

# Economic Impact of Cruise Tourism in Atlantic Canada\*

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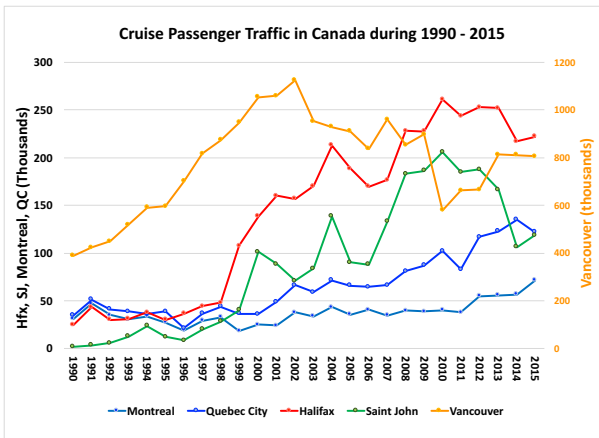
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## Background Information

- Average annual growth during the 1990-2015 period in major Canadian ports is given below: (Transport Canada)

Vancouver: 2.96%    Montreal: 3.41%    Quebec City: 5.15%  
 Halifax: 9.24%    Saint John: 18.38%



## Background Information (cont.) & Literature

- Growth in CT accompanied by expected growth of benefits (i.e. spending) for host ports.
- Atlantic Canada Cruise Association (ACCA) total economic impact estimates:
  - Output: \$183m, Jobs:1,249 jobs, Income:\$51m (2012)
  - Output: \$233m, Jobs:1,400 jobs, Income:\$61m (2016)
- Deficiencies in self-reported cruise association statistics: Scarfe (2011); Larsen et. Al (2013); Falkenhaus (2012); Seidl, Guiliano & Pratt (2007); Klein (2003, 2005a, 2005b)

## Research Questions

1. Conduct an independent study to estimate the economic impact of cruise tourism in Atlantic Canada:
  - Average passenger/crew spending per port
  - Total visitor spending using on-shore visits
  - Cruise Line spending in Atlantic Canada
  - Direct expenditures generated by the Cruise Industry
  - Total economic impacts using a regional I-O model
2. Illustrate the relative contribution of the cruise industry to the tourism industry/economy in the region

## Data Sources

Our sample makes use of two distinct data sets:

### 1. **Passenger & Crew Surveys at Port (2016 and 2017)**

- Ports surveyed: Halifax, Saint John, Charlottetown, St. John's
- Period: April-October in 2016 and May-October in 2017
- Hours Surveyed: 2-4 hrs after arr. until 1 hour before dep.
- Information collected:
  - a) **Main:** Expenditure by category, Party size
  - b) **Itinerary:** Port order, # of ports, Cruise type (L,P,MM, E)
  - c) **Weather:** Ave. temperature, Rain indicator
  - d) **Demographics:** Pass/Crew, Age, Gender, Residence, Education, Employment, Income

### 2. **ACCA Economic Impact Study (2016)**

- Number of on-shore passenger/crew visits per port
- Cruise line expenditures (filtered)

**Table 1:** Sampling Information for the 2016 & 2017 period

<b>Port Surveyed</b>	<b>Total # of Ship Visits</b>	<b># of Ships Surveyed</b>	<b>% of Ships Surveyed</b>	<b>Our Sample Visitors Surveyed</b>	<b>ACCA(2016) Visitors Surveyed</b>
Charlottetown	146	61	42%	830	1,290
Halifax	306	267	87%	5,928	1,491
Saint John	129	60	47%	536	839
St. John's	50	20	40%	388	1,145
<b>All Ports</b>	<b>631</b>	<b>408</b>	<b>65%</b>	<b>7,682</b>	<b>4,765</b>

## Methodology for Estimating Visitor Spending

- **Model:** Generalized Linear Model (Poisson family with natural log link function)
- **Sample size:** 7,682 observations
- **Dependent Variable:** Expenditure per person
- **Independent Variables:**
  - Port Indicators: Charlottetown, Saint John, St. John's
  - Itinerary: Cruise market segment, Port order, Number of ports
  - Weather: Temperature, Rain
  - Demographics: Crew, Age, LF status
  - Time: Month indicators, Indicator for 2017
- **Weights:** Stratification based on ports and cruise market segments (luxury, premium, mass market and European)

Table 2: Marginal effects from weighted GLM estimation

Variable	dy/dx	Std. Err.	Z	P-value	[95% Conf. Interval]
Port Charlestown	-\$1.56	2.66	-0.59	56%	-\$6.77 \$3.65
Port_Saint John	-\$10.89	2.23	-4.88	0%	-\$15.26 -\$6.51
Port St. John's	-\$19.96	3.94	-5.07	0%	-\$27.68 -\$12.24
Port order	\$1.10	0.44	2.48	1%	\$0.23 \$1.97
No of ports	-\$0.25	0.46	-0.53	60%	-\$1.15 \$0.66
log(Ave.Temp)	-\$4.78	3.42	-1.40	16%	-\$11.48 \$1.93
Rain	-\$1.18	1.57	-0.75	45%	-\$4.25 \$1.89
Crew	-\$22.94	5.06	-4.54	0%	-\$32.86 -\$13.03
Clcat_Luxury	\$14.00	4.52	3.10	0%	\$5.15 \$22.85
Clcat_Premium	\$16.30	3.58	4.56	0%	\$9.29 \$23.31
Clcat_Mass market	\$21.24	3.85	5.52	0%	\$13.69 \$28.78
Age_30to50	\$8.72	5.45	1.60	11%	-\$1.96 \$19.41
Age_50to70	\$7.28	5.33	1.37	17%	-\$3.17 \$17.73
Age_70 or more	\$1.71	5.50	0.31	76%	-\$9.06 \$12.48
Emp_Retired	-\$8.86	1.82	-4.86	0%	-\$12.43 -\$5.29
Emp_Not working	-\$11.12	5.62	-1.98	5%	-\$22.13 -\$0.11
Month_May	\$6.19	3.59	1.73	8%	-\$0.84 \$13.23
Month_June	-\$2.83	2.48	-1.14	25%	-\$7.68 \$2.02
Month_July	\$5.25	3.13	1.68	9%	-\$0.89 \$11.38
Month_August	\$2.87	3.19	0.90	37%	-\$3.39 \$9.13
Month_September	\$2.49	2.08	1.19	23%	-\$1.60 \$6.57
Year 2017	-\$5.77	1.51	-3.82	0%	-\$8.73 -\$2.81



**Table 3: Predicted average spending per person (2016-17)**

<b>Port Pax/Crew</b>	<b>Predicted exp. 2016 &amp; 2017</b>	<b>Standard Error</b>	<b>95% Confidence Lower Limit</b>	<b>Interval Upper Limit</b>
Charlottetown_pax	\$59.00	\$2.71	\$53.69	\$64.30
Halifax_pax	\$60.86	\$0.98	\$58.93	\$62.78
Saint John_pax	\$53.06	\$2.00	\$49.13	\$56.99
St. John's_pax	\$40.56	\$2.60	\$35.45	\$45.66
Charlottetown_crew	\$39.21	\$3.81	\$31.74	\$46.68
Halifax_crew	\$40.44	\$3.67	\$33.26	\$47.63
Saint John_crew	\$35.26	\$3.46	\$28.48	\$42.05
St. John's_crew	\$26.95	\$2.61	\$21.84	\$32.07

**Table 4: Predicted average spending per person (2016 only)**

<b>Port Pax/Crew</b>	<b>Predicted exp. 2016 only</b>	<b>Standard Error</b>	<b>95% Confidence Lower Limit</b>	<b>Interval Upper Limit</b>
Charlottetown_pax	\$59.51	\$1.76	\$56.06	\$62.97
Halifax_pax	\$61.28	\$1.32	\$58.70	\$63.86
Saint John_pax	\$65.14	\$1.33	\$62.54	\$67.75
St. John's_pax	\$28.20	\$3.73	\$20.89	\$35.50
Charlottetown_crew	\$43.88	\$5.08	\$33.93	\$53.83
Halifax_crew	\$45.18	\$5.21	\$34.97	\$55.39
Saint John_crew	\$48.05	\$5.61	\$37.06	\$59.04
St. John's_crew	\$20.79	\$3.68	\$13.57	\$28.01

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St. John's_pax	\$28.20	\$3.73	\$20.89	\$35.50
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Table 5: Average Spending Estimates - Our study vs ACCA (2016)

Estimated visitor spending per port	GLM Estimates 2016 and 2017	Cr. Association Estimates (2016)	Relative Difference
Charlottetown_Pax	\$59.00	\$98.77	67%
Halifax_Pax	\$60.86	\$83.84	38%
Saint John_Pax	\$53.06	\$81.66	54%
St. John's_Pax	\$40.56	\$80.44	98%
Charlottetown_Crew	\$39.21	\$78.88	101%
Halifax_Crew	\$40.44	\$90.13	123%
Saint John_Crew	\$35.26	\$73.51	108%
St. John's_Crew	\$26.95	\$73.99	175%

[▶ Explanation](#)[▶ St. John's](#)

Table 6: Direct visitor spending at major ports in Atlantic Canada

<b>Port, Province</b>	<b>Total Direct Visitor Spending (GLM)</b>	<b>Total Direct Visitor Spending (ACCA, 2016)</b>	<b>On-Shore Visits (ACCA, 2016, Table IN-8)</b>
Charlottetown, PEI	\$4,160,966	\$7,143,021	74,961
Halifax, NS	\$15,242,341	\$22,472,034	264,707
Sydney, NS	\$5,256,231	\$6,262,812	91,473
Saint John, NB	\$8,010,549	\$12,774,099	158,933
St. John's, NFL	\$657,832	\$1,372,076	17,311
Cornerbrook, NFL	\$352,759	\$669,387	9,318
Other ports in NFL	\$847,204	\$654,361	22,461

Table 7: Direct Cr. Ind. Expenditures by Province (millions of \$2016)

<b>Our study</b>	<b>Total Spending</b>	<b>Visitors</b>	<b>Cruise Lines</b>		
Nova Scotia	\$52.11	\$18.21	\$33.90		
New Brunswick	\$14.61	\$7.11	\$7.50		
Newfoundland and Labrador	\$3.66	\$1.66	\$2.00		
Prince Edward Island	\$7.76	\$3.71	\$4.05		
<b>Atlantic Canada</b>	<b>\$78.14</b>	<b>\$30.69</b>	<b>\$47.45</b>		
<b>ACCA, 2016</b>	<b>Total Spending</b>	<b>Visitors</b>	<b>Cruise Lines</b>	<b>Airfare</b>	<b>Insurance</b>
Nova Scotia	\$63.70	\$28.70	\$34.80	\$0.10	\$0.10
New Brunswick	\$21.47	\$12.70	\$8.60	\$0.03	\$0.14
Newfoundland and Labrador	\$5.91	\$2.70	\$2.90	\$0.19	\$0.12
Prince Edward Island	\$11.30	\$7.13	\$4.14	\$0.02	\$0.01
<b>Atlantic Canada</b>	<b>\$102.38</b>	<b>\$51.23</b>	<b>\$50.44</b>	<b>\$0.34</b>	<b>\$0.37</b>

Table 8: Total Impact: Industry Output ACCA, 2016 vs. 2016 sample

<b>Total = Direct + Indirect (i.e. Closed)</b>	<b>Total Impact</b>	<b>Jobs</b>	<b>Income</b>	<b>Total Impact</b>	<b>Jobs</b>	<b>Income</b>
<b>Goods Producing Sector</b>	<b>\$112</b>	<b>355</b>	<b>\$18</b>	<b>\$33</b>	<b>99</b>	<b>\$6</b>
Natural Resources, Utilities & Construction	\$39	120	\$7	\$10	23	\$2
Manufacturing	\$73	235	\$11	\$23	76	\$4
<b>Service Producing Sector</b>	<b>\$114</b>	<b>1045</b>	<b>\$42</b>	<b>\$112</b>	<b>881</b>	<b>\$40.1</b>
Wholesale & Retail Trade	\$2	28	\$1	\$14	168	\$6.0
Transportation & Warehousing	\$51	356	\$17	\$65	386	\$21.0
Financial Services	\$13	60	\$3	\$11	51	\$2.9
Professional & Technical Services	\$15	154	\$9	\$7	73	\$4.0
Information, Culture and Recreation	\$10	22	\$1	\$3	16	\$0.8
Accommodation & Food Services	\$16	294	\$6	\$7	143	\$2.8
Other Services & Government	\$7	131	\$5	\$5	44	\$2.6
<b>Total Impacts</b>	<b>\$233</b>	<b>1400</b>	<b>\$61</b>	<b>\$145</b>	<b>980</b>	<b>\$46.49</b>
Indirect Business Taxes	\$6					
Personal Income Taxes			\$13			\$9.8

## Methodological Differences

### Differences in methodology:

- Direct spending
  - Estimation of visitor spending & sampling issues (major)
  - Cruise line spending: Exclusion and allocation (minor)
- Indirect spending (I-O Analysis)
  - Aggregation and industry multipliers
  - Leakages (interprovincial & international imports)
  - Jobs and Income: Top down vs Bottom up
  - Level of economic impact: Output vs Value added

Table 9: GDP at basic prices: Total Impact (Closed) by Industry

	Atlantic Canada			Rest of Canada			Total Impact on Canada		
(millions of \$)	GDP	Jobs	Jobs (FTE)	GDP	Jobs	Jobs (FTE)	GDP	Jobs	Jobs (FTE)
<b>Goods Producing Sector</b>	<b>\$5.9</b>	<b>32</b>	<b>28</b>	<b>\$5.0</b>	<b>36</b>	<b>29</b>	<b>\$10.9</b>	<b>68</b>	<b>57</b>
Nat. Resources, Utilities & Const.	\$4.2	17	13	\$2.6	15	10	\$6.8	32	23
Manufacturing	\$1.6	16	15	\$2.4	21	19	\$4.1	37	34
<b>Service Producing Sector</b>	<b>\$27.6</b>	<b>533</b>	<b>394</b>	<b>\$17.8</b>	<b>237</b>	<b>175</b>	<b>\$45.4</b>	<b>770</b>	<b>568</b>
Wholesale & Retail Trade	\$6.1	184	127	\$3.9	55	44	\$9.9	239	171
Transportation & Warehousing	\$5.6	80	67	\$3.6	61	41	\$9.1	141	107
Financial Services	\$6.2	34	27	\$4.6	26	21	\$10.8	59	48
Professional & Technical Services	\$3.1	61	44	\$2.8	42	30	\$5.9	104	74
Inform., Culture & Rec.	\$1.1	12	8	\$1.1	11	7	\$2.2	23	16
Accommodation & Food Services	\$2.9	123	88	\$0.7	25	18	\$3.6	148	106
Other Services & Government	\$2.8	40	33	\$1.1	17	13	\$3.9	57	46
<b>Total Impact on GDP</b>	<b>\$33.5</b>	<b>565</b>	<b>421</b>	<b>\$22.8</b>	<b>273</b>	<b>204</b>	<b>\$56.4</b>	<b>838</b>	<b>625</b>

- Total (direct+indirect) impact on jobs:1400 (2016 ACCA)



Table 10: Total Impact (Closed) - Impact on GDP

<b>Expenditure-based (thousands of \$)</b>	<b>NFL</b>	<b>PEI</b>	<b>NS</b>	<b>NB</b>	<b>RoC</b>	<b>Total</b>
Final domestic expenditures on commodities	\$3,782	\$9,031	\$60,654	\$19,746	\$6,903	\$100,116
International imports	(\$1,260)	(\$1,621)	(\$15,631)	(\$11,453)	(\$5,244)	(\$35,209)
Interprovincial imports	(\$1,656)	(\$4,787)	(\$23,860)	(\$7,167)	(\$4,242)	(\$41,711)
Inventories and other commodity leakages	(\$16)	(\$18)	(\$89)	(\$41)	(\$204)	(\$367)
Interprovincial exports	\$2,985	\$912	\$1,862	\$9,528	\$26,424	\$41,711
<b>Total</b>	<b>\$3,835</b>	<b>\$3,517</b>	<b>\$22,937</b>	<b>\$10,613</b>	<b>\$23,639</b>	<b>\$64,540</b>
<b>Income-based (thousands of \$)</b>	<b>NFL</b>	<b>PEI</b>	<b>NS</b>	<b>NB</b>	<b>RoC</b>	<b>Total</b>
<b>GDP at market prices</b>	<b>\$3,835</b>	<b>\$3,517</b>	<b>\$22,937</b>	<b>\$10,613</b>	<b>\$23,639</b>	<b>\$64,540</b>
Taxes on products	\$307	\$797	\$4,906	\$1,873	\$1,059	\$8,942
Subsidies on products	(\$52)	(\$53)	(\$323)	(\$68)	(\$264)	(\$760)
<b>GDP at basic prices</b>	<b>\$3,580</b>	<b>\$2,772</b>	<b>\$18,354</b>	<b>\$8,808</b>	<b>\$22,844</b>	<b>\$56,358</b>
Subsidies on production	(\$6)	(\$18)	(\$30)	(\$13)	(\$114)	(\$182)
Taxes on production	\$84	\$139	\$952	\$467	\$1,131	\$2,772
Wages and Salaries	\$999	\$1,365	\$9,580	\$4,172	\$10,605	\$26,722
Employers' social contributions	\$160	\$165	\$1,262	\$593	\$1,593	\$3,773
Labour income of unincorporated sector	\$37	\$71	\$514	\$202	\$786	\$1,609
Gross operating surplus	\$2,306	\$1,051	\$6,077	\$3,387	\$8,843	\$21,664

- Total (direct+indirect) impact on income:\$61million (2016 ACCA)

# Relative Contribution of the CI to the NS Economy

Table 11: NS Tourism Industry Snapshot (2016)

	Tourism Sector	Cruise Industry	Contribution
<b>Tourism Revenues</b>	\$2.6 billion	\$73.4 million	2.82%
<b>Provincial Taxes</b>	\$168 million	\$3.4 million	2.02%
<b>Provincial GDP</b>	\$928 million	\$22.9 million	2.47%

## NOVA SCOTIA TOURISM INDUSTRY SNAPSHOT

## TOURISM NOVA SCOTIA

### TOURISM INDUSTRY GOAL

**\$4 billion**

in tourism revenues by 2024

Goal #14 of the Ivory Report

### 2016 PERFORMANCE

Best tourism year on record and third consecutive year of tourism growth:

**2.2 million** (estimated) non-resident overnight visitors

**\$2.6 billion** (estimated) in tourism revenues

**\$125 million** more than 2015

**5% increase** compared to 2015

**28% increase** compared to 2010



### TOURISM SECTOR IMPACTS

	2010 ESTIMATE	2016 ESTIMATE	CHANGE	2024 ESTIMATE
Tourism revenues	\$2.0 billion	\$2.6 billion	+\$575 million	<b>\$4 billion</b>
Provincial taxes <small>(direct + spin-off)</small>	\$131 million	\$168 million	+\$37 million	<b>\$260 million</b>
Provincial GDP	\$722 million	\$928 million	+\$206 million	<b>\$1.4 billion</b>



## Summary of Results

### Overall conclusion:

- Results suggest average cruise passenger expenditure per person is approximately \$60 in Halifax and Charlottetown, \$53 in Saint John and \$40 in St. John's.
- Similarly, average cruise ship crew expenditures are approximately two-thirds of the average passenger spending in these ports.
- Total direct visitor (pax+crew) spending in Atlantic Canada is estimated to be somewhere between \$29 to \$33 million (\$2016).

## Summary of Results(cont.)

### Overall conclusion:

- In 2016, the total impact of the cruise industry in Atlantic Canada on GDP is estimated to be \$56 million (\$33 million for Atlantic Canada and \$23 million for the rest of Canada).
- The total number of jobs created by the economic activity of the cruise industry in Atlantic Canada in 2016 is estimated to be 838 (565 in Atlantic Canada and 273 for the rest of Canada).
- The total number of full-time equivalent jobs created by the economic activity of the cruise industry in Atlantic Canada in 2016 is estimated to be 625 (421 in Atlantic Canada and 204 for the rest of Canada).
- Amount of labour compensation (wages and salaries) associated with the economic activity of the cruise industry in Atlantic Canada in 2016 is estimated to be \$26.7 million (\$16.1 million in Atlantic Canada and \$10.6 million in rest of Canada).

## Summary of Results (cont.)

### **Difference in estimates:**

- ACCA estimates for the visitor expenditures in a given port are considerably larger (38%-175%) than ours.
- Similarly, ACCA estimates for the total direct spending by the cruise industry is 24% larger than ours. (\$102.4 million vs \$78.1 million).
- Consequently, the total impact estimates are considerably larger (Industry output by 61%, jobs by 67% and income by 128%) than the ones estimated in this study.
- The discrepancy in estimates can be explained by the differences in direct spending estimates and total impact estimates due to major differences in methodology (sampling, estimation, aggregation, etc.).

## Future Research

### Things to do:

- Continue to explore the implications of our findings on public policy.
- Investigate potential avenues to stimulate passenger/crew spending & port development.
- Research questions in other aspects of cruise tourism (port specific differences, propensity to convert cruise tourists to regular tourists, etc.).

**Thank you. Questions?**

# Differences in Visitor Spending Estimates

## Table 12: Sampling Frames

% of the 2016 season	Luxury	Premium	Mass Market	European	Total
<b>Apr-Jul</b>	2.2%	6.6%	6.9%	0.5%	16.2%
<b>Aug-Oct</b>	6.5%	34.4%	35.5%	7.5%	83.8%
<b>Total</b>	8.7%	41.0%	42.4%	8.0%	100%
<b>ACCA (2016) Sample</b>	<b>Luxury</b>	<b>Premium</b>	<b>Mass Market</b>	<b>European</b>	<b>Total</b>
<b>Apr-Jul</b>	0.0%	4.1%	7.4%	0.0%	11.5%
<b>Aug-Oct</b>	3.9%	24.0%	53.3%	7.2%	88.5%
<b>Total</b>	3.9%	28.1%	60.8%	7.2%	100%
<b>Our Sample</b>	<b>Luxury</b>	<b>Premium</b>	<b>Mass Market</b>	<b>European</b>	<b>Total</b>
<b>Apr-Jul</b>	2.7%	8%	8.4%	0.7%	19.7%
<b>Aug-Oct</b>	4.6%	35.5%	38.1%	2.0%	80.3%
<b>Total</b>	7.3%	43.5%	46.6%	2.7%	100%

## Table 13: Average Visitor Spending Breakdown - 2016 Sample

Average Visitor Spending	Luxury	Premium	Mass Market	European
<b>Apr-Jul</b>	\$47.85	\$56.29	\$65.26	\$54.53
<b>Aug-Oct</b>	\$62.62	\$62.15	\$71.86	\$50.65



**Table 14:** Population averages for the 2016-17 cruise season

	<b>Noports</b>	<b>Portorder</b>	<b>Temp.</b>	<b>Rain</b>	<b>Lux</b>	<b>Prem</b>	<b>Mass</b>	<b>Euro</b>
All ports	8.07	3.74	16.29	37.3%	17.0%	47.7%	27.2%	8.1%
Charlottetown	8.50	3.67	16.67	42.8%	25.3%	67.1%	5.5%	2.1%
Halifax	7.83	3.75	16.74	35.0%	17.6%	45.4%	27.8%	9.2%
Saint John	7.44	3.48	15.69	33.9%	7.9%	29.1%	59.8%	3.1%
St.John's	9.87	4.58	13.99	44.0%	12.0%	52.0%	4.0%	32.0%

[▶▶ Back to the spending estimates](#)

## Methodology(cont.)

Table 15: Explanatory Variables

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port_ch:	=1 if port surveyed is Charlottetown
port_sj:	=1 if port surveyed is St. John
port_sjs:	=1 if port surveyed is St. John's
portorder:	Port ranking in the itinerary
log(avetemp):	Natural log of average daily temperature
rain:	=1 if it rained on the day of survey
crew:	=1 if respondent is a crew member
clcat_lux	=1 if respondent is on a luxury cruise
clcat_prem	=1 if respondent is on a premium cruise
clcat_mass	=1 if respondent is on a mass market cruise
agecat_30to50	=1 if respondent is between 30 and 50
agecat_50to70	=1 if respondent is between 50 and 70
agecat_above70	=1 if respondent is older than 70
emp_ret	=1 if respondent is retired
emp_unemp	=1 if respondent is unemployed
month_*	=1 if month is may/june/jul/aug/sep
y_17	=1 if year is 2017

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**Base group**

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clcat_euro	=1 if respondent is on european cruise line
agecat_below30	=1 if respondent is younger than 30
emp_emp	=1 if respondent is employed
year	= 2016
month	= October

Table 16: Results from GLM Estimation

exppp	Coef.	Std. Err.	z	P-value	[95% Conf. Interval]
Port_Charlottetown	-0.028	0.047	-0.59	55.8%	-0.121 0.065
Port_Saint John	-0.194	0.041	-4.75	0.0%	-0.274 -0.114
Port_St. John's	-0.355	0.070	-5.07	0.0%	-0.493 -0.218
Port order	0.020	0.008	2.48	1.3%	0.004 0.035
No of ports	-0.004	0.008	-0.53	59.5%	-0.021 0.012
log(Ave.temp)	-0.085	0.061	-1.4	16.2%	-0.204 0.034
Rain	-0.021	0.028	-0.75	45.1%	-0.076 0.034
Crew	-0.409	0.090	-4.52	0.0%	-0.586 -0.231
Clcat_Luxury	0.249	0.081	3.09	0.2%	0.091 0.407
Clcat_Premium	0.290	0.064	4.53	0.0%	0.165 0.416
Clcat_Mass market	0.378	0.069	5.48	0.0%	0.243 0.513
Age_30to50	0.155	0.097	1.6	11.0%	-0.035 0.346
Age_50to70	0.130	0.095	1.36	17.2%	-0.057 0.316
Age_70 or more	0.030	0.098	0.31	75.6%	-0.161 0.222
Emp_Retired	-0.158	0.032	-4.87	0.0%	-0.221 -0.094
Emp_Not working	-0.198	0.100	-1.98	4.8%	-0.394 -0.002
Month_May	0.110	0.064	1.73	8.4%	-0.015 0.236
Month_June	-0.050	0.044	-1.15	25.2%	-0.137 0.036
Month_July	0.093	0.056	1.68	9.3%	-0.016 0.203
Month_August	0.051	0.057	0.9	36.9%	-0.060 0.163
Month_September	0.044	0.037	1.19	23.3%	-0.029 0.117
Year 2017	-0.103	0.027	-3.81	0.0%	-0.156 -0.050
Constant	4.063	0.209	19.4	0.0%	3.652 4.473

No. of obs = 7,682

Scale parameter = 1

Deviance = 43,598,635.1

(1/df) Deviance = 5,692.471

Pearson = 52,116,039.08

(1/df) Pearson = 6,804.549

AIC = 6,339.085

BIC = 43,500,000

Table 17: Cruise Industry Multipliers by Province

<b>Output (millions of \$)</b>	<b>NFL</b>	<b>PEI</b>	<b>NS</b>	<b>NB</b>
Direct impact	\$2.56	\$5.87	\$41.93	\$11.29
Total impact, closed model	\$7.52	\$9.02	\$73.36	\$30.44
Total multiplier	2.93	1.54	1.75	2.70
<b>GDP at basic prices (millions of \$)</b>	<b>NFL</b>	<b>PEI</b>	<b>NS</b>	<b>NB</b>
Total impact, closed model	\$3.58	\$2.77	\$18.35	\$8.81
Total multiplier	1.40	0.47	0.44	0.78
<b>Labour income (millions of \$)</b>	<b>NFL</b>	<b>PEI</b>	<b>NS</b>	<b>NB</b>
Total impact, closed model	\$1.20	\$1.60	\$11.36	\$4.97
Total multiplier	0.47	0.27	0.27	0.44

**Table 18:** Share of Home port passengers in NFL

<b>Year</b>	<b>Ship</b>	<b>Cruise Line</b>	<b>Pax</b>	<b>Date</b>
2016	Ocean Endeavor	Adventure Canada	198	11/06/2016
	Ocean Endeavor	Adventure Canada	198	19/06/2016
	Ocean Endeavor	Adventure Canada	198	29/06/2016
	National Geographic	Lindblad Expeditions	148	08/09/2016
	National Geographic	Lindblad Expeditions	148	15/09/2016
	National Geographic	Lindblad Expeditions	148	22/09/2016
2017	Ocean Endeavor	Adventure Canada	198	05/06/2017
	Ocean Endeavor	Adventure Canada	198	15/06/2017
	Ocean Endeavor	Adventure Canada	198	22/06/2017
	Ocean Endeavor	Adventure Canada	198	05/07/2017
	Ocean Endeavor	Adventure Canada	198	13/07/2017
	Spitsbergen	Hurtigruten	335	24/07/2017
	National Geographic	Lindblad Expeditions	148	09/09/2017
	National Geographic	Lindblad Expeditions	148	14/09/2017
	National Geographic	Lindblad Expeditions	148	21/09/2017
Total homeport pax in NFL			2,115	
Total NFL pax (2016-17)			48,147	
Share of home port pax in NFL			4.4%	