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# A meta-analysis of the direct economic impacts of cruise tourism on port communities

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ABSTRACT

This research provided a meta-analysis of the direct economic impacts of cruise tourism, using a meta-regression, an Ordinary Least Square model, a fixed-effects model, and Sobel-Goodman mediation tests. The results revealed a significantly positive coefficient between direct economic impacts and: number of passengers, number of crew members, number of cruise lines, expenditures per passenger, and expenditures per cruise line. It was further found that cruise lines had significant mediation effects on the expenditures per passenger and per crew member at port destinations. Compared to North American markets, the direct economic impacts of cruise tourism on ports in the Caribbean markets and other emerging markets were significantly lower.

## 1. Introduction

Since the 1980s, the cruise industry has been one of the fastest growing international tourism sectors, experiencing an average annual passenger growth rate of approximately 7% according to the Florida-Caribbean Cruise Association (FCCA, 2017). The Cruise Line International Association (CLIA, 2016) found that 23.2 million cruise passengers spent $1.99 billion on port visits in 2015, contributing 45,225 jobs and $728.1 million in wage income to port destinations. A study conducted by Business Research and Economic Advisors (BREA, 2014) argued that the main sources of direct economic impact on port destinations can be divided into three categories: 1) expenditures by cruise passengers on shore (mainly referred to as shore excursions), 2) crew member spending (mostly on food and beverages), and 3) cruise line purchases of shipping storage and a variety of port (agent) services. These three expenditure segments are likely to be retained by the local economies of port destinations, to the direct benefit the port communities (Brida, Lanzilotta, Moreno, & Santiñaque, 2018; Diakomihalis, Lekakou, Stefanidaki, & Syriopoulos, 2009; Dwyer, Douglas, & Livaic, 2004).

It has also been reported that the indirect impacts of cruise tourism related services and government sectors, including local tourism operators, wholesale trade, transport, lodging, restaurants and bars, manufacturing, retail trade, and port taxes, have induced additional revenues and increased employment rates for cruise ports (CLIA, 2015). However, some scholars have argued that port destinations have failed to produce economic benefits for local communities beyond the associated costs (Johnson, Snepenger, & Akis, 1994; Klein, 2011; McCarthy, 2003). Yet, Thomas and Stoeckl (2015) found that the economic impacts of cruise tourism are generally greater than the direct expenditures of cruise tourists, crew members and cruise lines, and are related to the local industrial structure and economic multipliers. Given that the indirect economic impacts and other costs are difficult to measure (Pulido-Fernández, Cárdenas-García, & Carrillo-Hidalgo, 2017; Wang & Davidson, 2010), this research focusses on direct economic benefits in hopes of better understanding the economic contribution of cruise tourism to port communities.

It has been suggested that framing the terms of direct economic impacts can be a useful way for enabling the involvement of local stakeholders (Carneiro & Crompton, 2010; Harnik & Crompton, 2014; Marcussen, 2016). Given the importance of tourism to local economies, examination of the direct economic impacts of cruise tourism, while a challenging subject (Gargano & Grasso, 2016; Gouveia & Eusébio, 2018; Pallis, 2015), is likely very important for policymakers and port authorities. It is believed that this study is the first attempt to quantify the direct economic impacts of cruise tourism on port communities from a

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global perspective. It is further believed that the results could contribute to the current literature by gaining new insights into cruise tourism based on global markets, suggesting potential policies for cruise port communities, and adding to the theoretical conceptualization of systematic cruise tourism research.

## 2. Literature review

Cruise tourism studies have primarily focused on cruise passenger behavior (DiPietro & Peterson, 2017; Petrick, 2004; Petrick & Durko, 2015), as well as on the impacts of cruise tourism on regional economies (Dwyer & Forsyth, 1998; Gabe, Gayton, Robinson, McConnon, & Larkin, 2017; Penco & Di Vaio, 2014). Considering the exponential growth in passenger rates and the continuous development of this tourism sector, it has historically been argued that cruise tourism is one of the largest areas of tourism inquiry, but systematic studies in this field have been suggested to still be very rare (Klein, 2009; Papathanassis & Beckmann, 2011).

Chen, Lijesen, and Nijkamp (2017) proposed a conceptualization of two-sided markets related to the cruise tourism industry, and suggested that cruise lines play the role of a hybrid intermediary connecting cruise tourists with ports. This particular model is reflected in cruise tourist expenditures and the pricing schemes employed by port destinations. Accordingly, their conceptualization guided the research framework of the current study and the following review discusses studies related to the relationships among cruise lines, tourists, and ports. Thus, this research aimed to justify the hypotheses derived from these relationships among the main stakeholders and to measure the coefficients of their economic impacts on port destinations.

Lue, Crompton, and Fesenmaier (1993) proposed that cruise tourism is a typical “multi-destination” travel pattern with the cruise ship as a “single destination” and “multiple ports of call” to attract cruise tourists. Yet, based on where research has typically been conducted, it could be argued that cruising has predominantly been regarded as a cruise ship-centric form of tourism (Hung & Petrick, 2011; Qu & Ping, 1999; Satta, Parola, Penco, & Persico, 2015). Recent research reveals that cruise tourists are motivated by not only onboard experiences, but also shore attractions at port destinations (Chen, Neuts, Liu, & Nijkamp, 2016; Hung & Petrick, 2011; Zou, Migacz, & Petrick, 2017). Furthermore, it seems that cruise tourists are willing to pay more to visit attractive port destinations (Neuts, Chen, & Nijkamp, 2016; Petrick, Li, & Park, 2007; Xie, Kerstetter, & Mattila, 2012), and that expenditures at port destinations significantly contribute to local economies (Andriotis & Agiomirgianakis, 2010; Brida, Fasone, Scuderi, & Zapata-Aguirre, 2014; Douglas & Douglas, 2004). Based on these findings, the following hypotheses have been formulated:

**H1a.** A cruise tourist's expenditures have a positive influence on direct port economic impacts.

**H1b.** The number of cruise tourists has a positive influence on direct port economic impacts.

In contrast to passenger expenditures, the economic contribution of crew members (mainly from expenditures on food and beverages) has been suggested to be under-researched (Diakomihalis et al., 2009; Dwyer & Forsyth, 1998; Gouveia & Eusébio, 2018). Since BREA (2014) and CLIA (2015) have both argued that crew member expenditures are one of the three main economic contributors to cruise port economies, it is likely important to include them in economic analyses. Thus, in order to produce a more comprehensive analysis, the expenditures and number of crew members have also been included in the present research. Consequently, two more hypotheses were proposed:

**H1c.** A crew member's expenditures have a positive influence on direct port economic impacts.

**H1d.** The number of crew members has a positive influence on direct port economic impacts.

Research on the impact of cruise lines' business transactions with their ports of call has also historically been quite rare. Some scholars have discussed the economic impacts of cruise lines on ports from a destination perspective (Braun, Xander, & White, 2002; Brida & Zapata, 2010; Marksel, Tominc, & Božičnik, 2017), in particular in terms of substantial logistics services (BREA, 2014; Pratt & Blake, 2009) and the increasing number of mega-sized cruise ships (Brida, Pulina, Riaño, & Zapata-Aguirre, 2012; FCCA, 2017). Yet empirical evidence of these impacts on ports is scant. Therefore, the following hypotheses have been proposed:

**H2a.** A cruise line's expenditures have a positive influence on direct port economic impacts.

**H2b.** The number of cruise lines has a positive influence on direct port economic impacts.

It has been suggested that cruise tourists seldom leave the cruise ship “bubble”, either because they book shore excursions directly with the cruise line or stay within the limits of the port area (Brida, Bukstein, Garrido, & Tealde, 2012; Jaakson, 2004; Weaver, 2005). It has been argued that this specific travel pattern can result in significant economic leakage to the visited ports (Brida, Bukstein, & Tealde, 2015; Larsen, Wolff, Marnburg, & Øgaard, 2013). However, Dawson, Johnston, and Stewart (2017) stated that cruise tourists have comparatively higher average expenditures than land-based tourists in visited ports. In respect to cruise tourists' spending at the destinations visited, Chen et al. (2017) further suggested that cruise lines may serve an intermediary role between cruise tourists and port destinations. Additionally, a cruise line's length of stay in a port is most likely highly related to the expenditures of cruise passengers and crew members spend at port destinations. Since the length of stay in a port has been found to be a critical issue for cruise lines' itinerary planning (Chen, Zhang, & Nijkamp, 2016), it was thus believed to be important to empirically test how much visitation times mediate the expenditures of cruise passengers while at port destinations. Given that the current study includes cruise tourists, crew members, and cruise lines, a third set of hypotheses was formulated as follows:

**H3a.** A cruise line's length of stay in a port has positive mediation effects between a cruise tourist's expenditures at port destinations and its direct economic impacts on the port.

**H3b.** A cruise line's length of stay in a port has positive mediation effects between a crew member's expenditures at port destinations and its direct economic impacts on the port.

On the basis of the aforementioned hypotheses, this research aims to empirically test the conceptualization of two-side cruise market (Chen et al., 2017) in the tourism sector. This study attempts to contribute to the tourism literature by introducing conceptualization of two-sided cruise markets and by further validating the mediation effects of cruise lines (see Fig. 1). Beyond the theoretical significance of the current study, examining the direct economic benefits derived from cruise tourism could provide managerial guidance for stakeholders in cruise tourism industry. Although the direct economic benefits of cruising on the ports visited are commonly attributed to the spending of cruise lines, cruise passenger and crew members, past research has not examined the impact of each stakeholder and the economic relationships between them. Based on a multi-resource data integration approach, the current research has the potential to make a significant contribution to cruise tourism research via a comprehensive quantitative meta-analysis of previous studies on cruising.

## 3. Data description

Meta-analysis involves the statistical examination of findings from prior research and data collection is the most critical part of the analysis processes (Nelson & Kennedy, 2009). Based on an extensive review of

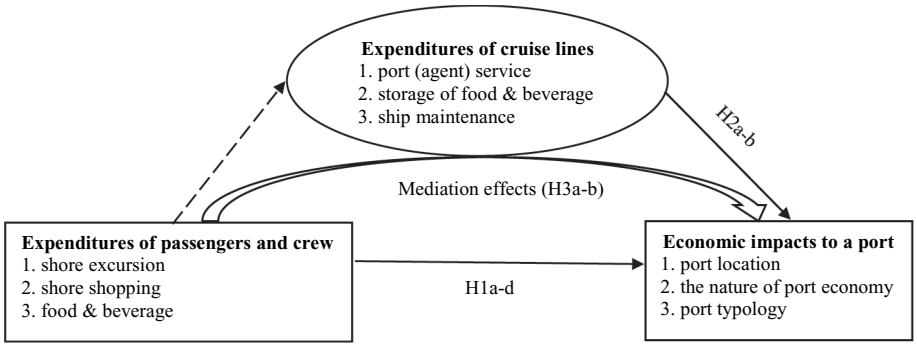


**Fig. 1.** Proposed hypotheses and research framework (adjusted from Chen et al., 2017).

the literature, the meta-analysis in this research included: 17 journal articles (studies coded 1 to 17), two conference papers (studies coded 18 and 19), two working papers (studies coded 20 and 21), and nine reports (studies coded 22 to 30). Regarding that the criterion is 27 studies to meet 80% statistical power on conducting a fixed effects meta-analysis (Cohen, 1988; Valentine, Pigott, & Rothstein, 2010), the modest sample size in this research was believed to be acceptable. It has been widely suggested that meta-analyses should include "grey literature" (e.g., conference proceedings, dissertations, and technical reports) to integrate previous research findings comprehensively (Hoogstra, Van Dijk, & Florax, 2017; Rothstein, Sutton, & Borenstein, 2006; Schmidt & Hunter, 2014). Moreover, most of the peer-reviewed journal articles in this area of inquiry have used survey data and it is believed that the evaluation of economic impacts should not ignore the value of big samples from industry and official data (Papathanassis & Klein, 2015; Papathanassis, Matuszewski, & Brejla, 2012). Thus, industry reports from seven official research associations (e.g., CLIA, FCCA, and BREA) were included in this research, in order to improve the diversity of data resources.

Accordingly, the sampling process was based on eight observed variables, including: cruise passenger expenditures, number of cruise passengers, crew expenditures, number of crew members, cruise line expenditures, number of cruise lines, cruise passenger length of stay, and the direct economic impacts on port communities. The coding process of the variables utilized in related studies is displayed in Table 1.

The characteristics of the 30 studies, such as publishers, authors' nationalities, method types, port locations, data periods, data sources, and number of observations, were presented in Table 2. Three types of data were collected (industry/official and survey data) from these 30 articles, and a variety of methodologies were applied (e.g., computable equilibrium, OLS, Tobit, Heckit, and descriptive analysis). With regards to the repeated observations (obs. > 1), one study could be observed several times (e.g., obs. = 2 in study coded 1) and there are 180 observations in total. Hence, the dataset is imbalanced in the sense that some variables have more observations than others.

## 4. Modeling and results

Based on the above systematic description, several issues were considered for this panel structure data: first, the studies had non-panel data of an imbalanced nature, and therefore a study ID of clustering the diverse observations should be included to reduce statistical heterogeneity; second, a set of dummy variables of data characteristics can be used to control the fixed effects; and third, the related independent variables of cruise passengers, cruise lines, and cruise ports are at the same level and do not contain multiple hierarchy dimensions among the three factors in the dataset. Thus, a three-stage modeling process was applied: (i) a fixed-effects meta-regression model was used to measure the effect size of each study; (ii) an OLS model was used to quantify the coefficient between the dependent variable and each independent variable, followed by a fixed-effects model to reduce the imbalance of the dataset and to check the robustness of the OLS model; and (iii) a Sobel-Goodman model was applied to test the mediation effects of cruise lines on the expenditures of cruise tourists and crew members.

### 4.1. Meta-analysis

Meta-analysis was originally used for medical research and treatment effects (e.g., odds ratios and risk differences), and has hence been utilized to evaluate the effectiveness of various treatments (Glass, MacGaw, & Smith, 1984; Sutton, Abrams, & Jones, 2000). In social science, effect size has historically been used to measure the treatment effects of different sample sizes and its weighted standardized value has been employed when determining the strength of the relationships (Longhi, Nijkamp, & Poot, 2008), typically with a 95% confidence

**Table 1**
Coding process of observed variables in the related literature.

| Observed variables | Coded studies |
|---|---|
| Passenger expenditures | 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30 |
| The number of passengers | 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30 |
| Crew expenditures | 1, 3, 12, 13, 15, 17, 19, 23, 24, 25, 26, 27 |
| The number of crew members | 1, 3, 12, 13, 15, 17, 19, 20, 22, 23, 24, 25, 26, 27 |
| Cruise line expenditures | 1, 3, 4, 5, 12, 17, 18, 19, 20, 23, 24, 25, 26, 27, 28, 30 |
| The number of cruise lines | 1, 3, 4, 5, 12, 15, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 30 |
| Passenger length of stay | 2, 3, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 17, 19, 20, 22, 26, 27, 29 |
| Direct economic impacts on ports | 1, 3, 4, 5, 12, 17, 18, 19, 20, 21, 23, 24, 25, 26, 27, 28, 29, 30 |

Note: 1. Dwyer and Forsyth (1998); 2. Henthorne (2000); 3. Douglas and Douglas (2004); 4. Braun et al. (2002); 5. Pratt and Blake (2009); 6. Brida and Zapata (2010); 7. Brida and Risso (2010); 8. Brida, Bukstein, et al. (2012); 9. Brida, Pulina, et al. (2012); 10. Brida, Pulina, Riaño, and Aguirre (2013); 11. Larsen et al. (2013); 12. Penco and Di Vaio (2014); 13. Brida et al. (2014); 14. Andriotis and Agiomirgianakis (2010); 15. Seidl, Guiliano, and Pratt (2007); 16. Satta et al. (2015); 17. Dwyer et al. (2004); 18. Diakomihalis et al. (2009); 19. Thomas and Stoeckl (2015); 20. Gabe et al. (2017); 21. Pallis (2015); 22. Jamaica report (2007); 23. FCCA report (2012); 24. CLIA report (2013); 25. BREA report (2014); 26. Australia report (2014); 27. BREA report (2015); 28. Hawaii report (2003); 29. Martin report (2014); 30. BREA report (2014).

**Table 2**
Summary of publication characteristics.

| Code | Journal or publisher | Author nation | Method | Location | Time | Source | Obs. |
|---|---|---|---|---|---|---|---|
| 1 | *Annals of Tourism Research* | Australia | Computable equilibrium | Australia | 1995 | survey | 2 |
| 2 | *Journal of Travel Research* | USA | OLS | Jamaica | 1993 | survey | 1 |
| 3 | *International Journal of Tourism Research* | Australia | Descriptive | Port Vila | 2002 | survey | 1 |
| 4 | *Tourism Economics* | USA | Descriptive | Canaveral | 1999 | industry | 1 |
| 5 | *Tourism Analysis* | China, H.K. | Computable equilibrium | Hawaii | 2002 | official | 1 |
| 6 | *Anatolia* | Italy, Columbia | Descriptive | Costa Rica | 1994–2007 | survey, official | 13 |
| 7 | *Tourism Analysis* | Italy | OLS, Tobit | Costa Rica | 2006–2008 | survey, official | 3 |
| 8 | *Ocean and Coastal Management* | Italy | OLS, Tobit | Cartagena | 2009 | survey | 1 |
| 9 | *Tourism Economics* | Italy | OLS, Logit | Cartagena | 2009 | survey | 1 |
| 10 | *Tourism Geography* | Italy | Cluster | Cartagena | 2009 | survey | 6 |
| 11 | *Tourism Management Perspectives* | Norway | Descriptive | Bergen | 2010–2012 | survey | 3 |
| 12 | *Maritime Policy & Management* | Italy | Descriptive | Italy | 2012 | survey, official | 3 |
| 13 | *Tourism Economics* | Italy | Tobit, Heckit | Uruguay | 2011 | official | 3 |
| 14 | *International Journal of Tourism Research* | Cyprus | OLS | Crete | 2005 | survey | 1 |
| 15 | *Tourism Economics* | USA | Descriptive | Costa Rica | 2002–2004 | survey, official | 9 |
| 16 | *Tourism Geography* | Italy | Descriptive | Italy | 2012 | survey | 4 |
| 17 | *Tourism Maritime Environment* | Australia | Descriptive | Cairns | 2001 | official | 1 |
| 18 | Conference paper | Greece | Descriptive | Greece | 2005 | official | 1 |
| 19 | Conference paper | Australia | Descriptive | Cairns | 2013 | official | 1 |
| 20 | Working paper | USA | Descriptive | Bar Harbor | 2002 | survey, industry | 2 |
| 21 | Working paper | Europe | Descriptive | Global | 2013 | industry | 2 |
| 22 | Jamaica report | Jamaica | Descriptive | Jamaica | 2006 | survey | 1 |
| 23 | FCCA report | USA | Descriptive | Global | 2008 | industry | 1 |
| 24 | CLIA report | USA | Descriptive | Europe | 2013 | survey, industry | 1 |
| 25 | BREA report | USA | Descriptive | US | 2014 | industry | 16 |
| 26 | Australia report | Australia | Descriptive | Port Vila | 2013 | industry | 3 |
| 27 | BREA report | USA | Descriptive | Caribbean | 2014 | survey, industry | 76 |
| 28 | Hawaii report | USA | Descriptive | Hawaii | 2002–2003 | industry | 2 |
| 29 | Martin Associates | USA | Descriptive | Boston | 2012 | survey | 2 |
| 30 | BREA report | USA | Descriptive | Asia | 2014 | industry | 18 |

interval for each study being measured (Akgün, Baycan-Levent, Nijkamp, & Poot, 2011; Cohen, 1988).

In this research, a generic meta-regression model was used to examine the proposed hypotheses regarding the direct economic effects of cruise tourism. The factors of cruise passengers, crew members, cruise lines, lengths of stay, port characteristics dummies, and year dummies were all employed to identify the value of the direct economic impacts of one-unit change in each variable. Thus, the model was:

$$E = \alpha + \beta_i Pax_i + \gamma_j Cre_j + \sigma_k Lin_k + \eta_l Dur_l + \delta_m Por_m + \theta_n Dat_n + \mathcal{E},$$

where $E$ is the dependent variable of direct economic impact of cruise tourism; $Pax_i$ denotes the average expenditures and number of cruise passengers per port visit; $Cre_j$ indicates the average expenditures and number of crew members per port visit; $Lin_k$ means the average expenditures and port visit frequency of cruise lines in a year; $Dur_l$ is the cruise lines' mediation effects on the expenditures of cruise passengers and crew members; $Por_m$ indicates the port location, typology, and nature of the economy; and $Dat_n$ means the port data source and time periods by year.

With respect to multiple independent variables, this research used weighted effect sizes for cruise passengers, crew members, and cruise lines. Table 5 illustrated that the combined total effect size is significantly large (> 0.800), except for the non-significant items in study coded 10 (0.362), study coded 11 (0.480), study coded 13 (0.722), study coded 14 (0.765), and study coded 29 (0.449). Cohen (1988) suggested that a medium effect size (between 0.300 and 0.800) is acceptable, so these five studies were also used in the subsequent pooled OLS model (Table 3).

### 4.2. Measurement models

Concerning the measurement inconsistency in different studies in the meta-analysis, further measurement models included only 81 observations, and the statistics of the eight observed variables are described in Table 4. It is worth noting that all the monetary variables in Table 4 have been converted into US dollar ($) according to the real-time exchange rate reported in each study. The large value of standard deviations within the variables is an indicator of the diversity of the datasets reviewed. In studies similar to the present work, data bias was suggested as prevalent, due to differences in data sources and the multiple techniques used to measure the imbalanced estimates (Crompton, Jeong, & Dudensing, 2016; Shrestha & Loomis, 2001).

In order to reduce the variability and heterogeneity across each observation and groups of observations, it has been suggested to apply a log transformation to the large periodic variables (Darden, York, & Pedersen, 1993; Mertens, 2016; Sargan, 1964). Therefore, seven variables were transformed including: expenditures per passenger, number of passengers per port visit, expenditures per crew member, number of crew members per port visit, expenditures per cruise line visit, number of cruise lines, and direct economic impacts of cruise tourism on ports per year. Cruise ports also have critical characteristics that can influence the consumer behavior of cruise passengers, crew members, and cruise lines, such as their likelihood of re-visitation and willingness-to-pay (Brida & Risso, 2010; Oppermann, 1996; Petrick, Tonner, & Quinn, 2006). Thus, certain port characteristics have been identified, including: the port locations in different regions (de la Vina & Ford, 2001; Lekakou, Pallis, & Vaggelas, 2009); the port typology of the home port and ports of call (Brida et al., 2013; Henthorne, 2000); and the economies of land-based or island ports (Dawson et al., 2017; McKee & Chase, 2003; Pallis, 2015). Accordingly, eight dummy variables concerning port characteristics are summarized in Table 5.

It has been argued that comparisons within the same level might serve as a countermeasure for reducing data imbalances (Driscoll & Kraay, 1998; Koetse, de Groot, & Florax, 2009). Thus, the current study applied an OLS model by clustering the 81 observations, and data dummy variables relating to the data source and the time period were used. To identify the potential mediation effects of cruise lines on the expenditures of cruise passengers and crew members, an additional mediation approach (Baron & Kenny, 1986) was applied. Specifically, the most common Sobel-Goodman mediation test (Fritz & Mackinnon,

**Table 3**
A meta-regression on direct economic impacts of cruise tourism on ports with cruise lines' mediation effects.

| Code | weighted effect size of passengers^ | weighted effect size of crew^ | weighted effect size of cruise lines | combined total effect size | CI^ | p |
|---|---|---|---|---|---|---|
| 1 | 0.894 | 0.946 | 1.000 | 0.947 | 0.873–1.000 | *** |
| 2 | 0.949 | – | – | 0.949 | 0.937–0.959 | *** |
| 3 | 0.925 | 0.940 | 1.000 | 0.955 | 0.909–1.000 | *** |
| 4 | 1.000 | – | 0.996 | 0.998 | 0.996–1.000 | *** |
| 5 | – | – | 1.000 | 1.000 | 1.000–1.000 | *** |
| 6 | 0.999 | – | – | 0.999 | 0.999–1.000 | *** |
| 7 | 0.911 | – | – | 0.911 | 0.893–0.926 | *** |
| 8 | 0.994 | – | – | 0.994 | 0.992–0.996 | *** |
| 9 | 0.961 | – | – | 0.961 | 0.949–0.970 | *** |
| 10 | 0.362 | – | – | 0.362 | 0.289–0.443 | *** |
| 11 | 0.480 | – | – | 0.480 | 0.405–0.556 | 0.152 |
| 12 | 0.734 | 0.996 | 1.000 | 0.910 | 0.670–1.000 | *** |
| 13 | 0.887 | 0.557 | – | 0.722 | 0.488–0.898 | 0.036 |
| 14 | 0.530 | 1.000 | – | 0.765 | 0.454–1.000 | 0.152 |
| 15 | 0.929 | 0.993 | – | 0.961 | 0.914–0.995 | *** |
| 16 | 0.763 | 1.000 | – | 0.882 | 0.704–1.000 | *** |
| 17 | 0.911 | 0.985 | 1.000 | 0.965 | 0.893–1.000 | *** |
| 18 | 1.000 | 1.000 | 0.992 | 0.997 | 0.992–1.000 | *** |
| 19 | 0.997 | 0.996 | 1.000 | 0.998 | 0.995–1.000 | *** |
| 20 | 0.999 | 1.000 | – | 1.000 | 0.999–1.000 | *** |
| 21 | 0.989 | 1.000 | – | 0.995 | 0.987–1.000 | *** |
| 22 | 1.000 | 1.000 | 0.953 | 0.984 | 0.952–1.000 | *** |
| 23 | 1.000 | 1.000 | 0.999 | 1.000 | 0.999–1.000 | *** |
| 24 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000–1.000 | *** |
| 25 | 0.996 | 0.983 | 1.000 | 0.993 | 0.975–1.000 | *** |
| 26 | 1.000 | 1.000 | 0.972 | 0.991 | 0.972–1.000 | *** |
| 27 | 0.941 | 1.000 | 1.000 | 0.980 | 0.927–1.000 | *** |
| 28 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000–1.000 | *** |
| 29 | 0.771 | 0.127 | – | 0.449 | 0.084–0.808 | *** |
| 30 | 0.979 | 1.000 | 0.992 | 0.989 | 0.977–1.000 | *** |
| Fixed-effects | 0.996 | 1.000 | 0.997 | 0.996 | 0.996–1.000 | *** |

Note: ^ with cruise lines' mediation effects; ^ confidence intervals (CI) level 95%; ***$p < 0.001$.

**Table 4**
Summary of observed variables.

| Observed variables | Mean | Std. Dev. | Min. | Max. |
|---|---|---|---|---|
| Expenditures per passenger | 164 | 198 | 19 | 896 |
| Number of passengers per port visit | 1928 | 693 | 208 | 4875 |
| Expenditures per crew member | 53 | 26 | 5 | 189 |
| Number of crew members per port visit | 498 | 348 | 146 | 1846 |
| Expenditures per cruise line visit | 123,079 | 192,929 | 8953 | 864,450 |
| Number of cruise lines | 1951 | 8983 | 1 | 57,450 |
| Length of stay in hours | 5 | 1 | 3 | 10 |
| Direct economic impacts on ports per year | 1270,000,000 | 6,080,000,000 | 79,546 | 49,300,000,000 |

Note: There are 81 observations and the monetary value has been converted into US dollars ($).

**Table 5**
Summary of port characteristic dummy variables.

| Dummy variables | | Obs. | % | Total |
|---|---|---|---|---|
| Port location | North American markets | 7 | 8.64 | |
| | Caribbean markets | 40 | 49.38 | 81 (100%) |
| | European markets | 4 | 4.94 | |
| | Emerging markets (Asia-Pacific-South America) | 30 | 37.04 | |
| Nature of port economy | Island economy | 47 | 58.02 | 81 (100%) |
| | Land-based economy | 34 | 41.98 | |
| Port typology | Port of call | 45 | 55.56 | 81 (100%) |
| | Home port | 36 | 44.44 | |

2007) was used, which relies on a normal distribution (Preacher & Hayes, 2008). Given that the log of cruise economic impacts on a port approximates a normal distribution (see Fig. 2), this mediation test was considered appropriate for the current study.

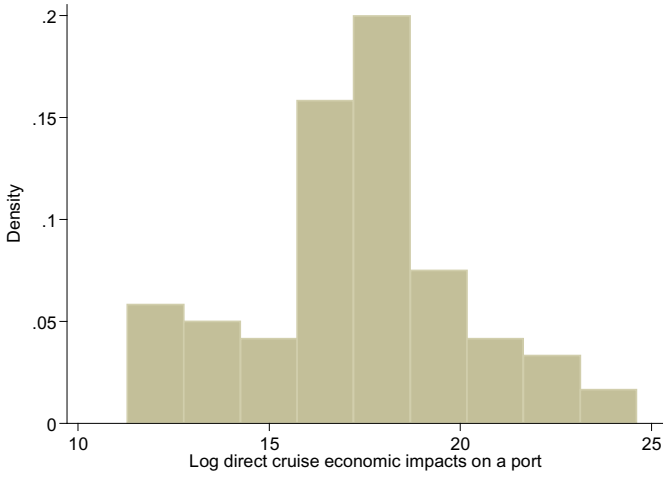


**Fig. 2.** Histogram of log direct economic impacts (per cruise visit per port).

**Table 6**
Determinants of direct cruise economic impacts on ports (Log-Log transformation).

| Independent variables | OLS model | Fixed-effects model |
|---|---|---|
| *H1a:* Expenditures per passenger per port visit | 0.80 (0.06)*** | 0.85 (0.05)*** |
| *H1b:* Number of passengers per port visit | 0.52 (0.13)*** | 0.48 (0.06)*** |
| *H1c:* Expenditures per crew member per port visit | 0.06 (0.05) | −0.04 (0.06) |
| *H1d:* Number of crew members per port visit | 0.20 (0.08)** | 0.24 (0.04)*** |
| *H2a:* Expenditures per cruise line per port visit | 0.21 (0.05)*** | 0.21 (0.02)*** |
| *H2b:* Number of cruise lines per port | 1.01 (0.01)*** | 1.02 (0.01)*** |
| *H3a:* Cruise lines' mediation effects on passenger expenditures | 0.24 (0.35)** | 0.24 (0.35)** |
| *H3b:* Cruise lines' mediation effects on crew expenditures | 0.62 (0.30)** | 0.62 (0.30)** |
| Port location dummies (North America, benchmark)[a] | | |
| Caribbean markets | −0.37 (0.23)** | Omitted |
| European markets | −0.11 (0.12) | Omitted |
| Other emerging markets | −0.26 (0.12)** | Omitted |
| Nature of port economy dummies (Island, benchmark)[a] | | |
| Land-based economy | 0.12 (0.06)* | Omitted |
| Port typology dummies (Port of call, benchmark)[a] | | |
| Home port | 0.03 (0.01) | 0.01 (0.01) |
| Data source dummies (Survey data, benchmark)[a] | | |
| Official/Industry data | 0.11 (0.07) | 0.10 (0.01) |
| Data year dummies (2013–2014, benchmark)[a] | | |
| 1993–1999 | −0.01 (0.02) | Omitted |
| 2000–2007 | −0.04 (0.01) | Omitted |
| 2008–2012 | 0.02 (0.01) | Omitted |
| Number of observations | 81 | |
| $R^2$ | 0.99 | 0.99 |

[a] These dummy variables were added to correct for the imbalance of the dataset on cruise visits.
* $p < 0.1$.
** $p < 0.05$.
*** $p < 0.01$.

### 4.3. Empirical results

The results of the OLS model, the fixed-effects model, and the Sobel-Goodman mediation effects tests are shown in Table 6. The three sets of hypotheses were not rejected in general, and seven sub-hypotheses were confirmed: expenditures per passenger (H1a), number of passengers (H1b), number of crew members (H1d), expenditures per cruise line (H2a), number of cruise lines (H2b), and a cruise line's mediation effects on the expenditures per passenger expenditures (H3a) and per crew member expenditures (H3b). Accordingly, expenditures per passenger, number of passengers, number of crew members, expenditures per cruise line, and number of cruise lines would add direct economic impacts on ports significantly, but the expenditures per crew member made very limited economic contributions. Furthermore, cruise lines had significant mediation effects between the direct economic impacts on a port and the expenditures per cruise passenger and per crew member.

Although a fixed-effects model based on different studies could predict the coefficients of interested variables more accurately than the OLS model, the results of the two models were generally consistent (see Table 6). For instance, a 10% increase in the expenditures per passenger or per cruise line would increase by 8.5% (8% in the OLS model) or 2.1% of the direct economic impacts on a port. By contrast, a 10% increase of the number of cruise passengers or crew members would contribute 4.8% (5.2% in the OLS model) or 2.4% (2.0% in the OLS model) to the direct economic impacts on a port. Furthermore, a 10% increase in the number of cruise lines would increase the direct economic impacts on ports by 10.2% (10.1% in the OLS model). Moreover, a 10% increase of a cruise line's length of stay in a port would increase the direct economic impacts on the port by 2.4% through the expenditures per cruise passenger and by 6.2% through expenditures per crew member. This suggests that cruise ports, in particular the ones with limited capacity, are well-advised to focus on attracting small or medium sized cruises with longer stays instead of accommodating a few mega ships. The non-significant crew expenditures at port destinations could potentially be due to crew members being less likely to participate in sightseeing, and their expenditures being likely to be food and beverages.

In order to correct for the imbalance of the meta-analysis data, the following dummy variables related to cruise visits were added: port locations (North American, Caribbean, European, and other emerging markets); port economies (island and land-based); port typologies (home port and port of call); data resources (survey data and official/industry data); and year dummies (1993–2014). The OLS model found that Caribbean ports had significantly lower (0.37 times) direct economic impacts derived from cruise tourism, followed by a significantly lower result in the emerging Asian-Australian-South American (0.26 times) and a non-significantly lower one in European ports (0.11 times), compared to the North American ports. One plausible explanation is that the industrial structure and regional economy development have influenced the direct economic impacts of cruise tourism on ports (Thomas & Stoeckl, 2015). However, the OLS and the fixed-effects model both found that there were no significant differences for the dummy variables of port typologies or data sources. Since the fixed-effects model was on the study level, dummy variables based on different studies (i.e., port location, economy, and year), were omitted.

## 5. Discussion

The current study has attempted to identify the determinants of the direct economic impacts of cruise tourism on ports, including expenditures per passenger, number of cruise passengers, number of crew members, expenditures per cruise line, and number of cruise lines. There are three major findings from the study. First, the results of the meta-regression model found medium comprised effect sizes for expenditures and number of cruise passengers, crew members, and cruise lines contributing to the direct economic impacts on a port. Second, the subsequent OLS model and fixed-effects model found that per cruise

tourist expenditures, number of cruise tourists, number of crew members, per cruise line expenditures, and number of cruise lines presented significant contributions to the direct economic impacts on a port. Last, the Sobel-Goodman mediation tests showed that cruise lines had significant mediation effects on the expenditures of per cruise tourist and per crew member.

In order to further elaborate on the meta-analyses findings, ten stakeholders in the cruise tourism industry were approached via face-to-face interviews from 22 to 29 March 2019 in a cruise port in Naples, Italy. Informants included two restaurant managers, two tour agents, two hotel managers, two local resident, one salesman in a souvenir shop, and one tourism scholar. The port of Naples is one of the largest cruise ports in Europe, with 10 docking places to accommodate over 20 cruise lines all year round, providing the local community with thousands of job opportunities. The interviews were semi-structured and focused on five key questions, with the aim of exploring respondents' perceptions toward the number of cruise ships, the expenditure of cruise lines, the expenditure of cruise passengers, the expenditure of crew members, and the influence of cruise lines' length of stay on these expenditures.

According to the interview field-notes, there was a consensus supporting the accommodation of more cruise ships and their positive economic impact for the local community. More specifically, the local business respondents (i.e. restaurants, tour agents, and souvenir shop) stated that international cruise tourists tend to spend more than mass tourists. It is worth noting that the expenditures of some crew members, who were repeat customers in the local restaurants, were stated to be at least as high as those of regular cruise passengers. Furthermore, all respondents agreed that the longer the cruise ships stay in the port, the more economic benefits they generate for the community. Also, local residents and tourism scholars proposed that cruise ships should dock in the port longer in order to let cruise passengers and crew members better explore the local attractions, cuisine, culture, and even nightlife. Yet, one hotel manager was concerned that they may not receive more business even cruise lines have longer lengths of stay in the port as cruise tourists usually return to their onboard cabins instead of staying overnights in a hotel. Another hotel manager argued that the hotel sector in a home port would have more customers because of cruise lines starting and/or ending cruise itineraries in the home port, where cruise passengers are more likely to stay a few nights in local hotels. While indirect economic impacts in home ports are beyond the purpose of the current study, this area is suggested for further research. Responses from the informants confirmed the meta-analysis findings and further revealed that cruise lines shoulder much of the responsibility for engaging cruise tourists with port communities, such as by providing more diverse excursion options at port destinations (Lee & Lee, 2017) and having longer lengths of stay in cruise ports (Chen et al., 2017).

Moreover, it was found that the direct economic impacts of cruise tourism on Caribbean and other emerging cruise ports were comparatively lowers than those on the North American ports. It is worth noting that land-based ports were found to have non-significantly higher direct economic impacts derived from cruise tourism than island ports. This indicates that there is no obvious disadvantage for island ports to derive economic benefits from cruise tourism. The results also revealed no significant difference ($p > 0.1$) in the direct economic impacts of cruise tourism between home ports and ports of call. This suggests that investments on tourist attractions and marketing characterizing ports of call could be attractive alternatives to the significant infrastructure investment required (and the corresponding capacity utilization risks) to become a home port, particularly in emerging markets. It is likely that direct economic impacts of cruise tourism would eventually benefit the local communities significantly, and thus cruise tourism could be a good way to develop coastal destinations (Mescon & Vozikis, 1985; Chase & Alon, 2002; Chang, Park, Liu, & Roh, 2016).

These findings also have certain implications which could be useful in cruise lines' decision making with regard to selecting ports of call and itinerary planning. For instance, visiting ports which are rich in attractions will be more likely to provide diverse shore excursions and warrant an increase in cruise lines' lengths of stay. Furthermore, the findings provide empirical evidence of the important roles they play in the communities visited. In particular their importance and responsibility as mediators of the expenditures of cruise passengers and crew members at port destinations and their direct economic impacts on ports. This awareness will be relevant in encouraging cooperation and facilitating negotiations with the port authorities (e.g., port subsidies and incentives), particularly in emerging cruise markets. It is likely that the involvement of port communities is valuable in encouraging cruise tourism development (Satta et al., 2015). This study can therefore be of help concerning whether and how the port communities decide to develop cruise tourism.

## 6. Conclusions and implications

### 6.1. Theoretical contributions

This study introduced the theoretical conceptualization of two-sided cruise market (Chen et al., 2017) and cruise lines' intermediary role (see Fig. 1). Accordingly, this research applied a comprehensive meta-analysis to measure the effect sizes of certain variables related to direct economic impacts of cruise tourism on ports; these variables were obtained from previous cruise tourism studies. It further conducted an OLS model, a fixed-effects model, and Sobel-Goodman mediation test to quantify the coefficient between each independent variable and the direct economic impact of cruise tourism to ports, which provided considerable insights into the economic contribution of cruise tourism on the local communities at port destinations.

The hypothesized relationships among direct economic impacts on ports and the expenditures and number of cruise tourists, crew members, and cruise lines were not rejected. Furthermore, the mediation effects of cruise lines on the expenditures of cruise tourists and crew members were identified, which are believed to contribute to the theoretical concepts of two-sided cruise markets. As an important first step toward verifying the conceptualization of two-sided markets in the cruise tourism industry and the mediated platform role of cruise lines, this study has provided a systematic research framework for cruise tourism economy and suggest it to be a potential future theory for guiding cruise lines in their management decisions. Moreover, this study addressed a relevant gap in the cruise tourism research, and the findings provide considerable insights into the direct economic impacts of cruise tourism on port destinations from the perspective of community involvement.

### 6.2. Practical implications

The current study attempted to identify the determinants of direct port economic impacts derived from cruise tourism and quantify the degree to which they contribute. The mediation effects of cruise lines on cruise passengers and crew expenditures in the ports they visit were also examined. This research was able to add to the knowledge of cruise lines' roles in cruise tourism. The findings suggest that cruise lines shoulder much of the responsibility for engaging cruise tourists with port communities, such as by having longer stays in ports (Chen et al., 2017) and providing more diverse excursion options at port destinations (Lee & Lee, 2017; Seidl, Guiliano, & Pratt, 2006).

These findings also likely provide practical implications for cruise lines' decision making with regards to selecting ports of call and itinerary planning. For instance, visiting ports rich in attractions will likely provide diverse shore excursions and warrant an increase in the length of stay. Moreover, results should make cruise lines more aware of their importance and responsibility as mediators of cruise passenger expenditures at port destinations and their direct economic impacts on

ports. This awareness could be particularly relevant for encouraging cooperation and facilitating negotiations with port authorities (e.g., port subsidies and incentives), particularly in emerging cruise markets. This research will also complement the policy-making efforts of related tourism agents at port destinations, thus helping cruise lines and cruise tourists to engage with port communities (Gokovali, Bahar, & Kozak, 2007), for instance, by organizing local festivals and other cultural events. Considering the conservative attitudes of port communities toward developing cruising opportunities, their involvement is likely to be very valuable in encouraging long-term sustainable cruise tourism development (Satta et al., 2015).

### 6.3. Limitations and future directions

It is pertinent to explicitly state that data bias is not avoidable in meta-analysis (Akgün et al., 2011; Peng, Song, & Crouch, 2014; Sutton et al., 2000). Thus, dummy variables for port location, the nature of the port economy, port typology, data sources, and time periods were included. Also, a fixed-effect model on the study level was applied to control the stated data bias. This research was limited in that it only utilized the 30 available quantitative studies with 81 observations in the measurement models.

This present study was also limited in that it employed a few independent variables, including per cruise tourist expenditures, number of cruise tourists, per crew member expenditures, number of crew members, per cruise line expenditures, and number of cruise lines. In the future, it would be useful to investigate additional related variables from all three main stakeholders: cruise lines, tourists, and ports. For example, a more detailed profile of cruise tourists, ship features (e.g., capacity and itineraries), and related tourism attractions at cruise port destinations would likely contribute to a better understanding of the economic impacts of cruise tourism. Moreover, the Sobel-Goodman model in this research is the first attempt to empirically test the "conceptualization of two-side cruise market" in the cruise tourism sector. Future studies should also use more detailed longitudinal data in one port to investigate cruise lines' role as a mediator between cruise tourists and the cruise port, in order to further examine the conceptualization of two-sided cruise markets. Yet the current research can be seen as a comprehensive quantitative meta-analysis of previous studies on cruising, and a major contribution to cruise tourism research in terms of both theory and practice.

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## References

Akgün, A. A., Baycan-Levent, T., Nijkamp, P., & Poot, J. (2011). Roles of local and newcomer entrepreneurs in rural development: A comparative meta-analytic study. *Regional Studies, 45*(9), 1207–1223.

Andriotis, K., & Agiomirgianakis, G. (2010). Cruise Visitors' experience in a Mediterranean port of call. *International Journal of Tourism Research, 12*(4), 390–404.

Australia Report. (2014). Assessment of the economic impact of cruise ships to Vanuatu executive summary. Retrieved from http://www.ifc.org/wps/wcm/connect/e78c600045833 7069717 bf9916182e35/Summary + of + Results + + Assessment + of + the + Economic + Impact + of + Cruise + Ships + to + Vanuatu.pdf?MOD = AJPERES.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173–1182.

Braun, B. M., Xander, J. A., & White, K. R. (2002). The impact of the cruise industry on a Region's economy: A case Study of Port Canaveral, Florida. *Tourism Economics, 8*(3), 281–288.

BREA. (2014). The global economic contribution of cruise tourism. Retrieved from https://www.cliaeurope.eu/images/downloads/reports/Global_Cruise_Impact_Analysis_ 2013.pdf.

BREA (2015). Economic contribution of cruise tourism to the destination economies. Retrieved from http://www.f-cca.com/downloads/2015-cruise-analysis-volume-2.pdf.

Brida, J. G., Bukstein, D., Garrido, N., & Tealde, E. (2012). Cruise Passengers' expenditure in the Caribbean Port of call of Cartagena de Indias: A cross-section data analysis. *Tourism Economics, 18*(2), 431–447.

Brida, J. G., Bukstein, D., & Tealde, E. (2015). Exploring cruise ship passenger spending patterns in two Uruguayan ports of call. *Current Issues in Tourism, 18*(7), 684–700.

Brida, J. G., Fasone, V., Scuderi, R., & Zapata-Aguirre, S. (2014). Research note: Exploring the determinants of cruise Passengers' expenditure at Ports of Call in Uruguay. *Tourism Economics, 20*(5), 1133–1143.

Brida, J. G., Lanzilotta, B., Moreno, L., & Santiñaque, F. (2018). A non-linear approximation to the distribution of Total expenditure distribution of cruise tourists in Uruguay. *Tourism Management, 69*, 62–68.

Brida, J. G., Pulina, M., Riaño, E., & Aguirre, S. Z. (2013). Cruise passengers in a home port: A market analysis. *Tourism Geographies, 15*(1), 68–87.

Brida, J. G., Pulina, M., Riaño, E., & Zapata-Aguirre, S. (2012). Cruise Passengers' experience embarking in a Caribbean Home Port: The case study of Cartagena de Indias. *Ocean & Coastal Management, 55*, 135–145.

Brida, J. G., & Risso, W. A. (2010). Cruise passengers expenditure analysis and probability of repeat visits to Costa Rica: A cross section data analysis. *Tourism Analysis, 15*(4), 425–434.

Brida, J. G., & Zapata, S. (2010). Economic impacts of cruise tourism: The Case of Costa Rica. *Anatolia, 21*(2), 322–338.

Carneiro, M. J., & Crompton, J. L. (2010). The influence of involvement, familiarity, and constraints on the search for information about destinations. *Journal of Travel Research, 49*(4), 451–470.

Chang, Y. T., Park, H., Liu, S. M., & Roh, Y. (2016). Economic impact of cruise industry using regional input–output analysis: A Case Study of Incheon. *Maritime Policy & Management, 43*(1), 1–18.

Chase, G., & Alon, I. (2002). Evaluating the economic impact of cruise tourism: A Case Study of Barbados. *Anatolia, 13*, 5–18.

Chen, J. M., Lijesen, M. G., & Nijkamp, P. (2017). Interpretation of cruise tourism in a two- sided market context: An exploration on Japan. *Maritime Policy & Management, 44*(6), 790–801.

Chen, J. M., Neuts, B., Liu, J., & Nijkamp, P. (2016). Demand determinants of cruise tourists in competitive markets: Motivation, preference and intention. *Tourism Economics, 22*(2), 227–253.

Chen, J. M., Zhang, J., & Nijkamp, P. (2016). A regional analysis of willingness-to-pay in Asian cruise markets. *Tourism Economics, 22*(4), 809–824.

CLIA. (2013). Cruise Industry Overview. Retrieved from https://www.cliaeurope.eu/images/ downloads/reports/CLIA_Europe_Economic_Contribution_Report_2013.pdf.

CLIA. (2015). Contribution of cruise tourism on the economies of Europe 2015. Retrieved from http://cruising.org/docs/defaultsource/ research/contribution_cruise_tourism_to_ economies_of_europe_2015.pdf?sfvrsn = 0.

CLIA. (2016). Cruise Industry Overview. Retrieved from https://www.cruising.org/docs/default- source/research/2016_clia_sotci.pdf.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Earlbaum Associates20–26.

Crompton, J. L., Jeong, J. Y., & Dudensing, R. M. (2016). Sources of variation in economic impact multipliers. *Journal of Travel Research, 55*(8), 1051–1064.

Darden, T., York, D., & Pedersen, L. (1993). Particle Mesh Ewald: An N-log(N) method for Ewald sums in large systems. *The Journal of Chemical Physics, 98*(12), 10089–10092.

Dawson, J., Johnston, M., & Stewart, E. (2017). The unintended consequences of regulatory complexity: The Case of Cruise Tourism in Arctic Canada. *Marine Policy, 76*, 71–78.

Diakomihalis, M., Lekakou, M., Stefanidaki, E., & Syriopoulos, T. (2009). The economic impact of the cruise industry on local communities: The case of Greece. *The 4th international scientific conference: Planning for the future–learning from the past, Greece*. Retrieved from https://www.researchgate.net/profile/Mihail_Diakomihalis/.

DiPietro, R. B., & Peterson, R. (2017). Exploring cruise experiences, satisfaction, and loyalty: The Case of Aruba as a Small-Island Tourism Economy. *International Journal of Hospitality and Tourism Administration, 18*(1), 41–60.

Douglas, N., & Douglas, N. (2004). Cruise ship passenger spending patterns in Pacific Island Ports. *International Journal of Tourism Research, 6*(4), 251–261.

Driscoll, J. C., & Kraay, A. C. (1998). Consistent covariance matrix estimation with spatially dependent panel data. *Review of Economics and Statistics, 80*(4), 549–560.

Dwyer, L., Douglas, N., & Livaic, Z. (2004). Estimating the economic contribution of a cruise ship visit. *Tourism in Marine Environments, 1*(1), 5–16.

Dwyer, L., & Forsyth, P. (1998). Economic significance of cruise tourism. *Annals of Tourism Research, 25*(2), 393–415.

FCCA. (2012). Cruise industry overview. Retrieved from http://www.f-cca.com/downloads/ 2012-Cruise-Industry-Overview-Statistics.pdf.

FCCA. (2017). Cruise industry overview. Retrieved from http://www.f-cca.com/downloads/ 2017-Cruise-Industry-Overview-Cruise-Line-Statistics.pdf.

Fritz, M. S., & MacKinnon, D. P. (2007). Required sample size to detect the mediated effect. *Psychological Science, 18*(3), 233–239.

Gabe, T., Gayton, D., Robinson, P., McConnon, J., & Larkin, S. (2017). *Economic impact of cruise ship passengers visiting Bar Harbor (Maine) in 2016*.

Gargano, R., & Grasso, F. (2016). Cruise Passengers' expenditure in the Messina Port: A mixture regression approach. *Journal of International Studies, 9*(2), 158–169.

Glass, G. V., MacGaw, B., & Smith, M. L. (1984). *Meta-analysis in social research.* Beverly Hills: Sage.

Gokovali, U., Bahar, O., & Kozak, M. (2007). Determinants of length of stay: A practical use of survival analysis. *Tourism Management, 28*(3), 736–746.

Gouveia, A. X., & Eusébio, C. (2018). Assessing the direct economic value of cruise tourism in a port of call: The Case of Funchal on the Island of Madeira. *Tourism and Hospitality Research,* 1–17 (Retrieved from DOI:1467358418768666).
Harnik, P., & Crompton, J. L. (2014). Measuring the Total economic value of a Park system to a community. *Managing Leisure, 19*(3), 188–211.
Hawaii Report. (2003). Hawaii cruise industry impact study. Retrieved from http://files.hawaii. gov/dbedt/visitor/econ-impact/cruise-impact.pdf.
Henthorne, T. L. (2000). An analysis of expenditures by cruise ship passengers in Jamaica. *Journal of Travel Research, 38*(3), 246–250.
Hoogstra, G. J., van Dijk, J., & Florax, R. J. (2017). Do jobs follow people or people follow jobs? A meta-analysis of Carlino–Mills studies. *Spatial Economic Analysis, 12*(4), 357–378.
Hung, K., & Petrick, J. F. (2011). Why do you cruise? Exploring the motivation for taking cruise holidays, and the construction of a cruise motivation scale. *Tourism Management, 32*(2), 386–393.
Jaakson, R. (2004). Beyond the tourist bubble?: Cruise ship passengers in port. *Annals of Tourism Research, 31*(1), 44–60.
Jamaica report. (2007). Cruise ship passenger satisfaction survey. Retrieved from http://www.y umpu.com/en/document/view/32508806/cruise-ship- passenger-satisfaction- survey-2006- jamaica-tourist – /1.
Johnson, J. D., Snepenger, D. J., & Akis, S. (1994). Residents' perceptions of tourism development. *Annals of Tourism Research, 21*(3), 629–642.
Klein, R. A. (2009). Keeping the cruise tourism responsible: The challenge for ports to maintain high self esteem. Retrieved from https://ambergriscaye.com/art/pdfs/icrt2.pdf.
Klein, R. A. (2011). Responsible cruise tourism: Issues of cruise tourism and sustainability. *Journal of Hospitality and Tourism Management, 18*(1), 107–116.
Koetse, J., de Groot, H. L. F., & Florax, R. J. G. M. (2009). A meta-analysis of the investment-uncertainty relationship. *Southern Economic Journal, 76*(1), 283–306.
Larsen, S., Wolff, K., Marnburg, E., & Øgaard, T. (2013). Belly full, purse closed: Cruise line Passengers' expenditures. *Tourism Management Perspectives, 6*, 142–148.
Lee, G., & Lee, M.-K. (2017). Estimation of the shore excursion expenditure function during cruise tourism in Korea. *Maritime Policy & Management, 44*(4), 524–535.
Lekakou, M. B., Pallis, A. A., & Vaggelas, G. K. (2009). Which Homeport in Europe: The Cruise Industry's selection criteria. *Tourismos, 4*(4), 216–240.
Longhi, S., Nijkamp, P., & Poot, J. (2008). *Meta-Analysis of Empirical Evidence on the Labour Market Impacts of Immigration.* IZA Discussion Paper No. 34181–38.
Lue, C. C., Crompton, J. L., & Fesenmaier, D. R. (1993). Conceptualization of multi-destination pleasure trips. *Annals of Tourism Research, 20*(2), 289–301.
Marcussen, C. H. (2016). Quantitative analyses in cruise tourism studies. *Cruise business development* (pp. 251–278). Cham: Springer.
Marksel, M., Tominc, P., & Božičnik, S. (2017). Cruise Passengers' expenditures: The Case of Port of Koper. *Tourism Economics, 23*(4), 890–897.
Martin Associates (2014). Economic impact of the Port of Boston. Retrieved from https://www.massport.com/media/261138/massport_final_report_17july2014_updated.pdf.
McCarthy, J. (2003). The cruise industry and Port City regeneration: The Case of Valletta. *European Planning Studies, 11*(3), 341–350.
McKee, D. L., & Chase, G. L. (2003). The economic impact of cruise tourism on Jamaica. *Journal of Tourism Studies, 14*(2), 16.
Mertens, B. J. A. (2016). Transformation, normalization, and batch effect in the analysis of mass spectrometry data for omics studies. In S. Datta, & B. J. A. Mertens (Eds.). *Statistical analysis of proteomics, metabolomics, and Lipidomics data using mass spectrometry* (pp. 1–21). Gewerbestrasse: Springer.
Mescon, T. S., & Vozikis, G. S. (1985). The economic impact of tourism at the port of Miami. *Annals of Tourism Research, 12*(4), 515–528.
Nelson, J. P., & Kennedy, P. E. (2009). The use (and abuse) of meta-analysis in environmental and natural resource economics: An assessment. *Environmental and Resource Economics, 42*(3), 345–377.
Neuts, B., Chen, J. M., & Nijkamp, P. (2016). Assessing customer value in segmented cruise markets: A modelling study on Japan and Taiwan. *Academy of Marketing Studies Journal, 20*(3), 1–10.
Oppermann, M. (1996). Visitation of tourism attractions and tourist expenditure patterns-repeat versus first-time visitors. *Asia Pacific Journal of Tourism Research, 1*(1), 61–68.
Pallis, T. (2015). Cruise shipping and urban development: State of the art of the industry and cruise ports. Retrieved from https://www.econstor.eu/handle/10419/121940.
Papathanassis, A., & Beckmann, I. (2011). Assessing the 'poverty of cruise theory' hypothesis. *Annals of Tourism Research, 38*(1), 153–174.
Papathanassis, A., & Klein, R. A. (2015). Special issue on cruise tourism. *Tourism in Marine Environments, 10*(3/4), 141–265.
Papathanassis, A., Matuszewski, I., & Brejla, P. (2012). The 'cruise ship railing dance': Conducting academic research in the cruise domain. *Cruise tourism and society* (pp. 173–192). Berlin Heidelberg: Springer.
Penco, L., & Di Vaio, A. (2014). Monetary and non-monetary value creation in cruise port destinations: An empirical assessment. *Maritime Policy & Management, 41*(5), 501–513.
Peng, B., Song, H., & Crouch, G. I. (2014). A meta-analysis of international tourism demand forecasting and implications for practice. *Tourism Management, 45*, 181–193.
Petrick, J. F. (2004). The roles of quality, value, and satisfaction in predicting cruise Passengers' behavioral intentions. *Journal of Travel Research, 42*(4), 397–407.
Petrick, J. F., & Durko, A. M. (2015). Segmenting luxury cruise tourists based on their motivations. *Tourism in Marine Environments, 10*(3–4), 149–159.
Petrick, J. F., Li, X., & Park, S. (2007). Cruise Passengers' decision-making processes. *Journal of Travel and Tourism Marketing, 23*(1), 1–14.
Petrick, J. F., Tonner, C., & Quinn, C. (2006). The utilization of critical incident technique to examine cruise Passengers' repurchase intentions. *Journal of Travel Research, 44*(3), 273–280.
Pratt, S., & Blake, A. (2009). The economic impact of Hawaii's cruise industry. *Tourism Analysis, 14*(3), 337–351.
Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Method, 40*(3), 879–891.
Pulido-Fernández, J. I., Cárdenas-García, P. J., & Carrillo-Hidalgo, I. (2017). Explaining tourism expenditure based on trip characteristics in emerging urban-cultural destinations. *Tourism Review, 72*(1), 68–86.
Qu, H., & Ping, E. W. Y. (1999). A service performance model of Hong Kong cruise Travelers' motivation factors and satisfaction. *Tourism Management, 20*(2), 237–244.
Rothstein, H. R., Sutton, A. J., & Borenstein, M. (Eds.). (2006). *Publication Bias in meta-analysis: Prevention, assessment and adjustments*. John Wiley & Sons.
Sargan, J. D. (1964). Wages and prices in the United Kingdom: A study in econometric methodology. *Econometric Analysis for National Economic Planning, 16*, 25–54.
Satta, G., Parola, F., Penco, L., & Persico, L. (2015). Word of mouth and satisfaction in cruise port destinations. *Tourism Geographies, 17*(1), 54–75.
Schmidt, F. L., & Hunter, J. E. (2014). *Methods of meta-analysis: Correcting error and Bias in research findings.* Sage Publications.
Seidl, A., Guiliano, F., & Pratt, L. (2006). Cruise tourism and community economic development in Central America and the Caribbean: The case of Costa Rica. *PASOS, 4*(2), 213–224.
Seidl, A., Guiliano, F., & Pratt, L. (2007). Cruising for Colones: Cruise Tourism Economics in Costa Rica. *Tourism Economics, 13*(1), 67–85.
Shrestha, R. M., & Loomis, J. B. (2001). Testing a meta-analysis model for benefit transfer in international outdoor recreation. *Ecological Economics, 39*, 67–83.
Sutton, A. J., Abrams, K. R., & Jones, D. R. (2000). *Methods for meta-analysis in medical research.* Chichester: Wiley.
Thomas, J. M., and Stoeckl, N. (2015). Economic opportunities and risks of cruise tourism in Cairns. https://www.marineconservation.org.au/data/AMCS_-_Cruise_Shipping_Risks_ and_Opportunities.pdf.
Valentine, J. C., Pigott, T. D., & Rothstein, H. R. (2010). How many studies do you need? A primer on statistical power for meta-analysis. *Journal of Educational and Behavioral Statistics, 35*(2), 215–247.
de la Vina, L., & Ford, J. (2001). Logistic regression analysis of cruise vacation market potential vacation market potential: Demographic and trip attribute perception factors. *Journal of Travel Research, 39*(4), 406–410.
Wang, Y., & Davidson, M. C. (2010). A review of micro-analyses of tourist expenditure. *Current Issues in Tourism, 13*(6), 507–524.
Weaver, A. (2005). The McDonaldization thesis and cruise tourism. *Annals of Tourism Research, 32*(2), 346–366.
Xie, H. J., Kerstetter, D. L., & Mattila, A. S. (2012). The attributes of a cruise ship that influence the decision making of cruisers and potential cruisers. *International Journal of Hospitality Management, 31*(1), 152–159.
Zou, S. S., Migacz, S. J., & Petrick, J. F. (2017). The utilization of critical incident technique to examine Chinese Tourists' cruising motivations and constraints. *Tourism Analysis, 22*(4), 577–582.

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