SSA Freight Survey
Summary Report

KJS Associates, Inc.
FXM Associates

July 1997

This report documents the results of a survey of major freight shippers and analysis of truck reservations data for the Woods Hole, Martha's Vineyard and Nantucket Steamship Authority. KJS Associates, Inc. and FXM Associates carried out this effort during March – July 1997 under contract to the Authority. The accompanying printout of presentation slides highlights the key findings and conclusions from this effort.

In response to complaints by freight users that they were not able to obtain adequate reservations for their trucks this year (1997), the Authority commissioned this analysis. SSA staff had also observed that there were not sufficient truck spaces available on the Nantucket route to handle the total expected demand this year, much less at the times desired by truckers for cost effective operations. In addition, as indicated in Slide 2, the Ferry Traffic Forecasting Study completed in 1996 by KJS and FXM projected truck traffic growth of 1% to 3% per year to Martha's Vineyard and 2% to 4% annually to Nantucket over the next ten years. This continued growth, due to the economic growth of the islands, will exacerbate this currently constrained situation even further in coming years.

Data Sources

The principal sources of information for the freight study were telephone interviews of a sample of frequent users identified by the SSA operations staff ("bulk reservations list") and a statistical analysis of SSA's actual reservations databank for 1997. Follow-up interviews were conducted with selected shippers to verify key data elements and obtain additional feedback on shippers' views of SSA truck operations.

As indicated in Slide 3, the freight survey interviewed 115 trucking firms and freight shippers who account for 78% of all 1997 truck reservations. Thus, the survey findings represent the vast majority of trucks using the SSA's routes, the commodities they carry and the businesses they serve.

SSA's reservations data bank included nearly 55,000 one–way reservations (27,500 round trips) from mid–Feb through Dec 31. Each reservation entry showed the account name and number (if appropriate), the date, time and specific vessel sailing and the length and category of the vehicle (bus, single unit truck, truck and trailer, etc.).

Profile of Major Users

Slides 4 and 5 summarize some key findings about the major freight users. Of the 115 firms surveyed, more than half (53%) serve Martha's Vineyard only, one third (32%) serve Nantucket only, and the remaining 17 firms provide service to both islands. About half are headquartered on one of the islands, one-fourth on the Cape or in nearby Southeast Massachusetts and the remainder elsewhere.

One of the most interesting findings was that nearly 80% of the firms interviewed reported that they either obtained all of the reservations they requested or that they did not have to make any major changes in their operations if they did not. Of the 21% (24 of 115 haulers) that did make major operational changes, two-thirds (16) serve Nantucket and one-third (8) serve Martha's Vineyard. On average, these haulers reported a need for three (3) more round trip reservations per week.

Reservations Summary

The analysis of the 55,000 truck reservations from the SSA's data bank found that there were 2,500 individual users listed, but that **75%** (about 1,850 users) only make **one round trip per year**. On the other hand, *6%* (about 150 users) make one or more trips *per week* as noted in Slide 6. In addition, the top 50 haulers account for 70% of all truck trips. These findings are depicted graphically in Slides 7, 8 and 9.

Truck Length Summary

The Authority assigns truck spaces in several categories based on length, ranging from T2 (20 to 29 feet) to T6 (over 72 feet long). As indicated in Slides 10 and 11, the T3 (average length 44 feet) and T4 (60-foot average) account for more than three-quarters (79%) of all trucks using the SSA routes. Trucks on the Nantucket route are 7% longer, on average, than on the Martha's Vineyard routes; there are 11% more T4's on the Nantucket route and correspondingly fewer T2's and T3's.

Temporal Distribution of Truck Trips

Slides 12 through 19 summarize truck travel to and from the Islands for a variety of time periods. Slides 12 and 14 indicate that June and July are the peak months for trucks with 12% to 13% of the total truck trips from mid-February to the end of December; slides 13 and 15 show Tuesday, Wednesday and Thursday as the peak days for truck travel. A comparison of weekend days on slides 13 and 15 also shows that there is twice as much weekend truck travel on the Nantucket route (15% of total weekly truck tips) than to or from Martha's Vineyard (8%).

Slides 16 and 17 show the combined average daily distribution of trucks by hour *to* the Islands (16) and *from* the Islands (17). The early morning peaks *to* the Islands and the noon (1200) and 5 p.m. (1700) returns *from* the Islands are an expected pattern. Another interesting pattern is less obvious: There are secondary peaks at midnight (2400) in both directions, at 8 p.m. *to* the Islands and the 6 a.m. *from* the Islands. Based on the results of the follow-up interviews, we believe that these peaks at partially reflect the desires of some haulers to get two trips per day from their

trucks by scheduling overnight deliveries and returning their trucks to base in the morning for a second run the following day.

Slides 18 and 19 show the seasonal variation of weekly volumes and the peak day volume by week from mid-February to December 31. These variations will be examined in more detail below in comparison to system capacity.

Commodity Summary

Slides 20 through 23 summarize the key findings from the truck user survey regarding the commodities carried by trucks using the SSA routes and their economic ramifications for the Islands. Construction materials, including all wholesale and retail building supplies, account for 39% of all truck trips to Martha's Vineyard and Nantucket (slide 20) and 36% of the total value of all commodities shipped via the Steamship Authority's routes (slide 22). The other top commodities carried by the SSA are food (27%), fuel (9%) and waste and recyclables (7%). The latter categories are transported *from* the Islands to the mainland while nearly all other commodities are transported *to* the Islands.

The distribution of freight origins/destinations is shown in Slide 21. Communities on Cape Cod account for 21% of all truck trips to/from the Islands, followed by locations in nearby SE Massachusetts (15%) and Rhode Island (16%). Petroleum products (heating oil, propane and gasoline) from the Providence area make up the vast majority of shipments to and from Rhode Island.

Economic Overview

Methodology: The survey queried shippers on the value of commodities carried and their cost of servicing each Island. Raw data entries were compared and adjusted for consistency in developing the estimates of values for each major commodity carried, and for costs per trip. Other sources were used to cross check the reasonableness of estimates derived from our shippers' survey: the U.S. Census Bureau's *Motor Freight Transportation and Warehousing Survey: 1995;* the U.S. Bureau of Economic Analysis's *Regional Economic Information System (1969-1994),* which provides detailed economic data for Dukes and Nantucket counties; Sales & Marketing Management's *1996 Survey of Buying Power;* and relevant reports of the Nantucket Planning & Economic Development Commission and the Martha's Vineyard Commission. In addition, selected major shippers were interviewed to further verify the commodity value and shipping cost data, and to discuss overall distribution considerations and costs.

Value of Commodities Carried: As Slide 22 indicates, we estimate that the SSA will carry approximately $565 million worth of goods to both islands in 1997. Martha's Vineyard's share of these goods will be approximately $320 million (57% of the two island total), while Nantucket's share is estimated at $245 million (43%). By value, the major commodities carried by the SSA to both islands are building supplies ($200 million), and food and beverages ($190 million).

Transport/Distribution Costs: As the data in Slide 23 show, the overall cost to regional shippers of distributing freight to Martha's Vineyard and Nantucket is estimated to total approximately

$27.2 million in 1997. This total includes shippers' costs from regional origin points on the mainland to their ultimate destinations on Martha's Vineyard or Nantucket. These costs represent about 5% of the overall value of the commodities carried to each island.

The cost of moving freight from mainland locations to Woods Hole or Hyannis, and from the SSA's island ports to the freight's ultimate island destinations, is estimated at $15.9 million, or 58% of total distribution costs and 3% of the value of commodities carried. The cost of on-board and related waiting time to shippers is estimated at $4.5 million, or 17% of total distribution costs and 0.8% of the value of commodities carried. The cost to shippers of ***SSA truck fares*** in 1997 is projected at $6.8 million, or 25% of total distribution costs and ***1.2% of the value of commodities carried.***

Volumes and Capacities

Slides 24 through 29 summarize freight volume and capacity relationships for the Authority's routes. The first three slides deal with "weekly" volumes and capacity for each route. For the peak spring and summer season, the Martha's Vineyard routes are running at about 88% of "nominal weekly capacity" while the Nantucket route is currently at its capacity for trucks. The term "*nominal* weekly capacity" is used because the weekly capacity is somewhere between 5 and 7 times the weekday capacity, but the multiplier varies by route and even from week to week. These variations are due to changes in vessel assignments and the mix of trucks, automobiles and over-sized private vehicles (campers, RV's, boat trailers, etc.).

Slides 25 and 26 show how weekly volumes and truck space capacities provided by the SSA vary considerably from season to season. For the Martha's Vineyard route (25), it appears that the most congested time for trucks will occur this fall between mid-September and mid-October when one of the freight boats is taken out of service for maintenance, and continuing on to the end of the year when service is further reduced for the winter schedule. On the Nantucket route (26), freight demand has been regularly exceeding nominal weekly capacity since April, and the situation will remain tight until after Labor Day. Another capacity "crunch" can be expected in late October when the *Nantucket* is taken off the run.

Slide 27 graphs the ratio of weekly volume to *nominal* weekly capacity for each route on a weekly basis. This graph shows that the Nantucket route is already operating at its service capacity for trucks for much of the year, and that maintenance requirements will create a similar situation on the Martha's Vineyard routes this fall and winter.

Conclusions

The principal conclusions from the freight survey are highlighted in Slides 28 and 29.

Martha's Vineyard

For Martha's Vineyard routes, there is not a crisis in freight traffic *yet*. But, the truck demand is rapidly approaching the SSA's capacity to efficiently handle freight for this island due to vessel maintenance needs and the necessity of closing the Oak Bluffs terminal for the winter season.

Given the projected increase of about 2% per year in truck traffic, the Martha's Vineyard routes can be expected to experience truck congestion and delays comparable to those seen on the Nantucket route today in two or three years.

Nantucket

The Nantucket route has already reached its practical capacity for trucks, and the situation will only get worse as demand for goods and services on the island grows. There is immediate need for short-term relief in the form of additional capacity for trucks on this route, and a systemwide plan to deal with the freight needs of Nantucket, as well as those of Martha's Vineyard.

SSA Freight Survey
Final Report

KJS Associates, Inc.
FXM Associates

July 1997

Truck Volume Trends

- 1990 – 1995 growth rates:
  - Martha's Vineyard – 1% per year
  - Nantucket – 3% per year
- 1995 – 2005 projected growth
  - Martha's Vineyard – 1% to 3% per year
  - Nantucket – 2% to 4% per year

Data Sources

- Telephone interviews
  - 115 valid responses
  - 78% of 1997 truck reservations
- Reservations data bank
  - 55,000 one–way reservations
  - mid–Feb to Dec 31
  - 2,480 companies/individuals
- Follow–up interviews

Profile of Firms

- Island served
  - Only Martha's Vineyard – 61 (53%)
  - Only Nantucket – 37 (32%)
  - Both islands – 17 (15%)
- Company location
  - On Island – 55 (48%)
  - Cape – 22 (19%)
  - SE Mass – 9 (8%)
  - All other – 29 (25%)

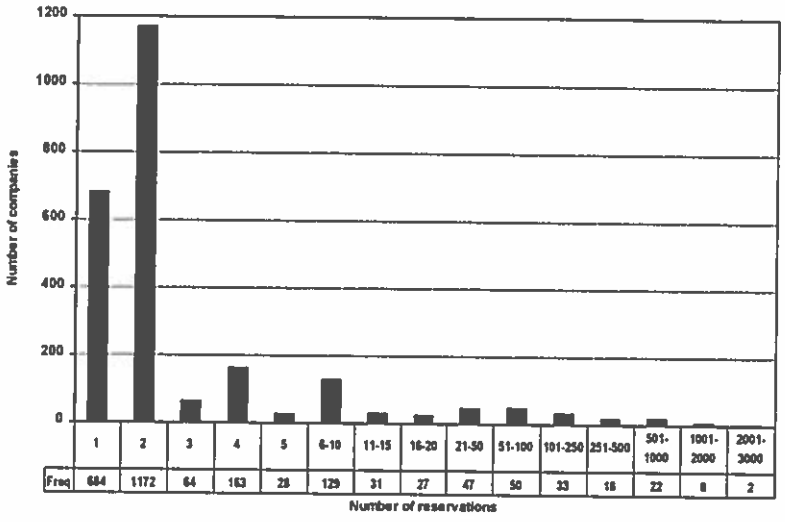
Reservations Requests

- 74 haulers (64%) obtained all reservations requested
- 17 haulers (15%) did not obtain all, but made no major changes
- 24 haulers (21%) had to make significant changes
  - 16 serve Nantucket
  - 8 serve Martha's Vineyard
  - Avg. need – 3 more round trips/week

Reservations Summary

- Distribution of 2,500 users
  - 75% (1,850) make 1 round trip per year
  - 6% (150) make 1 or more trips per week
- Distribution of trips
  - Top 10 haulers make 27% of all truck trips
  - Top 25 make 50%
  - Top 50 make 70%

Number of Annual Reservations



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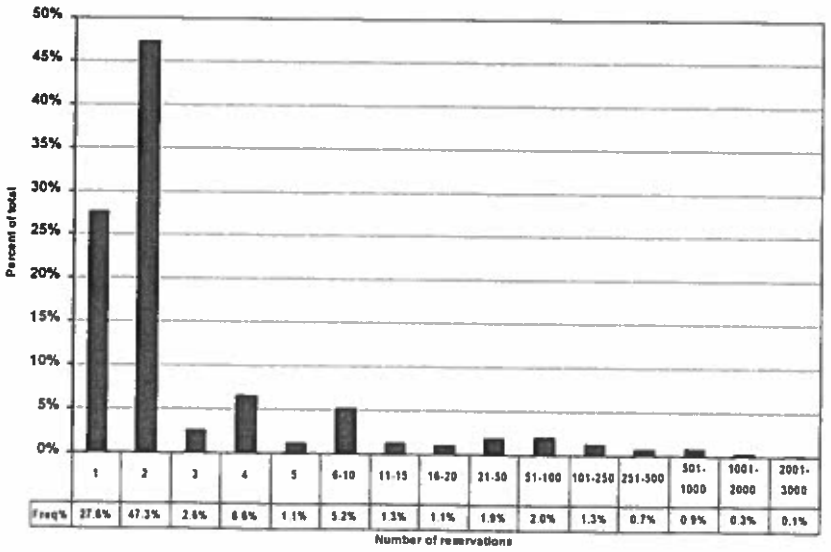
Frequency of Annual Reservations



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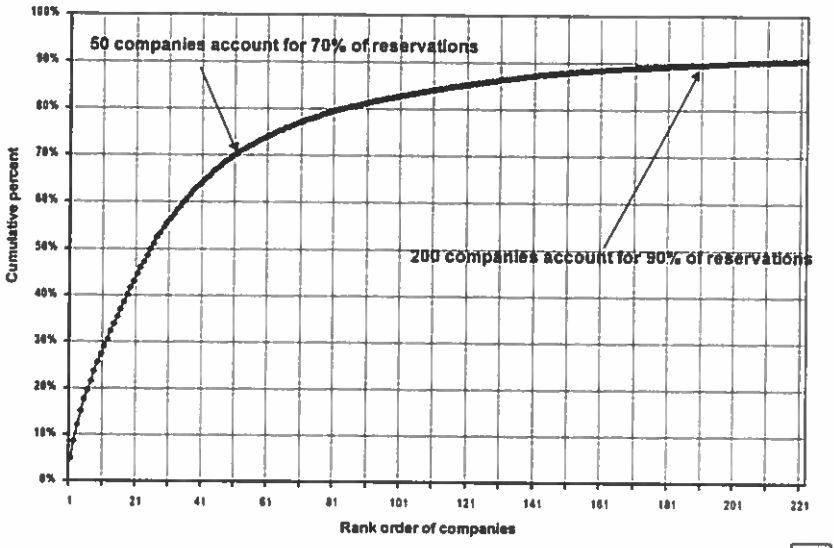
Cumulative % of Total Reservations



Truck Length Summary

- By category
  - T2 – 17%, avg. len. = 25 feet
  - T3 – 46%, avg. len. = 44 feet
  - T4 – 33%, avg. len. = 60 feet
  - Other – 4%

Average Length of Truck

Average length of truck and trailer, feet

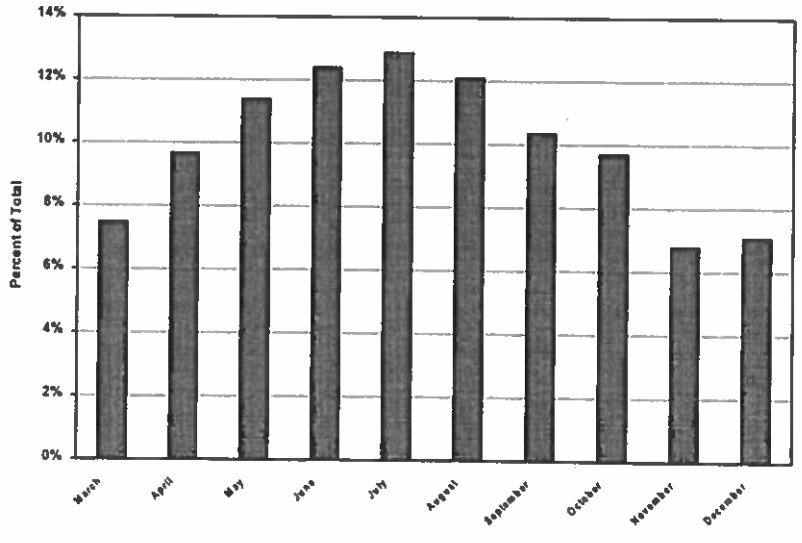
Route	Bus	RV	T2	T3	T4	T5	T6	TT	Overall
Martha's Vineyard	44.6	30.4	24.4	43.4	60.2	65.8	76.9	36.8	44.7
Nantucket	27	36	25.8	43.9	60.6	67.5	76.9	36.7	47.8
Both	44.5	30.8	24.9	43.6	60.3	67.1	76.9	36.7	45.9

Percent of trucks by category

Route	Bus	RV	T2	T3	T4	T5	T6	TT	*Percent of Total*
Martha's Vineyard	3.2%	0.6%	17.8%	47.9%	28.5%	0.3%	0.1%	1.6%	*62.2%*
Nantucket	0.1%	0.1%	14.8%	43.8%	39.9%	0.6%	0.0%	0.7%	*37.8%*
Both	2.0%	0.3%	16.8%	46.3%	32.8%	0.4%	0.1%	1.3%	*100.0%*

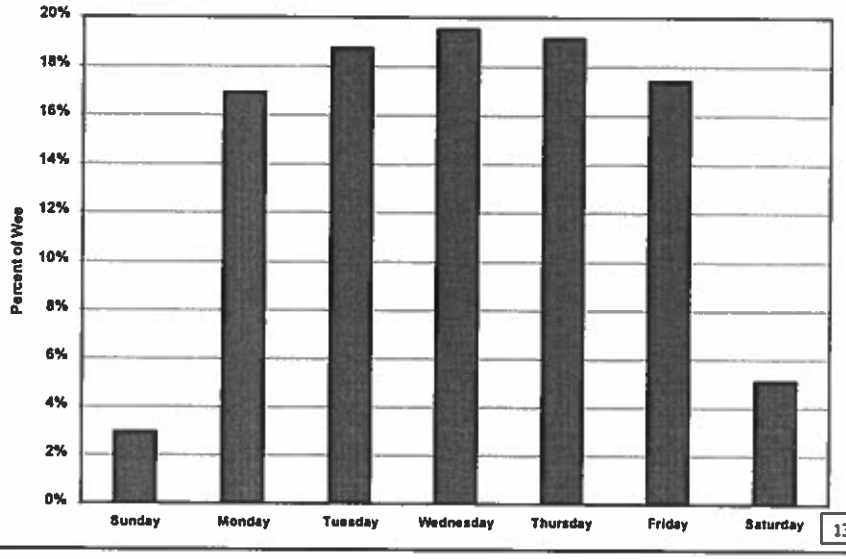
Martha's Vineyard's % of Totals

By Month



Martha's Vineyard's % of Totals

By Day



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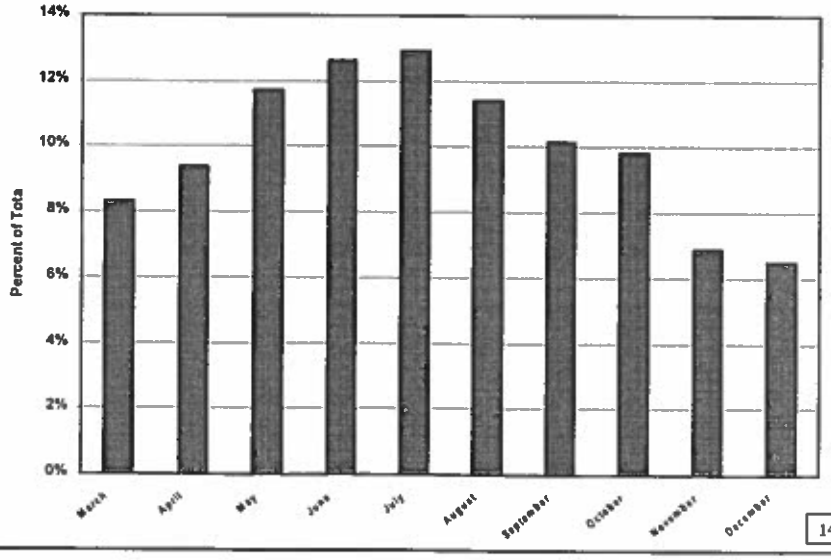
Nantucket's % of Totals

By Month



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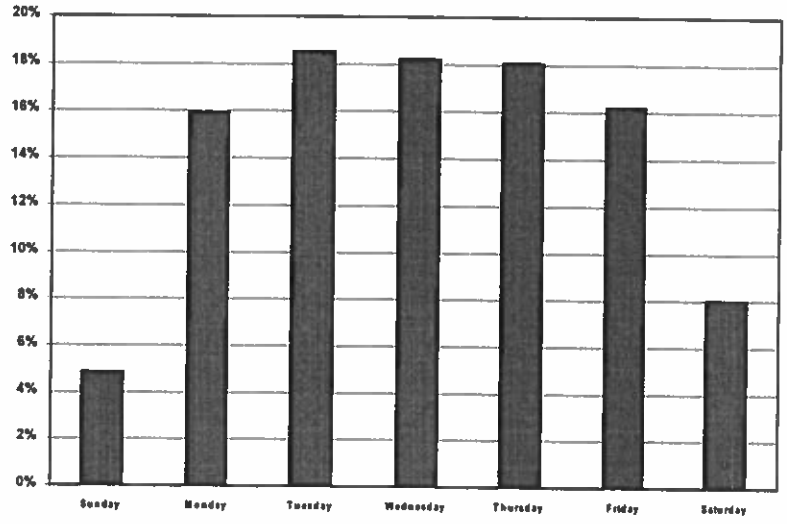
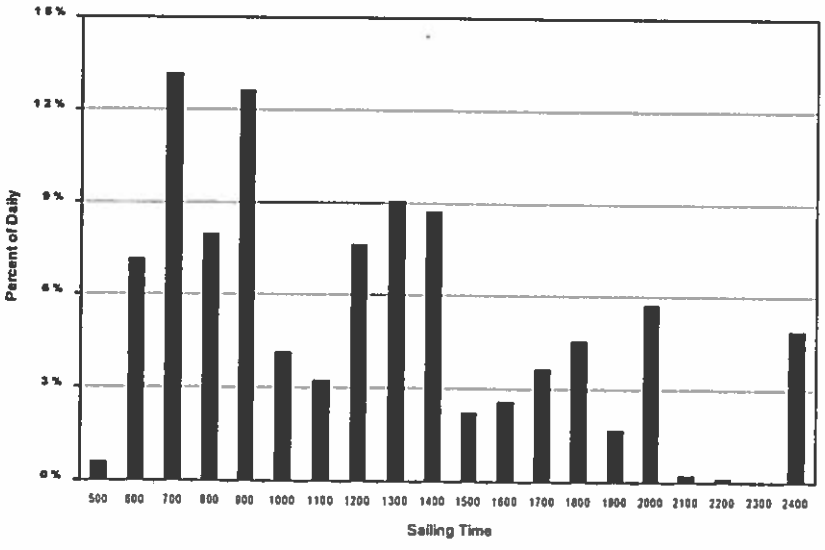
Nantucket's % of Totals

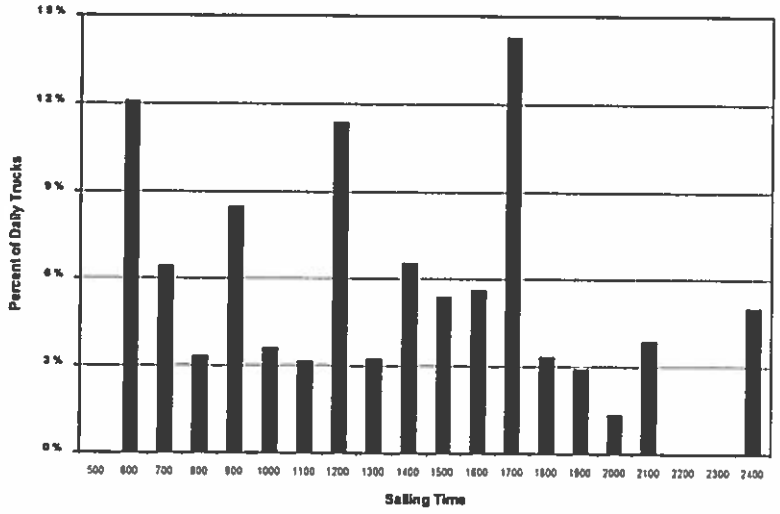
By Day



Trucks to Islands



Trucks from Islands



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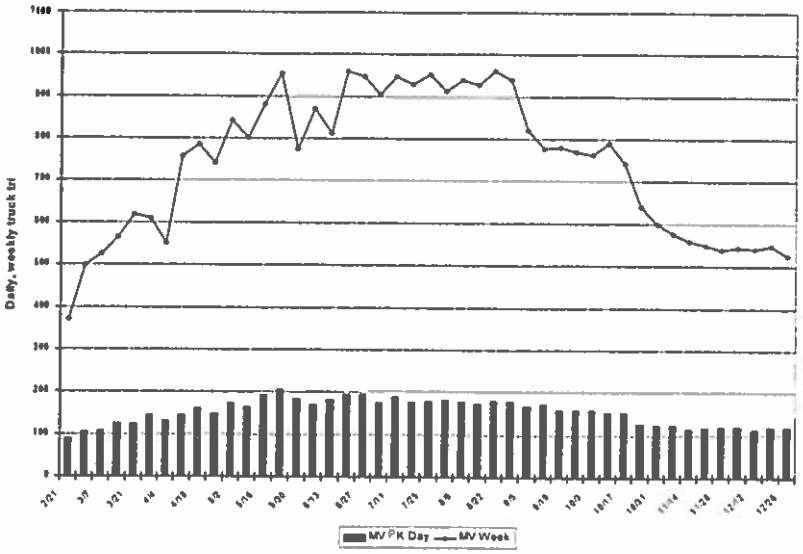
MV Daily, Weekly Trucks



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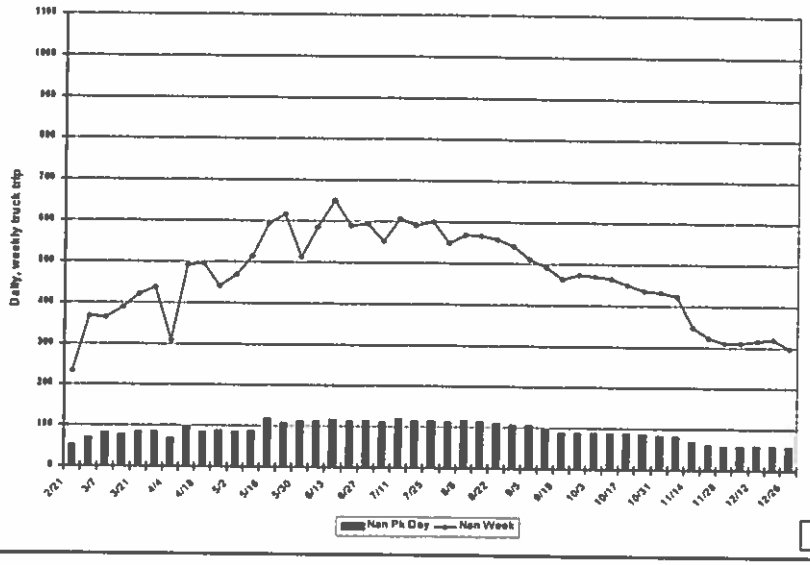
Nantucket Daily, Weekly Trucks



Commodity Summary

- Percent of total trips
  - Construction materials – 39%
  - Food – 27%
  - Fuel – 9%
  - Waste & recyclables – 7%

Freight Origins/Destinations

- Percent of total trips
  - Cape cities – 21%
  - Southeastern Mass – 15%
  - Rhode Island – 16%
  - Other Mass – 37%
- Potential capture by mainland freight facility – 61%

Value of Commodities Carried

- BOTH ISLANDS: $565 Mil (1997E)
- MARTHA'S VINEYARD $320 Mil
- NANTUCKET $245 Mil

- *Building Supplies $200 Mil (35%)*
- *Food & Beverages $190 Mil (34%)*

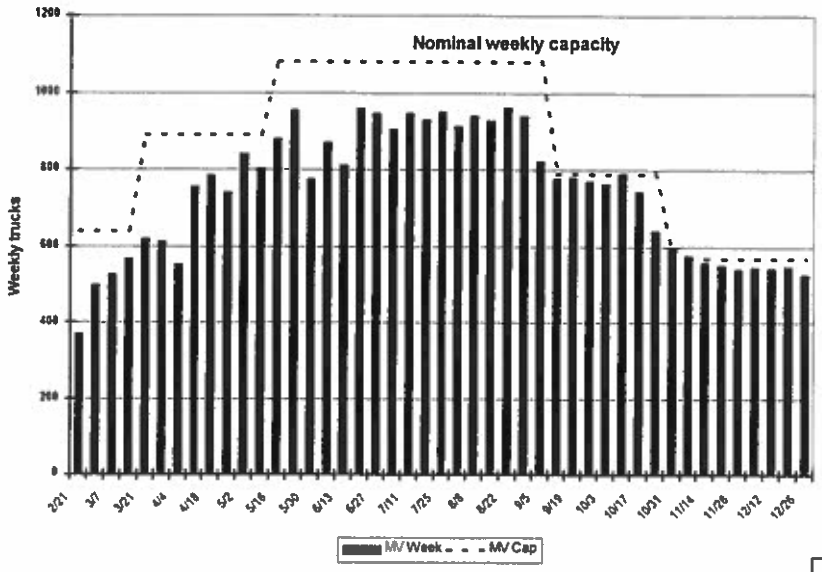
Transport/Distribution Costs

Category	% of Distribution Costs	% of Commodit Values
SSA Truck Fares ($6.8 Mil)	25%	1.2%
Other Transport to Islands ($4.5 M)	17%	0.8%
Other Costs ($15.9 M)	58%	3.0%
Total Distribution Costs ($27.2 mil)	100%	5.0%

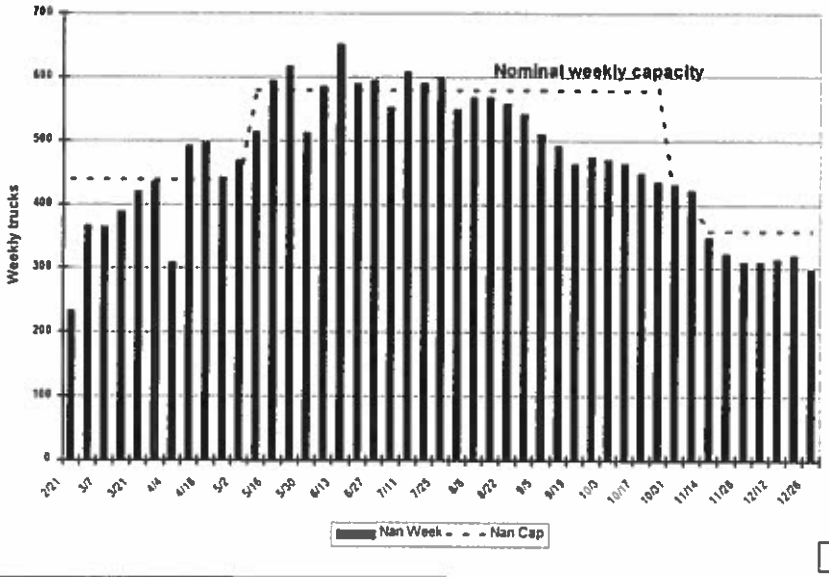
Weekly Volumes

- MV routes
  - Spring, summer avg. = 930 trucks/week
  - Nominal capacity = 1060 trucks/week
  - Vol/cap ratio = 0.88
- Nantucket routes
  - Spring, summer avg. = 580 trucks/week
  - Nominal capacity = 580
  - Vol/cap ratio = 1.00

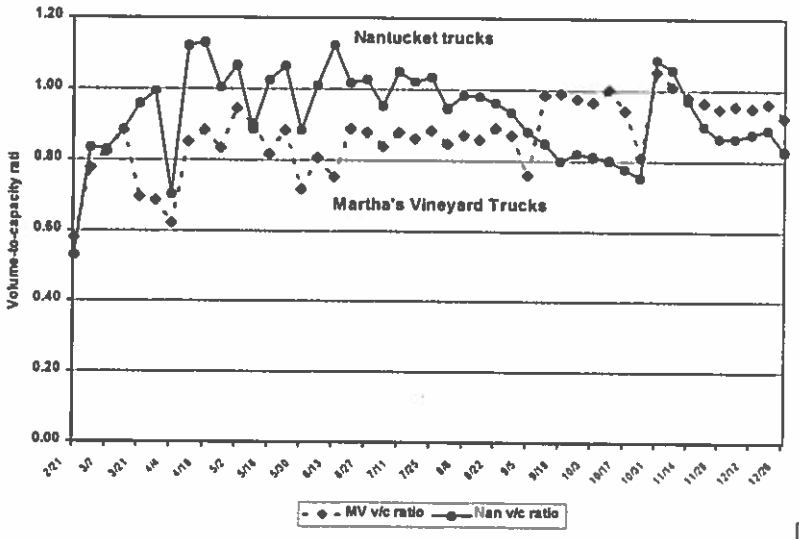
MV Weekly Volume & Capacity



Nantucket Weekly Vol & Capacity



V/C Ratio by Route



Martha's Vineyard Conclusions

- No crisis yet but rapidly approaching freight capacity
- Need to plan for additional truck capacity immediately

Nantucket Conclusions

- Have reached practical capacity for freight
- Need short–term relief and systemwide plan