

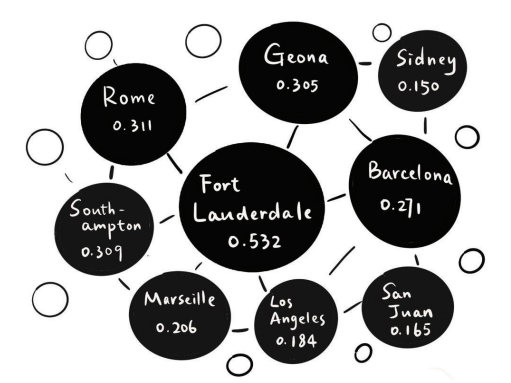
Mapping World Cruise Network

Degree Centrality Analysis

Port	Area	Indegree Centrality
Cozumel	Central America	0.448
St.Thomas	Central America	0.387
St. Martin	Central America	0.387
Antigua	Central America	0.354
St. Lucia	Central America	0.343
Nassau	Central America	0.315
Galapagos	Central America	0.310
Grand Cayman	Central America	0.304
Aruba	Central America	0.293
Panama Canal	Central America	0.293

Port	Country	Outdegree Centrality
Fort Lauderdale	US	3.782
Miami	US	1.354
Sydney	Australia	1.327
Southampton	UK	1.144
Los Angeles	US	0.979
Barcelona	Spain	0.918
Singapore	Singapore	0.918
San Juan	Puerto Rico	0.874
Rome	Italy	0.774
Genoa	Italy	0.630

Core-Periphery Structure



In general, the ports with higher indegree centrality are located in the Caribbean or other well-known destinations in the region, while the higher outbound centrality is found in the major port cities of North America and Europe. At the same time, the outbound and inbound centrality of the world cruise port network is uneven. The ranking distribution of inbound centrality is more even, while that of outbound centrality is more polarized. The ports in the core position according to the core edge analysis are all affiliated with large port cities in developed countries, while there are no port cities in developing countries/regions.

Data Preprocessing

The global cruise itinerary data of January 2019 were searched from Cruise Critic. This research obtained the origin port, stopover, and destination of each cruise itinerary, as well as obtaining the cruise itinerary name, ship type, and operating company. The raw data is organized into a **network data set** that can be used for network analysis. Since a cruise embarks in one port and then travels to several places for excursions without embarking or disembarking in between, it has been drafted to divide a voyage into departure and destination, and the resulting connection is a directed connection from the departure to the destination, i.e., the departure tourists are connected to the destination. (Fig. 1.) Another **route data set** is formed with real route information, and the nodes are no longer divided into origins and destinations in order to show the real route situation. (Fig. 2.)

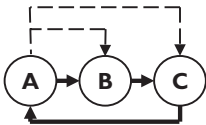


Fig.1. Network Dataset

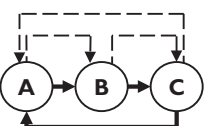


Fig.2. Route Dataset

World Market Share

In total, Royal Caribbean, Carnival and Genting accounted for 64% of the total cruise lines in the data for this study. Royal Caribbean operates mainly Caribbean itineraries, South America, Oceania ANZAC. Genting has some Caribbean and European itineraries. Carnival is far more intensive than the first two and operates routes around the world, covering almost all regions.

