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Making Sense of Passenger Vessel Data

by Matthew Chambers

The absence of legal definitions to describe waterborne passenger vessels, such as cruise ships and ferries, may pose a challenge for researchers attempting to collect, sort, and analyze passenger data. A variety of definitions are used to describe waterborne passenger vessels and the port and terminal infrastructures that support them (see table 1). Lacking common definitions, identical terminology may cause confusion, particularly when the data are linked to a Federal regulatory or statistical program. For instance, across-the-board definitions that would define a cruise ship by tonnage, passengers, accommodations, and route do not exist.¹

This report characterizes identical or similar terminology that may have different meanings to different users or yield different results for researchers. Further, this report briefly describes the two leading types of passenger vessels and their unique capabilities. In addition, it presents distinct challenges faced by the supporting port and terminal infrastructure unique to each vessel type.

Identical Terminology May Have Different Meanings or Yield Different Results

Several legal definitions or regulations describe ferry and passenger vessels as well as their subtypes (see table 1). For example, in describing passenger vessels, the Federal Maritime Commission specifies a minimum number of berths, whereas the U.S. Coast Guard specifies a minimum number of passengers. In this case, one definition may be more or less inclusive when compared to the other.

Although all passenger vessels are designed and specifically fitted to carry passengers,² differences ranging from the subtle to the obvious exist not only among types of passenger vessels but among their operational capabilities and physical descriptions. Unless it is fully differentiated, data

¹ U.S. Environment Protection Agency, *Cruise Ship White Paper* (August 2000), available at <http://www.epa.gov/> as of February 2011.

² American Bureau of Shipping, *Guide for Building and Classing: Passenger Vessels* (November 2001), available at <http://www.eagle.org/> as of February 2011.

Figure 1: Select Seattle, WA, Cruise and Ferry Terminals, and Ferry Routes



SOURCES: Data derived from multiple sources by the U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics as of March 2011.

Seattle, WA, has significant ferry and cruise activity.

compatibility and the subsequent analysis of data obtained from disparate sources may be misclassified.

Types of Passenger Vessels

Operators choose the type of passenger vessel for a particular route by considering such factors as economics, itinerary, passenger counts, route, and marine environment (e.g., protected v. open waters³). To match changing needs or current weather conditions, a cruise line or ferry operator may deploy vessels with different operational capability and passenger capacities. For example, until recently, Washington State Ferries deployed small 250-passenger-only ferries, such as the *Kalama*, and large Jumbo Mark II-class

³ Protected waters may include bays, lakes, rivers, and other sheltered bodies of water.

Table 1: Identical or Similar Terms with Different Meanings

This table illustrates how Federal agencies assign different meanings to identical terms. For example, the Federal Highway Administration may include water taxis in its definition of ferries for its Ferry Boat Discretionary Program, which provides funding for ferry boats and ferry terminal construction. However, the definition used by the Bureau of Transportation Statistics for its National Census of Ferry Operators, which provides data on ferry operators, routes, terminals, and vessels, specifically excludes water taxis because they do not operate on scheduled, fixed routes.

Source	Legal Definition or Meaning
Ferry	
46 United States Code § 2101, which is available at http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=browse_usc&docid=Cite:+46USC2101 as of March 2011.	...a vessel that is used on a regular schedule—a) to provide transportation only between places that are not more than 300 miles apart; and b) to transport only—i. Passengers; or ii. Vehicles, or railroad cars, that are being used, or have been used, in transporting passengers or goods.
U.S. Department of Homeland Security, United States Coast Guard, 46 Code of Federal Regulations 175.400, available at http://edocket.access.gpo.gov/cfr_2009/octqtr/pdf/46cfr175.400.pdf as of March 2011.	...a vessel that 1) operates in other than ocean or coastwise service; 2) has provisions only for deck passengers or vehicles, or both; 3) Operates on a short run on a frequent schedule between two points over the most direct water route; and 4) offers a public service of a type normally attributed to a bridge or tunnel.
U.S. Department of Transportation, Bureau of Transportation Statistic, National Census of Ferry Operators, available at http://www.bts.gov as of March 2011.	...a vessel that sails an itinerant, fixed route as a common carrier of passengers or vehicles. Railroad car float operations are also included.
Ferry boat and terminal	
U.S. Department of Transportation, Federal Highway Administration, Ferry Boat Discretionary Program, available at http://www.fhwa.dot.gov/discretionary/fbdinfo.cfm as of March 2011.	...whether toll or free, subject to the following conditions: 1) It is not feasible to build a bridge, tunnel, combination thereof, or other normal highway structure in lieu of the use of such ferry. 2) The operation of the ferry shall be on a route classified as a public road within the State and which has not been designated as a route on the Interstate System.
Passenger vessel	
46 United States Code § 2101, which is available at http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=browse_usc&docid=Cite:+46USC2101 as of March 2011.	...a vessel of at least 100 gross tons as measured under section 14502 of this title, or an alternate tonnage measured under section 14302 of this title as prescribed by the Secretary under section 14104 of this title—a) carrying more than 12 passengers, including at least one passenger for hire; b) that is chartered and carrying more than 12 passengers; c) that is a submersible vessel carrying at least one passenger for hire; or d) that is a ferry carrying a passenger.
U.S. Federal Maritime Commission, Passenger Vessel Operators, available at http://www.fmc.gov/ as of March 2011.	...having 50 or more berths or stateroom accommodations and that embark passengers at ports....
American Bureau of Shipping, Guide for Building and Classing: Passenger Vessels (November 2001), available at http://www.eagle.org/ as of February 2011.	...apply to 200-ft or longer oceangoing vessel carrying 12 or more passengers on international routes.
Small passenger vessels	
U.S. Coast Guard, Passenger Vessel Safety Program, available at http://www.uscg.mil as of February 2011.	...are ones that are less than 100 gross tons.
U.S. Department of Transportation, Maritime Administration, Small Vessel Waiver Program, available at http://www.marad.dot.gov/ as of March 2011.	...must be 1), at least, three years old, 2), when in service, cannot carry more than 12 passengers, 3) carry passengers only, and 4) owned by a U.S.-Citizen.
Uninspected passenger vessels	
U.S. Coast Guard, Passenger Vessel Safety Program, available at http://www.uscg.mil as of February 2011.	...carry 6 or fewer passengers for hire....

2,500-passenger/vehicle ferries, such as the *Tacoma* on its many routes (see figure 1).⁴ The *Kalama* and *Tacoma* are both ferries, yet they have quite different capabilities and passenger capacities.

Ferries

According to the National Census of Ferry Operators 2008, in 2007 a typical ferry plying U.S. waters had a median passenger capacity of 149. However, individual ferry capacities ranged from 2 to the nearly 6,000 passengers carried by the *Andrew J. Barberi*, which serves as a Staten Island Ferry in New York, NY. In 2007, ferry operators across the country maintained an active fleet of almost 700 vessels, transporting an estimated 106 million passengers.⁵ In turn, onboard amenities range from barebones to abundant. Depending on the factors such as trip duration, a vessel may offer passengers a wide range of amenities. For instance, some larger ferries may have a few passenger berths or stateroom accommodations, limited food service, or even arcades and gift shops.⁶

Cruise Ships

Cruise ships averaged 2,169 passengers per vessel in 2009, with capacities ranging from 100 passengers to the nearly 6,000-passenger capacity of the recently launched *Oasis of the Seas*, which sails from its home Port Everglades, FL. In 2009, the 17 major cruise lines deployed approximately 109 cruise ships in the United States, carrying about 9.8 million passengers.⁷

Challenges Faced by Port and Terminal Infrastructure

Cruise ships typically provide stateroom accommodations, onboard dining, and entertainment and are physically larger than ferries. Terminals that serve cruise ships embark and disembark large numbers of passengers and their luggage, quickly moving them through customs, ticketing, and passenger screening. Cruise ship terminals may provide shore-side eateries, shopping, travel services, and vending.

As a result, cruise ships place a greater demand on passenger terminals and port infrastructure than do ferries. Both the *Oasis of the Seas*, the world's largest cruise ship, and the ferry *Andrew J. Barberi* can each carry upwards of 6,000 passengers, but the newly expanded Terminal 18, which serves the *Oasis of the Seas* and her sister ship, oc-

cupies 240,000 square feet—about 5 ½ acres.⁸ Terminal 18 is 1 of 12 passenger terminals at Port Everglades (see figure 2). In contrast, the Battery Park Ferry Terminal serving the *Andrew J. Barberi* covers 22,000 square feet—about ½ acre.⁹

Figure 2: State of Florida Ports and Terminals



SOURCES: Derived by the U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics from multiple data sources as of March 2011.

Florida is home to the Nation's most popular cruise departure ports.

Figure 3: Alternative Marine Power

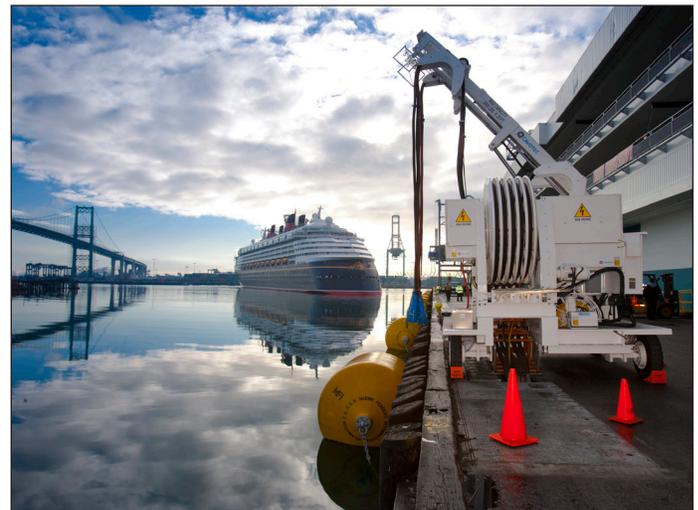


Photo courtesy of the Port of Los Angeles.

Alternative marine power, also called “cold ironing,” uses electricity to reduce diesel-engine emissions from ships while they are in port. Pictured here is the machinery used to connect cruise ships to shore-supplied electric power.

⁴ Washington State Department of Transportation, *Washington State Ferries Vessel by Class*, available at <http://www.wsdot.wa.gov/> as of February 2011.

⁵ U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, *2008 National Census of Ferry Operators*, available at <http://www.bts.gov> of March 2011.

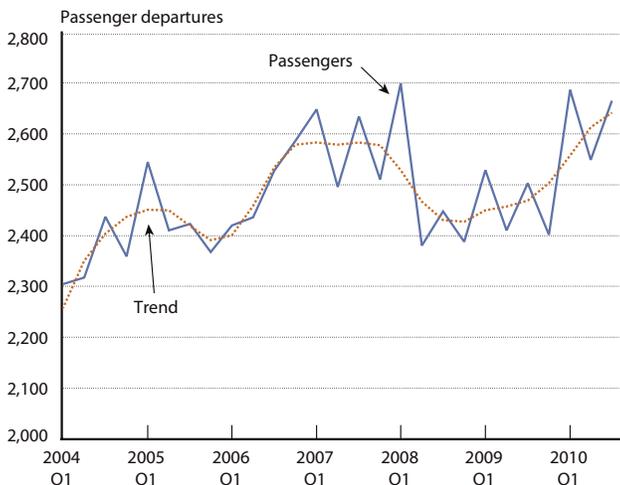
⁶ Cape May-Lewes Ferry, *Meet Our Fleet*, available at <http://www.capemaylewesferry.com/> as of February 2011.

⁷ U.S. Department of Transportation, Maritime Administration, *North America Cruise Summary Data*, available at <http://www.marad.dot.gov/> as of February 2011.

⁸ Port Everglades, *Port Everglades Builds World's Largest Cruise Terminal for World's Largest Ships* (March 2009), available at <http://www.porteverglades.net/> as of February 2011.

⁹ The Port Authority of New York and New Jersey, *New State-of-the-Art Cruise Terminal to Open in Battery Park* (Mar. 18, 2009), available at <http://www.panynj.gov/> February 2011.

Figure 4: U.S. Cruise Passenger Departures: 1Q04–3Q10 (in thousands)



NOTE: Trend calculated using X-12-ARIMA. For additional information, please visit <http://www.census.gov/www/x12a/>.

SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on U.S. Department of Transportation, Maritime Administration; *North America Cruise Summary Data*; available at <http://www.marad.dot.gov/> as of March 2011.

Cruise ships may also have unique environmental or operational requirements. For example, the Port of Los Angeles offers alternative marine power (also known as cold-ironing)¹⁰ at its World Cruise Center in order to curb vessel emissions (see figure 3).¹¹

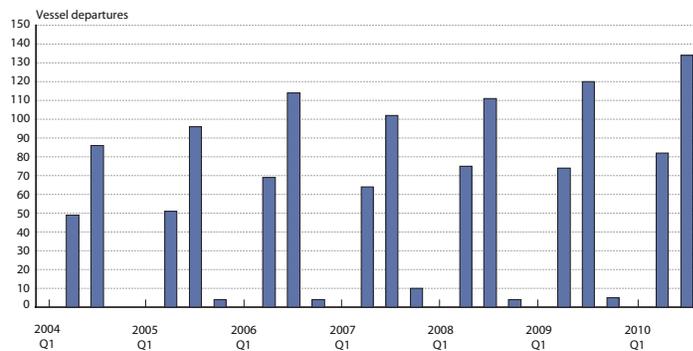
Ferry v. Cruise Boardings

The annual number of ferry passengers exceeds the number of cruise passengers by almost 10 to 1. According to the National Census of Ferry Operators 2008, the number of ferry passengers dipped slightly from 108 million in 2005

¹⁰ Alternative Maritime Power (or Cold Ironing) provides electricity from shore to a docked vessel, thus allowing the vessel to run onboard systems without running its engines.

¹¹ Port of Los Angeles, *Port of Los Angeles 'Plugs In' Three Different Cruise Lines to Shore-Side Electrical Power*, available at <http://www.portoflosangeles.org/> as of March 2011.

Figure 5: Seattle, WA, Cruise Vessel Departures: 1Q04–3Q10 (in thousands)



SOURCE: U.S. Department of Transportation, Research and Innovative Technology Administration, Bureau of Transportation Statistics, based on U.S. Department of Transportation, Maritime Administration; *North America Cruise Summary Data*; available at <http://www.marad.dot.gov/> as of March 2011.

to 106 million passengers in 2007. The number of cruise passengers increased by about half a million, from 9.8 million to 10.3 million, during the same period (see figure 4).

Seasonality affects cruise and ferry operations differently. For example, in Seattle, WA, the majority of ferry services operate year round; whereas cruise ships depart Seattle almost exclusively in the warm summer months. (2nd and 3rd quarters—see figure 5).

Fully understanding the difference in the industry standards and legal definitions, particularly when they are linked to regulatory or statistical programs, will help improve data and information quality. Furthermore, this knowledge will help clarify understanding of the entire transportation system and how it works. This understanding, in turn, will help facilitate data comparability by helping data users see how and why the terms are used by Federal agencies as well as informed decision-making. 🔄

About This Report

Matthew Chambers, a Senior Transportation Specialist, in the Bureau of Transportation Statistics (BTS) prepared this fact sheet. Dominic Menegus, a Geographic Information Systems (GIS) Analyst, provided special assistance creating the maps. Special thanks to Chip Moore, the RITA Editor, for his assistance. BTS is a component of the U.S. Department of Transportation's Research and Innovative Technology Administration (RITA).

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- *Ocean Passenger Terminals: Serving Larger Vessels Closer to Home and Central Transit Connections (2010)*
- *Making Connections: Intermodal Links Between Regular route Passenger Ferries and Other Passenger Transportation Modes (2009)*
- *Highlights of the 2006 National Census of Ferry Operators (2008)*
- *Multiple Imputation of Missing Passenger Boarding Data in the National Census of Ferry Operators (2006)*