



The Economic Impact of a Cruise Ship Visit on Connecticut's Economy

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Executive Summary

The Research and Planning Unit of the Compliance Office and Planning/Program Support of the Connecticut Department of Economic and Community Development was asked to conduct an economic impact analysis and examine the economic consequences and benefits of a scheduled visit of a cruise ship to one of Connecticut's deep water ports. A literature search was done. Simulations using Regional Economic Models, Inc. (REMI) Policy Insight™ were run. This report presents the results of that analysis. Some key findings are:

- The cruise industry is one of the fastest growing segments of the leisure travel market. Global cruise revenues have continued to increase annually.
- According to the Connecticut Maritime Coalition, the arrival of a potential 1,800 passengers and crew to New London would inject as much as \$250,000 per visit into the local economy. A search of the literature demonstrates that a level of onshore spending, exclusive of any onboard spending for sponsored tours, of \$100,000 to \$150,000 per ship visit is more likely. The key question is: “What would a cruise ship visit of 1,200 passengers and 600 crew mean for the local and state economies?”
- Based on the REMI results, a cruise ship visit of this size would generate an economic gain of \$183,105 in gross state product to the Connecticut economy in the year of the visit; with the impact eventually diminishing to zero assuming the visit is a single event.
- Another simulation was run in which the spending in 53 industries remained constant based on one visit per year for a 20-year analysis period. The outcome yields a net gain to the gross state product of \$130,101 on average and \$1.7 million on a 20-year net present value basis. Likewise, on a net present value basis, personal income increases \$1.7 million. Total employment growth averages 3 jobs. Fiscally, the cruise ship visit produces average annual net state tax revenues of \$3,119.

- Overall, as a one-time event, the cruise ship industry would have negligible consequences for the Connecticut economy. There would be no substantive impact on personal income, state or local tax revenues. Even as a one-or multi-visit-per-year annual phenomenon (two, six, and twelve-visit scenarios were run), there is a very nominal gain for the state and a negative impact for the local economy. The tax structure is such that the local government derives no meaningful new revenue.
- A cruise ship visit of this size (1,200 passengers, 600 crew) also raises questions about what costs may be incurred by the state and City of New London for infrastructure (pier and road) improvements, security, promotional and other currently unknown costs. This analysis does not take into account whatever additional but unknown costs are associated with cruise ships coming to Connecticut. However, as recently as this month, it was determined that both dredging and pier extension are needed to accommodate such a cruise ship. This work is estimated to cost \$1 million. [27]
- Before finalizing this report, efforts should be made to formally consult with the department's former Office of Tourism or other tourism experts to ensure that the assumptions made in this document are reasonable and defensible.
- The department may want to take the opportunity presented by the first or second (or both) scheduled visit(s) to conduct a survey of passengers returning to the ship to determine actual spending levels. The data collected from such a survey would serve to test the assumptions made in this study and provide better information for future studies of this kind. The department could contract with the University of Connecticut's Center for Survey Research and Analysis to design and conduct such a survey. Another option would be to utilize the Tourism Division of the State Commission on Arts, Tourism, Culture, History, and Film's tourist survey system to obtain the information at the port.

Statement of the Issue

The Holland America cruise ship *ms Maasdam* will make a first-ever visit to New London on May 14, 2004 and again, in a return visit, on October 27, 2004. (This study focuses on the impact of a single visit.) The 760-foot cruise ship with 1,236 passengers and a crew of 600 will be docking at the State Pier, rather than as originally planned, at the Fort Trumbull Pier now deemed too shallow. [26] These visits are described by Holland America as “look see” events. Connecticut’s three deep-water ports at Bridgeport, New Haven and New London have never had cruise ship visits of this magnitude. The success of these visits may lead to regular stops of cruise ships in Connecticut according to the Connecticut Maritime Coalition. [15] [25]

According to the Maritime Coalition, the arrival of 1,800 passengers and crew to New London is raising expectations among local merchants and others about an influx of consumer spending at the many New London and southeastern Connecticut attractions and venues, all of which may reap previously unavailable amounts of net new expenditures. Such gains would also have economic and fiscal “multiplier effects” for the region and the state. Estimates of this spending have varied. The Connecticut Maritime Coalition’s estimate is \$250,000 per visit [25]. Yet a search of the literature shows that, based on other port experiences, local onshore spending would be considerably smaller. Multiple return visits will, however, increase the impact over time. It should be noted, too, that the duration of the ship’s stay would be limited on each occasion. May’s visit is scheduled to begin at 7:00 a.m. and conclude at 2:00 p.m. The ship will depart shortly thereafter. [15] [16]

The key question is: “What will spending by onshore visitors mean to the state and local economy?” To explore the economic and fiscal potential, the Research and Planning Unit was asked to study the impact. In addition to a literature search on the cruise industry, simulations were made using the Regional Economic Model, Inc. Policy Insight™ model otherwise known as REMI. This report presents the findings of that effort.

Overview of the Cruise Industry

The cruise industry is one of the fastest growing segments of the leisure travel market. The number of passengers has grown an average of 8.4 percent per year since 1980. More recently, the annual increase in North America alone has been an average of 15 percent. Ports such as Halifax, Quebec City, Saint John, Vancouver and Victoria all experienced double-digit growth. Victoria's growth was measured over a three-year period at 90 percent a year to 360 percent a year. Worldwide projections were for as many as 13 to 14 million people to take a cruise in 2003 (latest available projection). The industry is indeed vast with more than 260 cruise ships sailing and accommodations for close to 300,000 passengers. [16]

North America

Global cruise revenues have continued to increase annually. According to Business Research and Economic Advisors (BREA) in a report for the International Council of Cruise Lines (ICCL), 9.2 million global passengers generated \$14.3 billion in gross revenues for the North American cruise industry in 2002. This represents a 9.8 percent increase in revenues from 2001. The industry generated operating income of \$2.25 billion during 2002 or 15.7 percent of gross revenues. This represents a 3 percent increase from the previous year. [2]

The ICCL report also estimated the benefits of the North American cruise industry for the United States, most recently for 2002. According to the ICCL report, the total economic benefit of the cruise industry in the U.S. was estimated to be \$20.4 billion. Direct spending of the cruise lines and passengers on U.S. goods and services was estimated to be \$12 billion. This amount is more than half of the \$20.4 billion impact. It represents an 8.8 percent increase over 2001. Likewise, total jobs generated by these expenditures were gauged to be 279,112; and total wages generated for U.S. employees were estimated at \$10.6 billion. [1]

Connecticut

For individual states, the impact is equally impressive. ICCL reports that, even though Connecticut is not currently a cruise destination, direct purchases of goods and services by the industry in Connecticut accounted for \$100 million in 2002. The purchases attributed to

Connecticut represented 0.6 percent of the \$12 billion U.S. total in 2002. The 1,247 jobs attributed to the state represent 0.5 percent of the 279,112 jobs in the U.S. economy [2]. Connecticut personal income attributable to the spending was estimated at \$69 million. Note that this is the result of demand for Connecticut generated goods and services and not the direct spending of cruise ship passengers in the state. [1]

The growth of the cruise industry is significant because a corresponding growth in the number of ports at which cruises dock and the cities in which cruise ships may seek to home port is associated with the increase in the number of ships and overall passengers. In fact, ports market themselves to the cruise industry. In the case of New London, such overtures were made by a newly formed trade organization, the Connecticut Cruise Industry Association (CCIA), a member of the Connecticut Maritime Coalition and part of the state's officially recognized maritime industry cluster. [18] New London has been identified by the industry and CCIA as an expansion destination port.

Passenger Vessel Services Act

Among the important factors driving the North American geographic growth of the industry are U.S. cabotage laws themselves. Cabotage laws govern coastal trade or navigation. In the U.S., both the Passenger Vessel Services Act (PVSA) of 1886 and the Merchant Marine Act of 1920 (also known as the Jones Act) apply. Under the PVSA, foreign-registered vessels are prohibited from operating exclusively between U.S. ports; if they do so, these vessels are subject to a \$200 per passenger fine. The act was originally intended to protect U.S. companies from competition by foreign (particularly Canadian) ferries shuttling among resorts on the Great Lakes. Thus, either a foreign cruise ship pays the fine, or it includes a foreign port on its itinerary, or begins at a foreign port. [16]

Jones Act

The Jones Act stipulates that only ships built in the U.S. are entitled to be registered in the U.S. It thus reinforces the PVSA by acting as a barrier to foreign-registered cruise lines operating between U.S. ports. Consequently the vessels that make up cruise ship lines are almost always registered in foreign countries including the Bahamas, Canada, Liberia or

Panama. In fact, the Holland America cruise is sailing from Canada to the U.S. in the May visit and from Florida to Quebec in the October return itinerary. [13]

Canada's Role

Canada's own cabotage laws, known as the Coastal Trade Act (CTA), allow foreign-flagged vessels to carry passengers between domestic ports only if there is an intervening international destination. Thus, the CTA promotes visits by Canadian vessels to U.S. ports of call. [16]

Other Cruise Industry Facts

The North American cruise industry overall can be characterized as expanding geographically and growing. The ICCL found that, in 2002, an estimated 7.5 million U.S. residents took cruise vacations throughout the world. This represented 82 percent of the industry's global passengers that year. Moreover, all regions of the U.S, particularly New England, the Mid Atlantic, Pacific and South Atlantic regions experienced passenger growth. [1]

Industry Costs

While ports and cruise industry advocates may perceive the cruise industry as a "cash cow," industry analyst, Professor Ross A. Klein, PhD. of Memorial University of Newfoundland, calls attention to the other side of the equation:

- advertising and marketing expenses for the port
- busses, congestion, crowds and pollution
- construction and maintenance costs for piers and terminals
- demand on local health care systems for passengers needing medical attention
- environmental hazards caused by ship discharges
- increased costs for infrastructure, port security and other services

All are among the negative consequences offsetting any benefits of what may be, in the end, only minor consumer spending. In fact, Klein stands out by warning ports and port

authorities to take a “sober and realistic look” at the cruise industry as a source of growth and income. He raises the question of whether multi-million dollar local investments will yield returns sufficient to be justified. [1]

With Professor Klein’s observations in mind, all the infrastructure costs that might ultimately be incurred to support a visit of the Holland America cruise ship to Connecticut and New London on a regular basis are not known. Ironically, as recently as March 13, 2004, based on a recent engineering study, it has been determined that the Fort Trumbull Pier is too shallow to accommodate the visiting ship. An extension of the Fort Trumbull pier by the use of temporary rental mooring equipment would not be feasible either. Future utilization of this pier as a cruise ship port involves, besides dredging, the construction of a “cat walk” of up to 200-foot long and numerous new pilings for mooring the vessel. Costs for such improvements are estimated at \$1 million. [27] Visitors will therefore not be docking at the site of the newly renovated historic Fort Trumbull, but at the less attractive commercial State Pier instead. [26]

According to Ed Dombroskas, Executive Director of the Tourism Division of the State Commission on Arts, Tourism, Culture, History, and Film, the Department of Transportation does not favor the State Pier as a viable long-term solution for passenger arrivals. Mr. Dombroskas said it is the obligation of the pier to provide a safe docking situation. [27] For safety reasons, while a cruise ship is docked at the State Pier, no offloading of cargo can occur. Moreover, the cost of docking in the case of this visit is expected to be \$3,500 to \$4,500. Fees paid by the cruise line can cover these costs, so there is a “wash” for the state. However, any foregone revenues from the loss of cargo operations for the duration of the cruise ship visit are another potential, but unknown loss for which this study does not account.

The above-mentioned fees a cruise ship pays for the rights and privileges to dock at a pier fully capable of accepting visitors for safe passage ashore have yet to be determined. The State Department of Transportation and pier operator Logistec would establish and retain those fees. Typically the fee would have two parts: a per foot charge based on the length of

the ship and a “head tax.” In New York, the fee is \$1 per foot and \$7.50 per passenger. Newport’s head tax is about \$2.50. However, the ship’s agent has indicated that if the fees are based on tonnage (as with commercial vessels) and amounted to \$7,000, the ship would bypass the port of New London. [27]

Besides determination of costs and fees, there are numerous other preparations that must occur before May 14. These include docking arrangements, ground transportation, and naming of a “receptive operator” for onboard booking of tourism visits. [27]

The Spending Issue

Perhaps the single most important of all factors is spending. In addition to what vendor purchases there may be, it is direct onshore spending that largely drives the economic impact. ICCL states that, on average, a 2,000 passenger ship with a crew of 950 generates approximately \$180,000 in on shore spending per U.S. port. This means that the average port-of-call passenger spends just short of \$82 per visit and members of the crew spend approximately \$17 per visit. [1] A Canadian source noted that most ports in Canada claim that passengers spend an average of \$100 Canadian dollars per person per port call. (The Canadian dollar currently exchanges for \$1.33 U.S. dollars). However based on surveys actually conducted from 1992 to 2001, per passenger spending ranged from \$32 to \$76 and averaged \$55.71. To get to the \$100 figure would require adding ticket purchases for onshore activities made onboard (none of which have been determined at the time of this study) and/or by including estimated crew expenditures to the per passenger spending level referenced above. [16]

Spending also depends on demographics and destination. The Canadian source noted that Price Waterhouse Coopers (PWC), in a study for the Florida-Caribbean Cruise Association, found ranges from \$53.84 in San Juan, Puerto Rico, to \$173.24 in St. Thomas, U.S. Virgin Islands, with an average for all ports of \$103.83. While the Canadian ports offer crafts, clothing, food and beverages and souvenirs, the Caribbean ports sell duty-free liquor. In Alaska, jewelry is a popular item of purchase. Undoubtedly, age and disposable income of passengers also factor among the determinants of spending. [16]

According to the ICCL report, the economic benefits of cruise-industry spending come from five principal sources:

- capital expenditures for new vessels, terminals, office facilities and equipment
- expenditures by the cruise lines for goods and services necessary to operations
- shore-side staffing by the cruise lines for their operations
- spending by the cruise lines for port services at U.S. ports of call
- spending by cruise passengers and crew

Vendor purchases are important to the economy. [16] **However, for purposes of this study, only the passenger and crew spending will be considered because, in the case of New London, the other expenditures are not applicable.** What remains is to determine an appropriate per passenger and ship visit level of spending to introduce into the forecasting model. Other recent studies were consulted for an answer to this issue.

WEFA Study

In 2000, the economic consulting firms of Wharton Economic Forecasting Associates, Inc. (WEFA) and BREA prepared a joint analysis using 1999 data about vendor purchases in the United States to estimate the impact of the cruise industry on the U.S. economy. This study is similar to the 2003 ICCL report mentioned earlier in this document that was prepared by BREA. For the 2000 study, vendor purchase data was entered into WEFA's Industry Analysis Model (a proprietary, multiple-equation macroeconomic model of the U.S. economy) to compute the impact of expenditures on employment and other industries. Vendor purchases were then allocated back to each state and Bureau of Economic Analysis multipliers were used to measure employment and indirect effects. According to the study, the \$47.5 million in purchases attributed to Connecticut represented 0.6 percent of the \$7.8 billion U.S. total in 1999. The 1,009 jobs attributed to Connecticut represent 0.5 percent of the 214,901 U.S. cruise industry-induced employment. Unlike the 2003 ICCL study however, the WEFA report does not indicate the impact of a typical single visit as in the case of New London. [2]

Bar Harbor

Interestingly, a study of Bar Harbor, Maine, based on 1,080 passenger surveys conducted between August and October 2002, reports that the average respondent spent a total of \$85.26 in Bar Harbor. Average expenditures approached an estimated \$105.82 per person with the inclusion of cruise-line sponsored tours that Holland America's Website indicates will be available to the passengers of the *Maasdam* when it visits New London. The Bar Harbor study is of special interest because the resort is perhaps more like New London as a New England port than many of the other ports examined. The Bar Harbor study also reported \$4.2 million total estimated expenditures in a single October when 20 ships were scheduled, or \$210,000 in onshore spending per ship per visit. [9] This is slightly above the ICCL reported amount of \$180,000. The Bar Harbor paper finds that close to 37 percent of those surveyed had household income exceeding \$100,000. The largest spending categories were food, beverages and apparel. Retail spending amounting to \$4.2 million from 40,000 passengers suggests about \$105 per person overall. [9]

Also of note, some passengers indicated they were looking for items they were unable to find including items by local artisans such as jewelry, pottery and wooden products. They also wanted a larger selection of clothing including "higher quality" apparel such as sweaters, ties and clothing without a Bar Harbor logo. A few respondents believed the town could use a taxicab or car rental service close to the pier. [9]

Florida, New York, and Alaska

A comprehensive survey, conducted by BREA for the ICCL, used survey responses from various cruise lines. For example, Florida port-of-call passengers spent an average of \$75 onshore in Florida per visit [22]. (Note: a review of available on-line cruise ship itineraries indicates that the overwhelming majority of cruise ship visits are for one day only).

Passengers who stayed overnight in New York averaged \$187 per person per night during their stay averaging 2.1 nights. The remaining passengers generated an average of \$75 in New York for local retail [21]. Alaska cruise passengers spent an average of \$100 per visit onshore [23]. Moreover, in May 2003, the Norwegian Cruise Lines announced round trips to New York City from Florida's Port Canaveral. The report made note that the Space Coast

Office of Tourism estimated that, if three-quarters of the 2,200 passengers arriving at Port Canaveral disembarked there, the ship could inject roughly \$85,000 into Central Florida's economy each week [24].

Portland and Boston

A more meaningful comparison for New London is data for Portland and Boston, other U.S. ports of call in New England. At these ports, spending per ship is estimated at \$235,000 and close to \$500,000 respectively [10] [19]. This makes the Connecticut Maritime Coalition figure of \$250,000 somewhat high. Applying the ICCL estimate of \$82 yields \$147,000 per ship visit. Applying the Bar Harbor \$85 per passenger yields \$153,000 per ship visit assuming 1,200 passengers and a 600-member crew.

New Bedford

Finally, in 2001, New Bedford, Massachusetts officials announced regular port-of-call visits by Regal Cruise Lines *Regal Empress* (1,068 passengers and 400 crew) beginning in the summer of 2002. According to a press release regarding the port of call visits, from the office of New Bedford's Mayor, each visit was expected to represent \$100,000 in spending to the local economy [20]. The manner in which this figure was derived was not referenced in the press release. However, the amount mentioned is consistent with the findings in the other studies consulted for this report and, therefore, further supports the assumption of approximately \$150,000 per ship visit for New London. Total local spending annually would be a multiple of the actual number of visits. The key question is: "What would a single cruise ship visit of this size and duration mean for the local economy?"

Onshore Spending

Alternative levels of onshore spending are conceivable (See table below). Some anecdotal reports acknowledge a per-visitor spending level as high as \$150. Yet little evidence supports this. If Alaskan jewelry shoppers average \$100, there is little likelihood that New London "day trippers" would spend at that level. Actual surveys conducted for St. John's Newfoundland indicate average onshore spending of \$55. [16] This is a low-end extreme. Likewise, 100 percent of passengers and crew at the anecdotal level of \$150 each is the high-

end extreme. No study, reviewed for this report, indicates the percent of passengers and/or crew going ashore. Therefore, consistent with the ICCL methodology, the average spending level applies to all. However, this study conservatively uses a mid-range spending level based on the evidence presented -- a simplifying assumption only. Surveying passengers may ultimately provide the most realistic estimate of actual spending patterns.

Number of	Percent	Spending Range		
Passengers	Going			
and/or Crew	Ashore	\$55	\$85	\$150
1800	100%	\$99,000	\$153,000	\$270,000
1620	90%	\$89,100	\$137,700	\$243,000
1440	80%	\$79,200	\$122,400	\$216,000
1260	70%	\$69,300	\$107,100	\$189,000
1080	60%	\$59,400	\$91,800	\$162,000
900	50%	\$49,500	\$76,500	\$135,000

The REMI Policy Insight Model

In order to show the total implications of the cruise ship visits, specifically on Connecticut, the REMI model (using detailed employment, population, personal income and other data specific to Connecticut) was used to run a simulation. REMI generates a regional baseline forecast and then, based on inputs provided by the model user, develops an alternative forecast that occurs in the event of the change in the sector of interest. The effects on the Connecticut economy occur over time.

The model is sensitive to a wide range of “what if” policy and project alternatives. Policy variables such as industry or firm sales, industry or firm employment, consumer spending, investment, or government spending are input. A simulation is run and “results” are produced and compared to a control forecast. The “differences” in gross regional (state) product, aggregate personal income, employment, and net state and local (countywide) tax revenues represent the “economic impact.” REMI automatically incorporates multiplier effects, interactions between economic changes and population, as well as the fiscal consequences for state and local government

It should be noted, however, that the reported effects do not show whether the economy is predicted to grow or decline in the alternative forecast, but rather what the effects of the economic change are compared to the control forecast, i.e. what the impact on the economy would be if the change did not occur. REMI Policy Insight™ is the leading regional economic forecasting and policy analysis model. It is a structural econometric model that clearly includes cause-and-effect relationships with numerically estimated parameters and forecasted future values. The model is based on classical economic theory and the underlying assumptions that households maximize utility and producers maximize profits. The REMI model brings together five major “blocks”: (1) output, (2) population and labor supply, (3) labor and capital demand, (4) market shares and (5) wages, price & profits. Under continuous development since 1980, the REMI model’s forecast horizon is currently 2035. Typically a 10-year or 20-year analysis is done.

Population, for example, is one of the dynamic variables. Population expands in a rapidly growing economy. This may in turn induce changes in local government spending as towns meet new demand for schools, fire, police and other municipal services. One of the most important “results variables” is gross state product (GSP), a measure of the dollar value of all final output produced in Connecticut in a given year as a result of employment or investment. A strong positive change in GSP is a typical indicator of a successful project because GSP is a very comprehensive measure of impact. Other key variables are growth in total personal income and total state and local tax revenues. The Connecticut model is a multi-region, 53-sector model based on eight counties and an aggregated statewide region composed of all counties.

Assumptions and Methodology

The model user must specify what inputs or “policy variables” to change as a result of the cruise ship visit. Since it is assumed that all of the demand will be met locally, rather than from imports to the region, the policy variable that represents a change in industry output best represents the situation. All sales become “exports.” An alternative “detailed consumption demand” policy variable would change industry output only to the extent demand is met locally. Since it is assumed all demand is satisfied locally, it is best to select

“industry sales” as the policy variables in this case. In turn, the model user must specify the sectors in which the spending will occur. For purposes of this study, cruise ship visitor spending is allocated to each of the model’s 53 sectors. Each visitor’s total spending is apportioned to each sector according to the model’s tourism “day tripper’s” share of total spending. For example, if the typical “day tripper” spent \$34.98 and \$10.91 on “eating and drinking,” $\$10.91/\$34.98 = .31$, then 31 percent of the cruise visitor spending was allocated to the “eating and drinking” sector. This methodology parallels one used by the University of Connecticut’s Center for Economic Analysis (CCEA) in their 1994 study of the contributions to the Connecticut economy by Mystic Seaport [17]. Total ship visit spending allocated to each sector is based on \$85 spent onshore per visitor and \$153,000 spent onshore per cruise ship visit. All spending is assumed to occur in New London County.

REMI Results

The essential results of the cruise ship visit are demonstrated in Table 1. The average values reflect the sum of the changes of the variable over a twenty-year horizon divided by 20 and represent the average annual change from the baseline forecast of the Connecticut economy. The baseline, or control forecast, represents the state of the economy without the cruise ship visitors. Simply stated, the economic impact is the difference between the baseline economic forecast (how things are) and the new economic forecast that reflects the gain to the economy (how things could be).

Table 1: 1 Visit Only	2004	2023	Average	NPV
Total Employment	4	0	0	
GRP	\$183,105	\$0	\$803	\$65,733
Personal Income	\$91,553	\$61,035	\$3,052	\$54,472
State Revenues	\$15,317	(\$786)	(\$1,969)	(\$19,236)
Local Revenues	\$2,657	(\$2,125)	(\$1,375)	(\$11,891)
State Expenditures	\$1,576	\$1,217	\$680	\$10,742
Local Expenditures	\$2,359	\$1,122	\$555	\$8,965
Net State Revenues	\$13,741	(\$2,003)	(\$2,650)	(\$29,978)
Net Local Revenues	\$298	(\$3,247)	(\$1,930)	(\$20,856)

The NPV column contains the net present value of monetary variables and represents the value, today, of the future stream of the variable discounted to the present at 5 percent per

year over the period 2004 to 2023. (The 5 percent discount rate was chosen to represent the opportunity cost of the funds. Had they been alternatively invested, they might earn close to 5 percent. Note: the current prime rate available to the most credit-worthy borrower is 4 percent. Most borrowers would pay a higher rate; therefore a discount rate of 5% was used for this analysis.) The terminal year value of each variable is its value in 2023. Thus, we see that the cruise ship visit generates an economic gain of \$183,105 in gross state product to the Connecticut economy in the year of the cruise visit, with the impact eventually diminishing to zero (Table 1) assuming it is a single event. Personal income, the aggregate income of state residents, averages \$3,052 but, like GSP, it declines over time to \$61,035 as seen in Table 1 as the impact diminishes.

Direct and Indirect Impact on Connecticut Employment

As a result of the cruise ship visit, New London County would gain 4 jobs in the year of the visit with no effect thereafter. On average, over a 20-year horizon, the job gain is zero.

Impact on State and Local Revenues

The positive change in state expenditures, when compared with the change in state revenues, leaves a negligible gain in state revenues of \$13,741 in the first year of the visit. The local expenditures and revenues produce a net gain in year one of \$298. On average thereafter, state and local revenues are negative. This is because the model-induced expenditures outweigh the model-projected new revenues. This is not surprising given that the initial spending is relatively small.

Long-Term Economic and Fiscal Impact

In the simulation presented up to now, the cruise ship visit was modelled as a lone event rather than a repeat visit each year. An additional simulation was run (Table 2) assuming a single cruise ship visit annually for 20 years. In this simulation, spending in each of the model's 53 industries remained at their respective levels every year for the 20-year analysis.

Table 2: 1 Visit Annually	2004	2023	Average	NPV
Total Employment	4	3	3	
GRP	\$183,105	\$122,070	\$130,101	\$1,658,678
Personal Income	\$91,553	\$183,105	\$144,196	\$1,724,937
State Revenues	\$15,317	\$16,194	\$14,693	\$182,309
Local Revenues	2,657	8,293	7,079	\$84,113
State Expenditures	1,576	12,366	11,574	\$136,115
Local Expenditures	2,359	11,349	10,316	\$121,605
Net State Revenues	\$13,741	\$3,828	\$3,119	\$46,194
Net Local Revenues	\$298	(\$3,056)	(\$3,237)	(\$37,492)

This represents an outcome much like the analysis done for most projects in which an employment level or operating investment is continued for the duration of the analysis. The outcome shown yields a net gain to the gross state product of \$130,101 on average and \$1.7 million on a 20-year net present value basis. (A 5 percent discount rate is used as explained previously). Likewise, on a net present value basis, personal income increases \$1.7 million. Total employment growth averages 3 jobs per year.

Fiscally, the cruise ship visit produces average annual net state revenues of \$3,119, but reduces net local revenues on an annual average basis by \$3,237. Local costs escalate while local revenues do not. As such, local revenues are exceeded by local expenditures (which include induced local spending that results from the increased economic activity) and are therefore negative. This is primarily due to the structure of the local tax system that relies solely on increases in property values to generate tax revenue. As this visit's benefits are largely in the areas of increased sales and income taxes, the local government derives no meaningful new revenue. The state, however, enjoys a positive gain (albeit small) because of its ability to tax sales and income from the increased economic activity. Overall, the outcome is a very modest gain for the state and a negative impact for the local economy.

In the long-term scenario, there are modest gains in output and revenues for the state even after long-term expenditures. The state's residents also benefit from a positive, but modest growth in personal income from the new spending. It should be emphasized that these are the results of a one-day, single-ship visit per year, an assumption that was made to answer the key question: "What would the impact of a ship visit of this magnitude be?"

Additional Scenarios

Several additional scenarios were run to answer the questions of: “What is the impact of this year’s two visits?” and “What is the impact of two or more visits annually for 20 years?” (See Tables 3 and 4). Compared with a single visit one time to two visits one time, for example, first-year Gross Regional Product (GRP) nearly doubles from \$183,105 to \$320,400. Personal income goes from \$91,553 to \$213,600. Net state revenues go from \$13,741 to \$26,630. The relationships are not one-for-one, so not strictly “linear,” but close. Greater local government spending for pier and road improvements, sanitation, security and other expenses would undoubtedly have to be incurred to support a permanent phenomenon. There still would not be a gain to local government revenues.

Table 3: 2 Visits One Time	2004	2023	Average	NPV
Total Employment	8	0	0	
GRP	\$320,400	\$0	\$5,619	\$159,593
Personal Income	\$213,600	\$61,040	\$6,865	\$149,818
State Revenues	\$30,580	\$6,155	\$1,017	\$15,345
Local Revenues	\$5,690	(\$261)	(\$248)	\$2,068
State Expenditures	\$3,950	\$2,298	\$1,258	\$20,114
Local Expenditures	\$4,906	\$1,753	\$1,042	\$17,112
Net State Revenues	\$26,630	\$3,857	(\$241)	(\$4,769)
Net Local Revenues	\$784	(\$2,014)	(\$1,290)	(\$15,045)

Table 4: 2 Visits Annually	2004	2023	Average	NPV
Total Employment	8	6	6	
GRP	\$320,435	\$305,176	\$283,492	\$3,562,409
Personal Income	\$213,623	\$396,729	\$294,495	\$3,507,479
State Revenues	\$30,576	\$39,414	\$34,666	\$421,468
Local Revenues	\$5,690	\$22,110	\$17,119	\$198,285
State Expenditures	\$3,950	\$30,812	\$24,971	\$287,984
Local Expenditures	\$4,906	\$27,007	\$22,002	\$255,188
Net State Revenues	\$26,626	\$8,602	\$9,695	\$133,484
Net Local Revenues	\$784	(\$4,897)	(\$4,883)	(\$56,903)

Table 3 shows the impacts of this year’s two-visit event. Table 4 shows the results of two ship visits annually. First year results are the same because that year’s inputs are identical. On average though, GRP increases from \$130,101 to \$283,492. Similarly, personal income

increases from \$144,196 to \$294,495. Net state revenues go from \$3,119 to \$9,695. These are still nominal gains only for the state.

Conclusion

As indicated by these results, this study finds that a one-time event would overall have a negligible impact on the Connecticut economy. There would be no substantive impact on personal income, state or local tax revenues. Even as a one-or multi-visit-per-year annual phenomenon (two, six, and twelve-visit scenarios were run), there is a very nominal gain for the state and a negative impact for the local economy (See Appendix B). Likely additional costs of advertising, security, port and road improvements only worsen the local impact. The local costs escalate, but the local government tax structure is such that the municipality derives no meaningful new revenue.

Appendix A : Calculation of Cruise Ship Visitor Expenditures by Sector

	Daytripper Spending	% of Total	% of \$85	(% of 85) x 1800	In millions
Lumber	0	0	0	0	0.000000
Furniture	0	0	0	0	0.000000
Stone, Clay, Glass, Etc.	0	0	0	0	0.000000
Primary Metals	0	0	0	0	0.000000
Fabricated Metals	0.009987	0.000285	0.024266	43.67862256	0.000044
Machinery & Computers	0	0	0	0	0.000000
Electrical Equipment	0.028831	0.000824	0.070052	126.0937586	0.000126
Motor Vehicles	0	0	0	0	0.000000
Rest of Transportation Equipment	0.17839	0.005099	0.433443	780.1972041	0.000780
Instruments	0.5167	0.01477	1.255451	2259.812183	0.002260
Miscellaneous Manufacturing	0.72372	0.020688	1.758458	3165.224063	0.003165
Food	0.57365	0.016398	1.393825	2508.885734	0.002509
Tobacco Manufacturing	0.28532	0.008156	0.693256	1247.860678	0.001248
Textiles	0.022693	0.000649	0.055138	99.24892176	0.000099
Apparel	0.38293	0.010946	0.930424	1674.762685	0.001675
Paper	0.041093	0.001175	0.099846	179.7222025	0.000180
Printing	0.44911	0.012838	1.091224	1964.204083	0.001964
Chemicals	0.1903	0.00544	0.462381	832.2861592	0.000832
Petroleum Products	1.438	0.041106	3.493979	6289.161834	0.006289
Rubber	0.011394	0.000326	0.027685	49.83220441	0.000050
Leather	0.08313	0.002376	0.201985	363.5730342	0.000364
Mining	0	0	0	0	0.000000
Construction	0	0	0	0	0.000000
Railroad	0.060501	0.001729	0.147002	264.6040195	0.000265
Trucking	0.16267	0.00465	0.395247	711.4450316	0.000711
Local/Interurban	1.4419	0.041217	3.503455	6306.218671	0.006306
Air Transportation	0.011539	0.00033	0.028037	50.46636885	0.000050
Other Transportation	0.020286	0.00058	0.04929	88.72179205	0.000089
Communication	0.46586	0.013317	1.131923	2037.46101	0.002037
Public Utilities	0	0	0	0	0.000000
Banking	0.026585	0.00076	0.064595	116.2707701	0.000116
Insurance	0	0	0	0	0.000000
Credit & Finance	0	0	0	0	0.000000
Real Estate	0.15871	0.004537	0.385625	694.1257821	0.000694
Eating & Drinking	10.912	0.311923	26.51342	47724.15433	0.047724
Rest of Retail Trade	2.3486	0.067135	5.706508	10271.71452	0.010272
Wholesale Trade	1.4856	0.042466	3.609635	6497.342712	0.006497
Hotels	0.83061	0.023743	2.018174	3632.712594	0.003633
Personal Services/Repair	5.9276	0.169442	14.40258	25924.64234	0.025925
Private Household	0	0	0	0	0.000000
Auto Repair/Service	1.5975	0.045665	3.881524	6986.742719	0.006987

Miscellaneous Business Services	0	0	0	0	0.000000
Amusement & Recreation	2.0097	0.057448	4.883066	8789.51915	0.008790
Calculation of Cruise Ship Visitor Expenditures by Sector- continued					
Motion Pictures	1.24	0.035446	3.012889	5423.199356	0.005423
Medical	1.062	0.030358	2.580393	4644.707836	0.004645
Miscellaneous Professional Services	0.013111	0.000375	0.031856	57.34158609	0.000057
Education	0	0	0	0	0.000000
Non-Profit Organizations	0.27302	0.007804	0.66337	1194.066039	0.001194
Agriculture/Forestry/Fishery Services	0	0	0	0	0.000000
Total	34.98304	1	85	153000	

Table Description:

The above table illustrates the calculations involved in the allocation of cruise ship visitor expenditures to the 53 industry sectors resident in the REMI Policy Insight Econometric model.

- Column 1 shows the 53 sectors in the model
- Column 2 shows the REMI Policy Insight -based expenditures in each sector by the typical day-tripper
- Column 3 shows expenditures as a percent of the total day-tripper spending of \$34.98
- Column 4 shows for each sector the same percent of \$85 (the assumed cruise ship visitor total onshore spending)
- Column 5 is the product of column 4 times the assumed 1,800 visitors
- Column 6 converts the amount into millions and shows the numbers used as inputs in the REMI Policy Insight model.
- The same methodology was used for the multi-visit scenarios, except visitor spending becomes \$170 (two visits), \$510 (6 visits), and \$1,020 (12 visits).

Appendix B

Table 5: 6 Visits Annually/20 yrs	2004	2023	Average	NPV
Total Employment	25	17	20	
GRP	\$930,786	\$915,527	\$869,751	\$10,871,485
Personal Income	\$625,610	\$1,159,668	\$921,631	\$10,949,591
State Revenues	\$94,767	\$115,929	\$106,082	\$1,303,537
Local Revenues	\$17,896	\$71,012	\$56,027	\$646,330
State Expenditures	\$11,324	\$102,417	\$84,864	\$969,063
Local Expenditures	\$15,350	\$87,607	\$73,502	\$845,170
Net State Revenues	\$83,443	\$13,512	\$21,217	\$334,474
Net Local Revenues	\$2,546	(\$16,595)	(\$17,475)	(\$198,840)
Table 6: 12 Visits Annually/20 yrs	2004	2023	Average	NPV
Total Employment	49	34	39	
GRP	\$1,846,000	\$1,831,000	\$1,735,474	\$21,728,988
Personal Income	\$1,251,000	\$2,380,000	\$1,832,550	\$21,815,466
State Revenues	\$189,600	\$239,100	\$214,260	\$2,630,553
Local Revenues	\$35,980	\$146,400	\$113,318	\$1,305,058
State Expenditures	\$23,570	\$211,300	\$170,982	\$1,949,330
Local Expenditures	\$31,140	\$180,300	\$147,922	\$1,698,351
Net State Revenues	\$166,030	\$27,800	\$43,279	\$681,223
Net Local Revenues	\$4,840	(\$33,900)	(\$34,604)	(\$393,292)

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