Crab 3Ps	35' - 64' Inshore Crab	Shrimp 4R
Labour	111,141	71,891	77,842	130,272	50,638	53,851	45,275	93,661
Fuel, Grease, Oil	58,461	58,687	30,146	72,094	9,440	14,595	14,600	56,389
Vessel Insurance	24,921	14,748	11,683	23,747	5,724	4,307	4,374	16,934
Vessel Repairs	22,380	14,205	6,865	16,027	3,489	2,241	1,896	8,756
Bait	11,017	14,167	4,569	14,656	4,791	3,958	960	195
Government	10,294	14,025	6,950	15,660	6,428	5,571	4,028	15,940
Food	6,053	5,067	3,826	6,815	1,277	1,880	2,619	4,704
Vehicle Expenses	5,959	6,193	3,929	5,805	3,981	4,551	3,036	7,613
Nets / Gear	4,889	3,333	4,349	7,366	1,891	1,446	1,506	7,401
Vehicle Lease	3,738	5,400	1,671	2,146	881	2,961	2,177	3,693
Onshore Facilities	3,282	500	650	983	218	272	497	964
Accounting Fees	3,291	3,933	1,640	7,609	820	837	566	2,328
Admin Fees	2,846	667	1,089	1,291	326	34	172	1,082
Buddy Up	-	-	3,508	8,530	-	-	2,371	1,000
Other	8,072	5,014	4,373	7,385	2,421	1,984	1,602	6,572
Total	\$276,342	\$217,830	\$163,089	\$320,388	\$92,323	\$98,486	\$85,679	\$227,232

2006 Results – % Breakdown Operating & Maintenance Expenses 35-64'

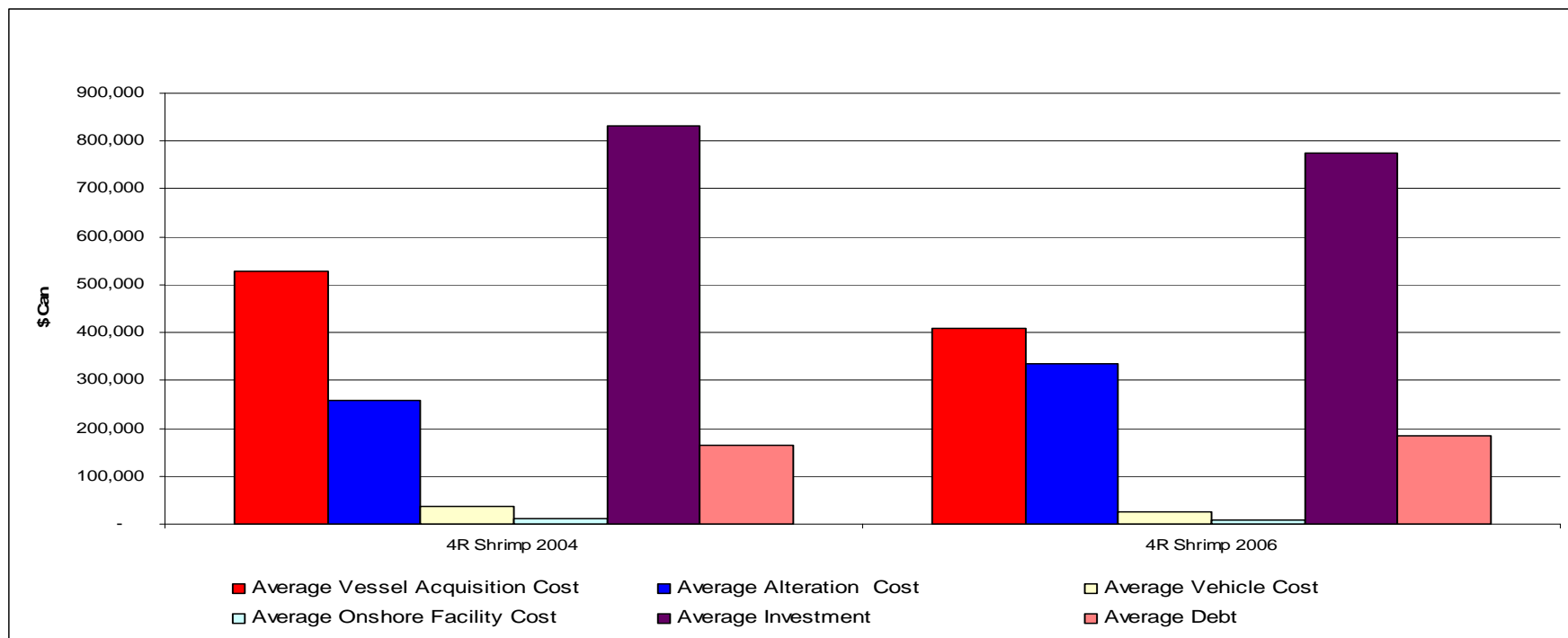


2006 Results – Financial Performance 35-64'

Financial Variable	Full-Time Crab 2J3KL	Supp Crab 2J	Supp Crab 3K	Large Supp Crab 3L	Small Supp Crab 3L	Supp Crab 3Ps	35' - 64' Inshore Crab	4R Shrimp
Total Fishing Revenues	342,711	239,935	222,245	388,997	132,941	144,130	108,232	285,677
Total Operating and Maintenance Expenses	276,342	217,830	163,089	320,388	92,323	98,486	85,679	227,232
Gross Operating Income (Loss)	66,370	22,105	59,156	68,609	40,618	45,644	22,553	58,445
Less: Depreciation	68,143	35,583	35,179	63,454	16,380	14,225	11,818	36,371
Net Operating Income (Loss)	(1,773)	(13,479)	23,977	5,154	24,238	31,419	10,734	22,074
Less: Interest Expense	23,785	28,667	18,656	29,604	2,557	4,449	3,863	15,200
Net Income Before Taxes	-\$25,558	-\$42,145	\$5,321	-\$24,450	\$21,681	\$26,971	\$6,872	\$6,874

Comparison of 2004 and 2006 C&E for 4R Shrimp 35-64'

Priority Fleet	Average Vessel Acquisition Cost	Average Alteration Cost	Average Vehicle Cost	Average Onshore Facility Cost	Average Investment	Average Debt	Range Interest Rate
4R Shrimp 2004 (\$)	527,000	257,775	35,873	10,405	831,053	164,642	5 - 10%
4R Shrimp 2006 (\$)	409,023	333,645	24,964	8,750	776,382	184,314	5 -10%



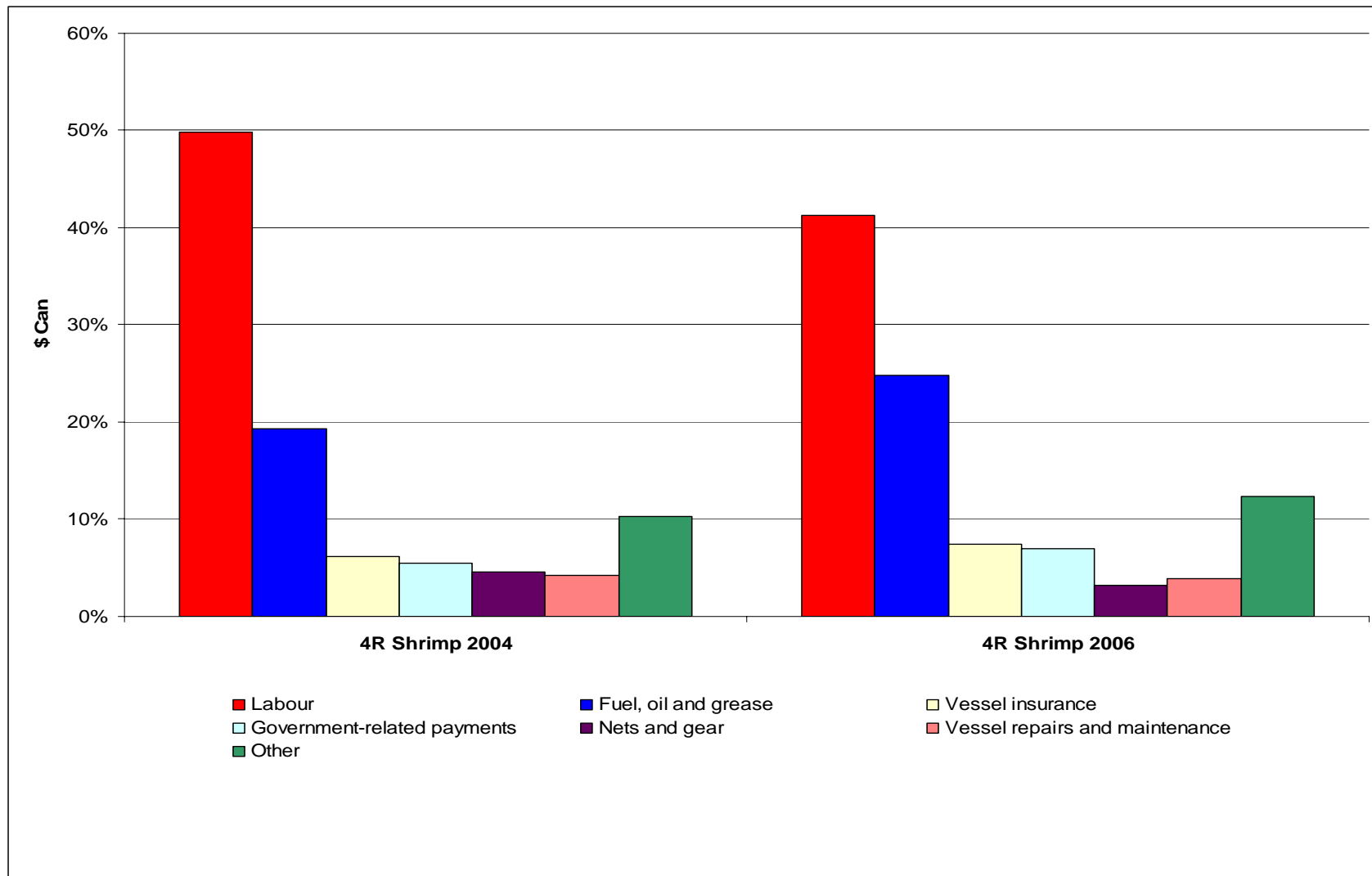
Comparison of Fishing Effort Profile and Revenue for 2004 and 2006 4R Shrimp 35-64'

Variable	4R Shrimp 2004	4R Shrimp 2006
Days at Sea	73	67
Days Fished	56	47
Average Crew size	5	4.7
Revenues from Landings of Primary Species (\$)	286,651	217,238
Average Price (\$/kg)	1.00	.81
% of Fishing Revenues From Primary Species	85%	76%
Revenues from all Fisheries (\$)	340,141	285,677

Comparison of Operating & Maintenance Expenses for 2004 and 2006 4R Shrimp 35-64'

Expenses	4R Shrimp 2004	4R Shrimp 2006
Labour	122,458	93,661
Fuel, oil and grease	47,552	56,389
Vessel insurance	15,121	16,934
Government-related payments	13,467	15,940
Nets and gear	11,322	7,401
Vessel repairs and maintenance	10,446	8,756
Vehicle expenses for fishing	9,529	7,613
Food	5,342	4,704
Bait	2,727	195
Accounting fees	2,091	2,328
Professional and administrative fees	679	1,082
Other	4,972	12,229
Total	245,706	227,232

% Breakdown of Comparison of Operating & Maintenance Expenses for 2004 and 2006 4R Shrimp 35-64'



Comparison of 2004 and 2006 Financial Performance for 4R Shrimp 35-64'

Financial Variable	4R Shrimp 2004	4R Shrimp 2006
Total Fishing Revenues (\$)	340,141	285,677
Total Operating and Maintenance Expenses (\$)	247,297	227,232
Gross Operating Income (Loss) (\$)	92,844	58,445
Less: Depreciation (\$)	35,583	36,371
Net Operating Income (Loss) (\$)	57,261	22,074
Less: Interest Expense (\$)	6,345	15,200
Net Income Before Taxes (\$)	50,916	6,874

General Comments of 2004 and 2006 C&E

- Signed confidentially agreement is crucial given the nature of the information being provided by enterprise owners
- C&E projects are costly and time consuming but worth the effort
- Piloting the survey would be a wise investment
- Data validation is invaluable but don't get lost in the process
- Focused training of interviewers is vital
- Interviewers should have extensive knowledge of the NL fishery

General Comments of 2004 and 2006 C&E continued

- DFO did not analyse the variance in cases where the required sample size was not obtained
- Fleets are not homogeneous and comparisons are misleading
- Important to analyse inshore fleets (<35') and nearshore fleets (35-64') separately
- 2004 was generally a good fishing year and all fleets had a positive net income; albeit the income of the inshore fleets was low
- 2006 prices for crab were lower and the fleets with the highest expenses and investment experienced a negative net income; fleets with multiple species licences and smaller vessels fared better financially
- Labour and fuel are the primary expenses incurred by fishing enterprises

Discussion

- **Utility of C&E data**
 - MUN
 - CURRA
 - Fishing Industry
- **Limitations of C&E**
 - Confidentiality
 - Sample Size
 - Non-sampling Errors
 - Variability of Enterprises
 - 'Outdated' Data
- **For further information contact:**
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 - Policy and Economics Branch**
 - Fisheries and Oceans Canada**