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Articles

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The Influence of Exercise on Developing Resilience Skills

Russell W. Clayton
University of South Florida
Christopher Thomas
Saint Louis University
Kevin Lo
University of San Francisco
Leslie Sukup
Ferris State University
Mark Julien
Brock University
Micheal Stratton
Georgia College

Abstract

The ability to bounce back from stress (resilience) is becoming increasingly more important for workers. In this paper, we contribute to the evolving understanding of resilience and the mechanisms that lead to increases in individual resilience levels. Specifically, we examine the relationship between exercise and resilience in a group (n=46) of previously sedentary individuals. A treatment group (n=26) underwent four weeks of group exercise classes while a control group (n=20) maintained their sedentary lifestyles. Support for our hypotheses suggests that exercise increases resilience. Limitations and directions for future research are discussed.

Overview

Both individuals and organizations face growing uncertainty in an increasingly more interconnected world. Within organizations, phenomena such as stress, burnout, bullying, and violence require a certain ability to bounce back. For the purposes of this paper, we will refer to this capacity as resilience.

Following Kasparkova and colleagues (2018), we lean on Luthans' (2002: p. 702) definition of resilience as the "positive psychological capacity to rebound, to 'bounce back' from adversity, uncertainty, conflict, failure, or even positive change, progress and increased responsibility." We hope to contribute to the evolving dialog on resilience, by addressing the question: what capabilities promote

resilience in individuals? We now turn to a review of the relevant literature to frame our research inquiry.

Literature Review

Resilience

Resilience resources and assets, when properly identified and managed, allow individuals to overcome stress, adversity, and challenges in addition to utilizing existing strengths and talents (Lam & McBride-Chang, 2007; Luthans, Youssef, et al., 2007). Many resources and assets make up being resilient and contribute to higher resilience levels. These resources and assets may consist of, among other things, inner strengths (Griffith & West, 2013), sense of meaning (Reivich et al., 2011), perseverance (Lazaridou & Beka, 2015), and being mentally and physically fit (Lazaridou & Beka, 2015; Reivich et al., 2011; Southwick & Charney, 2012; Strumpfer, 2003).

Recent research supports the notion that higher resilience levels in individuals lead to favorable workplace outcomes. For example, Gupta and Bakhshi (2018) found that resilience enabled workers to better overcome the harmful effects of workplace bullying in a sample of 512 employees in India. Resilience was also found to buffer the effects of stress on job satisfaction in a sample of 172 real estate professionals in the United States of America (Krush, Agnihotri, Trainor, & Krishnakumar, 2013). Finally, a study that sampled 236 Chinese civil servants found that resilient employees had better interpersonal relationships, more desirable work outcomes, and better mental health than their counterparts with low resilience (Meng et al., 2019).

Exercise as a Mechanism to Build Resilience

Research has supported that resilience is able to be taught and learned (Lee et al., 2013). A meta-analytic review of 11 resilience training studies by Joyce and colleagues (2018) found that resilience can be increased through cognitive behavioral therapy and/or mindfulness-based interventions. However, it is the relationship between exercise and resilience that we examine in this paper.

The effects of exercise on individual well-being are profound (Ensel & Lin, 2004; Taylor, 2000; Whelton, Chin, Xin, & He, 2002). Exercise, defined in the literature as a voluntary activity that includes "movement of sufficient intensity and duration to potentially increase aerobic or anaerobic capacity" (Taylor, 2000, p. 11), has been found to contribute to reduced anxiety and depression (Rethorst, Wipfli, &

Landers, 2009; Wipfli, Rethorst, & Landers, 2008). Cross-sectional studies have shown a relationship between exercise and resilience. For example, Childs and de Wit (2014) found a relationship between self-reported exercise and resilience in 111 university students and personnel. Ho and colleagues (2015) found a positive correlation between exercise and resilience in a sample of 775 Chinese adolescents. Likewise, Ozkara and colleagues (2016) found that physical activity significantly predicted resilience scores in a sample of 331 student teachers based in Turkey. While these studies provide initial support for the impact of exercise on resilience, they are cross-sectional in nature and cannot determine causality.

Theoretical Perspectives on Exercise

There is no one theory that fully encompasses how exercise improves psychological well-being. Rather, there are several explanatory mechanisms that may contribute to the impact of exercise on well-being. Bahrke and Morgan (1978) posited that exercise distracts the degree to which individuals experience stressors, which in turn could contribute to greater positive psychological states. Cardiovascular mechanisms, such as the increased ventricular filling and diminished vascular resistance as a result of exercise, have been found to explain the biological relationship between exercise and stress. Another explanation that is biological in nature posits that exercise increases body temperature, adrenal and steroid activity, as well as the release of endorphins (Plante, Coscarelli, & Ford, 2001). Furthermore, exercise might serve to "charge an individual's batteries (restore energy) or positively contribute to his or her self-esteem" thus providing an increase in psychological well-being (Siltaloppi, Kinnunen, & Feldt, 2009, p. 332). The most likely theoretical perspective to explain the relationship between exercise and resilience comes from the theoretical perspective of stress inoculation (Robertson, Cooper, Sarkar, & Curran, 2015). That is, being exposed to adversity in moderation, such as bouts of exercise, may lead to individuals developing resilience that attenuates stressors encountered in future situations (e.g., Sarkar & Fletcher, 2014).

Acute Versus Long-Term Exercise

For the present study, acute exercise refers to a single session of exercise and long-term exercise refers to several exercise sessions over the course of weeks or months. Prior research supports the effectiveness of both acute and long-term exercise on personal well-being. For example, Yeung's (1996) analysis of 20 experimental

design studies showed that acute exercise provided improvements to participants' mood states. More recent research (Bartholomew, Morrison, & Ciccolo, 2005) comparing a single 30-minute treadmill exercise sessions to 30-minutes of quiet rest provide additional support for acute exercise. In this study, Bartholomew and colleagues (2005) found that participants engaging in the single exercise session reported increases in positive mood and well-being while those in the quiet rest group did not. Long-term exercise has also received support in the literature. Netz and colleagues' (2005) meta-analysis of 36 studies linking long-term exercise to positive well-being found significant positive results, particularly in self-efficacy. In short, both acute and long-term exercise have been shown to improve psychological well-being in participants.

In support of prior research (i.e., Ho et al., 2015; Ozkara et al., 2016), the current study examines the temporal effects of exercise on resilience using an experimental design.

H1: Exercise will be associated with increased resilience over time.

H2: The difference in resilience among those who exercise and those who do not will be greater over time.

Method

Procedures

The data described in this study were collected and analyzed as part of a larger investigation of work-family conflict. Extant research indicates that work-family conflict is experienced with greater frequency and magnitude by working women than men (Gutek et al., 1991); thus, for our experimental intervention, we sought females between the ages of 21 and 55 who reported at least 20 hours of employment per week. An additional requirement was that participants had not exercise during the previous four months (i.e., sedentary lifestyle). A recruitment message, including information about a $150 incentive for participating, was placed in a local newspaper. Individuals who responded to the ad were screened to ensure that they conformed to the study requirements, and they completed the Physical Activity Readiness Questionnaire (ParQ) (Thomas, Reading, & Shephard, 1992) to assess their suitability for undertaking an exercise regimen.

Following the screening interviews, individuals were randomly assigned to either the treatment (n = 31), or the control ("waitlist") group (n = 25). Of these 56 participants, five from each group missed

the first meeting and were removed from the sample. The final sample (N = 46) reported an average age of 39 (*SD* = 9.96), and over half (54 percent) were married or living with a significant other. In terms of childcare responsibilities, 11 percent reported having two children under the age of 18 at home, and an additional 15 percent reported one child at home, while 70 percent did not have children living at home. A majority of participants were college graduates (69.5 percent) who worked an average of 36 hours per week, primarily in professional (56.5 percent) or administrative (26.1 percent) positions.

Pretreatment survey. All participants completed the pretreatment survey (Time 1) on the same night. Treatment group participants (N = 26) completed the survey immediately prior to the first exercise class which was conducted at the health and wellness center of a southeastern US university. Members of the control group (N = 20) completed their pretreatment survey in a different university building on the same night.

Exercise treatment. Treatment group participants completed a four-week Zumba® group exercise class consisting of seven 45-minute aerobic-style dance fitness classes led by a Zumba-certified instructor. The group setting assured a consistent treatment condition for each participant, which could not be guaranteed if they were instructed to exercise on their own.

Post-treatment survey for acute effects and long-term effects. Approximately five minutes after the first exercise class, treatment group participants completed the Time 2 survey to assess acute effects of exercise. To assess long-terms effects, treatment group participants were given the Time 3 survey on the last night of the four-week exercise class and were instructed to complete it the following day and return it to the researchers via mail. Treatment group participants who completed six of the seven exercise classes along with all three surveys were compensated $150 (n = 23).

Control group survey completion. Similar to the treatment group, the control group took the Time 1 and Time 2 surveys approximately 45 minutes apart on the first evening. However, they did not participate in any form of exercise in between the two survey administrations. Prior to leaving on that evening, control group participants were instructed to maintain their sedentary lifestyle and not undertake a new exercise program. They returned to campus to complete the Time 3 survey on the same evening that the treatment group concluded their exercise regimen and completed their final survey.

Control group participants who completed all three surveys were compensated $150 (n = 19). After completing the T3 survey, control group participants were offered the opportunity to complete the same series of Zumba classes that the treatment group had completed for the study.

Measures

Resilience. The multidimensional Psychological Capital (PsyCap) scale was used to measures resilience at Time 1, Time 2, and Time 3 (Luthans, Youssef, & Avolio, 2007). We included all six items from the resilience subscale; however, the reverse-scored item consistently generated low inter-item and item-total correlations along with poor factor loadings. We discarded that item, and used the 5 positively worded items for our analysis (Hinkin, 1998). A sample item is, "I can get through difficult times at work because I've experienced difficulty before." All items used a 7-point Likert-type response scale ranging from *strongly disagree* to *strongly agree*. Scale alphas at each time point were as follows: $\alpha_{T1} = .81$, $\alpha_{T2} = .80$, $\alpha_{T3} = .85$.

Demographics and Controls. Demographic information was collected on age (years), level of education (1 = High School/GED, 2 = Bachelor's Degree, 3 = Masters/Professional Degree, 4 = Doctorate), marital status (1 = single, 2 = married or living with a partner, 3 = widowed, 4 = divorced), and number of children (under 18) living in the home. Respondents also indicated the number of hours worked per week, and their job type (1= management, 2 = professional, 3= technical, 4 = administrative). As part of the T1 survey, participants indicated the way they felt "on average" in response to ten items (e.g., irritable, distressed) measuring negative affect (Watson, Clark, & Tellegen, 1988). Using a response format ranging from 1 = Very slightly/Not at all to 5 = Extremely, the scale generated an alpha estimate of .82.

Analytical Procedures

We tested the statistical power available for our sample (N = 46) using the GLIMMPSE power analysis program (http://glimmpse.samplesizeshop.org; Kreidler et al., 2013) and found that we could detect effects at $p \leq .05$ with 76 percent power, or effects at $p \leq .10$ with 85 percent. Next, we used Linear Mixed Modeling (LMM) from SPSS version 24 to test the hypothesized acute and long-term effects of exercise on resilience (Peugh & Enders, 2005; West, 2009). This procedure offers several advantages when used with repeated-measures designs that have additional characteristics which

are present in our data. In particular, LMM handles missing data without discarding those subjects and thus reducing sample size, allows for unevenly spaced measurements, and automatically codes for effects of categorical factors (e.g., trial number, treatment group, gender) and continuous covariates within a single analysis.

Results

Correlations, means, and standard deviations for the study variables are displayed in Table 1. Values for the treatment group appear below the diagonal, and control group values appear above the diagonal. Using an independent samples t-test, we verified congruence between the treatment and control groups on the demographic control variables included in the study. Both groups began with virtually identical resilience values, and level of education (p = .02) was the only demographic variable to exhibit a significant between-group difference.

Table 1: Descriptive Statistics, Reliabilities, and Intercorrelations for Treatment and Control Groups

		1	2	3	4	5	6	7	8	9	10
1. Age			−.26	.26	.33	.16	−.43	−.23	.23	.19	.14
2. Education		.17		−.25	−.52	−.46	.03	.13	−.07	−.03	−.42
3. Job Type		−.11	.35		.26	.05	−.61	.16	.08	.07	.08
4. Marital Status		.18	−.15	−.46		.11	−.17	−.10	.10	.10	.22
5. Children		.04	−.62	−.12	.52		.09	−.27	.29	.31	.45
6. Work hours		.15	.40	.08	.09	−.19		.24	−.01	.00	.01
7. Negative Affect		−.30	.07	−.24	.05	.10	−.08		−.40	−.46	−.46
8. Resilience T_1		.05	−.04	−.01	−.31	.23	.14	−.59		.97	.74
9. Resilience T_2		.11	−.09	−.01	.31	.36	.36	−.58	.78		.74
10. Resilience T_3		−.06	.07	.12	.07	−.03	.50	−.46	.56	.66	
Exercise	M	38.69	1.69	2.65	1.77	.58	36.85	2.12	4.82	5.01	5.17
	SD	10.91	.61	.97	.81	.97	9.92	.72	.69	.66	.48
Control	M	40.30	2.20	2.55	2.30	.40	34.65	1.96	4.79	4.86	4.72
	SD	8.36	.76	.87	1.06	.67	15.61	.42	.72	.63	.67

Note. Time 1 and Time 2: N = 46 (26 exercise, 20 control); Time 3: N = 42 (23 exercise, 19 control). Means and standard deviation values for each group are at the bottom of the table. Correlations for treatment group appear below the diagonal: $r \geq |.40|$ are significant at $p \leq .05$, and $r \geq |.58|$ are significant at $p \leq .01$, and correlations. Correlations for control group appear above the diagonal: $r \geq |.46|$ are significant at $p \leq .05$, and $r \geq |.61|$ are significant at $p \leq .01$.

The Type III Tests of Fixed Effects shown in Table 2 represent omnibus tests of significance for predictors included in the model, and the parameter estimates shown in Table 3 are useful for interpreting the individual effects in relation to the stated hypotheses. The results shown in these tables were derived via a first-order autoregressive covariance structure, using Restricted Maximum Likelihood Estimation (RMLE).

Table 2: Type III Tests of Fixed Effects for Resilience

	Numerator *df*	Denominator *df*	*F*	Sig.
Time-Based WIF				
Intercept	1	34.17	106.26	.00
Group	1	34.71	3.76	.06
Time	2	81.33	1.94	.15
Group * Time	2	81.30	3.30	.04
Marital Status	2	34.41	1.77	.19
Job Type	3	34.42	1.94	.14
Age	1	34.38	.60	.44
Education	1	34.61	.35	.56
Working Hours	1	34.33	3.24	.09
# Children at home	1	33.88	2.97	.08
Negative Affect	1	33.88	22.16	.00

Note. Denominator degrees of freedom are calculated by SPSS using the Satterthwaite approximation method.

Table 3: Fixed Effect Estimates for Resilience

Parameter[a]	Estimate	Std. Error	*df*	t	Sig.	95% Confidence Interval	
						Lower Bound	Upper Bound
Intercept	**5.99**	**.60**	**34.87**	**10.00**	**.00**	**4.76**	**7.21**
Exercise	**.57**	**.19**	**55.46**	**2.96**	**.01**	**.18**	**.95**
Time1	.09	.13	104.92	.66	.51	−.17	.35
Time2	.16	.10	82.03	1.52	.13	−.05	.35
Time1 * Exercise	**−.42**	**.17**	**104.90**	**−2.43**	**.02**	**−.77**	**−.08**
Time2 * Exercise	**−.31**	**.14**	**82.14**	**−2.24**	**.03**	**−.58**	**−.04**
Marital Status – Single	−.41	.26	34.56	−1.59	.12	−.92	.11
Marital Status – Married	−.39	.21	33.77	−1.83	.08	−.82	.04
Job Type – Management	−.65	.38	34.00	−1.69	.10	−1.42	.13
Job Type – Professional	−.27	.18	34.46	−1.52	.14	−.63	.09
Job Type – Technical	.07	.25	34.99	.26	.80	−.45	.58
Age	−.01	.01	34.38	−.78	.44	−.02	.01
Education	.08	.13	34.61	.59	.56	−.18	.33
Work Hours	.01	.01	34.33	1.72	.09	−.00	.03
# Children at Home	.18	.10	33.88	1.80	.08	−.02	.38
Negative Affect	**−.59**	**.13**	**33.88**	**−4.71**	**.00**	**−.84**	**−.33**

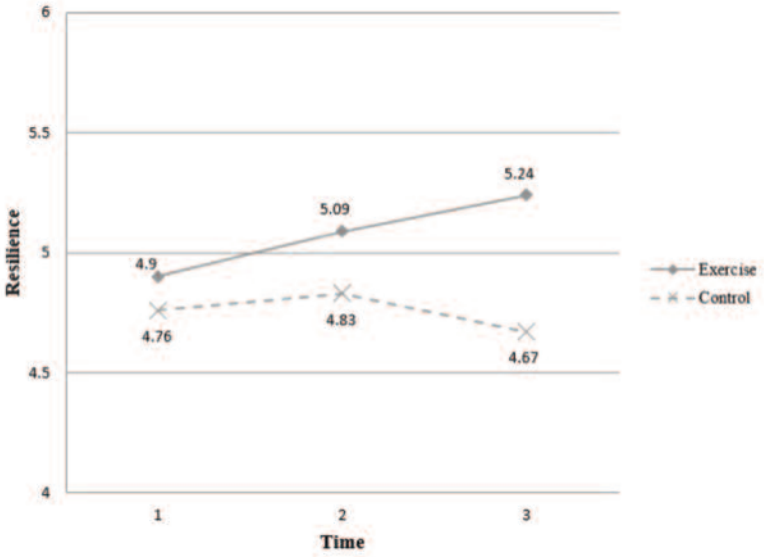
Note. [a] The referent parameters (i.e., set to zero) for this analysis were: Group 2 (Control) and Time 3. Any p associated with these referents are considered redundant and are not shown. All significant parameters are shown in bold ($p \leq .05$).

In terms of control variables, there were no significant effects for any of the demographic variables, while there was a significant effect of negative affect ($F = 22.16$ $p < .001$). In terms of main effects, time was not significant ($F = 1.94$, $p = .15$), and group membership (i.e., group or control) generated a marginally significant main effect at $p < .10$ ($F = 3.76$, $p = .06$). Additionally, there was a significant group*time interaction ($F = 3.30$, $p = .04$). H1 proposed that exercise would be positively related to exercise over time. The parameter estimate (i.e., regression coefficient) for the group variable generated a significant and positive estimate ($\beta = .57$, $p < .01$) indicating an overall positive impact on reported resilience across measurement times for those in the exercise group. Thus, H1 was supported. H2 proposed that the difference in resilience between the two groups would be augmented over time such that the exercise group experienced greater levels of resilience. This hypothesis amounts to an interaction effect, and the results support significant group*time interactions (T1*Exercise: −.43, $p = .02$ / T2*Exercise: −.31, $p = .03$) indicating a significant difference between the two groups over time in terms of the impact of exercise on resilience. These results indicate that time effects, while nonsignificant as main effects, are augmented

for the exercise group, such that over time the effect diverges between the two groups. Thus, H2 was supported. Figure 1 provides a graphical depiction of this particular effect. The slope for the control group between T1 and T2 is less steep than that of the exercise group, and the control group has a marked inflection point where the slope becomes negative and diverges from the exercise group between Time 2 and Time 3.

Figure 1: Plot of Time*Group Interactive Effect on Resilience

Marginal mean values were calculated based on the following covariates appearing in the model: Age = 39.57, Education = 1.90, Children = .52, Working Hours = 35.76, Negative Affect = 2.05.



To conclude our analysis, we conducted a final test to compare group means on resilience at each point in time. The two groups started at relatively equal levels of resilience (i.e., nonsignificant mean difference at T1), and we were interested in whether the influences uncovered in the model result in significant mean differences between the exercise and control groups, not just slope differences, at each measurement point. As shown in Table 4, although the two groups generated different slopes between Time1 and Time 2, the mean difference in level of resilience was nonsignificant (.15, t = .77, p = .45). In other words, while the exercise group did have an increase in resilience between Time 1 and Time 2, it was not significantly more than the control group. Between Time2 and Time 3, however, the

groups showed greater, and significant, mean differentiation (.45. t = 2.48, p = .02). These results suggesting that exercise may not have an acute effect on resilience, but rather the benefits emerge over the course of extended participation in exercise. This further supports our hypothesis of a long-term effect of exercise on perceptions of resilience. Overall, our investigation indicated that exercise provides a relatively stable, positive effect on resilience over time. Our results also indicated that, over time, perceptions of resilience tend to deteriorate among those who are not exercising.

Table 4: T-test for Equality of Group Means at Each Measurement Point

	Exercise	Control	Mean Difference	t	*p*
Resilience T_1	4.82	4.79	.03	.16	.88
Resilience T_2	5.01	4.86	.15	.77	.45
Resilience T_3	5.17	4.72	.45	2.48	.02

Note. Time 1 and Time 2: N = 46 (26 exercise, 20 control); Time 3: N = 42 (23 exercise, 19 control).
[a] T value and associated significance level (p) based on equal variance assumption.

Discussion

Overall, the current study provides support to the notion that long-term exercise leads to resilience, as seen through the significant difference at Time 3 between the experimental and control groups. Although it is widely accepted that exercise has health benefits, this finding suggests that resilience might require more time to develop, at least with respect to developing resilience through exercise. Thus, individuals, especially for those seeking instant gratification, might necessarily need to be long-term oriented in their approaches to building resilience.

It is also of note that the resilience scores for the control group were lower at Time 3 than at Time 1, meaning that resilience for the control group ultimately decreased over the course of the study. In other words, by making no adjustments to their exercise regiments, the individuals in the control group were actually less resilient at the end of the study than at the beginning. Taking these two findings about resilience over the long-term (the increase in resilience in the treatment group and the decrease in resilience in the control group), we potentially have an intriguing finding about a property of resilience that is built through exercise: it takes time to develop and can be quickly lost. In this way, there is a suggestion that individuals who

desire resilience must work actively to cultivate it. Failure to do so does not mean that it is maintained. Rather, there is a suggestion from our results that it naturally attenuates. However, for individuals who do develop resilience through exercise, the evidence also suggests that they will be better equipped to handle the uncertainty and challenges both at work and at home. As such, organizations wishing to assist employees in fostering resilience may provide opportunities for them to engage in regular exercise. This can include, but is not limited to, providing an on-site gym, offering "booster breaks" (Largo-Wright et al., 2017; Taylor, 2011), or the use of walking meetings (Clayton, Thomas, & Smothers, 2015).

We also note that follow-up studies might build upon the results from the treatment group in this study. Possible research questions for such work might be: 1) For individuals who have already developed resilience through exercise, what is the effort necessary to a) build or b) maintain this resilience? 2) Does resilience continue to develop with the same level of exercise? Or is there a point at which resilience plateaus thereby requiring more exercise to continue building it? 3) If individuals stop exercising, a) how far, b) how quickly, and c) in what directions do their resilience levels shift?

Although we offer this intriguing finding about a property of resilience developed through exercise and the support for a positive, significant relationship between long-term exercise and resilience, there are limitations to our study. First, our sample consisted only of female participants, therefore we cannot generalize these findings to males. Thus, future research could replicate this study using male subjects. Secondly, the exercise intervention for the treatment group was group-based exercise. Thus, we do not know if the same findings would hold for solo-exercise activities. It would be valuable to know based on empirical evidence that solo-exercise also builds resilience since a group exercise setting is not always possible in today's fast-paced world. Thus, future research efforts could also examine solo-based exercise as a way to build resilience to see whether the same findings are true. Lastly, there is no consensus regarding a definition of long-term exercise. Our study ran for 4 weeks. However, some might argue that to be too long or too short. Without a clear, accepted definition of "long-term exercise" our subjective determination is that 4 weeks constitutes long-term exercise, however we understand that claim might be debatable.

Overall, we believe our findings about resilience are novel and contribute to our overall understanding of resilience. We hope that other researchers, especially those from other fields, might similarly

deem our findings intriguing and be motivated in their own inquiries around resilience. In particular, we note the difference in our study between the effects of acute versus long-term exercise on resilience and the suggestion that resilience developed through exercise might be difficult to build and easily to lose.

References

Bahrke, M. S., & Morgan, W. P. (1978). Anxiety reduction following exercise and meditation. *Cognitive therapy and research,* 2(4), 323-333.

Bartholomew, J. B., Morrison, D., & Ciccolo, J. T. (2005). Effects of acute exercise on mood and well-being in patients with major depressive disorder. *Medicine and science in sports and exercise,* 37(12), 2032.

Childs, E., & de Wit, H. (2014). Regular exercise is associated with emotional resilience to acute stress in healthy adults. *Frontiers in Physiology*, 5, 1-7.

Clayton, R., Thomas, C., & Smothers, J. (2015). How to do walking meetings right. *Harvard Business Review*, August 5th, https://hbr.org/2015/08/how-to-do-walking-meetings-right

Ensel, W. M., & Lin, N. (2004). Physical fitness and the stress process. *Journal of Community Psychology,* 32(1), 81-101.

Fredrickson B.L. (2001). The role of positive emotions in positive psychology. The broaden-and-build theory of positive emotions. *American Psychologist*, 56 (3), 218–226.

Griffith, J., & West, C. (2013). Master resilience training and its relationship to individual well-being and stress buffering among Army National Guard soldiers. *Journal of Behavioral Health Services & Research,* 40(2), 140-155.

Gupta, R., & Bakhshi, A. (2018). Workplace bullying and employee well-being: A moderated mediation model of resilience and perceived victimization. *Journal of Workplace Behavioral Health,* 33, 2, 96-115.

Gutek, B. A., Searle, S., Klepa, L. (1991). Rational versus gender role explanations for work-family conflict. *Journal of Applied Psychology*, 76, 560-568.

Hinkin, T. R. (1998). A brief tutorial on the development of measures for use in survey questionnaires. *Organizational research methods*, 1, 104-121.

Ho, F. K. W., Louie, L. H. T., Chow, C. B., Wong, W. H. S., & Ip, P. (2015). Physical activity improves mental health through resilience in Hong Kong Chinese adolescents. *BMC pediatrics,* 15(1), 48.

Joyce, S., Shand, F., Tighe, J., Laurent, S. J., Bryant, R. A., & Harvey, S. B. (2018). Road to resilience. A systematic review and meta-analysis of resilience training programmes and interventions. *BMJ Open,* doi: 10.1136/bmjopen-2017-017858

Kasparkova, L., Vaculik, M., Prochazka, J., & Schaufeli, W. B. (2018). Why resilient workers perform better: The roles of job satisfaction and work engagement. *Journal of Workplace Behavioral Health*, 33, 1, 43-62.

Krieidler, S.M., Muller, K.E. Grunwald, G.K., Ringham, B.M., Coker-Dukowitz, Z.T., Sakhadeo, U.R., …(2013). GLIMMPSE: online power computation for linear models with and without a baseline covariate. *Journal of Statistical Software,* 54(10), 1-26.

Krush, M. T., Agnihotri, R. A. J., Trainor, K. J., & Krishnakumar, S. (2013). The salesperson's ability to bounce back: examining the moderating role of resiliency on forms of intrarole job conflict and job attitudes, behaviors and performance. *Marketing Management Journal*, 23, 42–56.

Lam, C. B., & McBride-Chang, C. A. (2007). Resilience in young adulthood: The moderating influences of gender-related personality traits and coping flexibility. *Sex Roles,* 56(3-4), 159-172.

Largo-Wright, E., Wlyudka, P. S., Merten, J. W., & Cuvelier, E. A. (2017). Effectiveness and feasibility of a 10-minute employee stress intervention: Outdoor Booster Break. *Journal of Workplace Behavioral Health*, 32, 3, 159-171.

Lazaridou, A., & Beka, A. (2015). Personality and resilience characteristics of Greek primary school principals. *Educational Management Administration & Leadership,* 43(5), 772-791.

Lee, J. H., Nam, S. K., Kim, A. R., Kim, B., Lee, M. Y., & Lee, S. M. (2013). Resilience: A meta-analytic approach. *Journal of Counseling and Development : JCD,* 91(3), 269-279.

Luthans, F. (2002). The need for and meaning of positive organizational behavior. *Journal of Organizational Behavior,* 23(6), 695-706.

Luthans, F., Avolio, B. J., Avey, J. B., & Norman, S. M. (2007). Positive psychological capital: Measurement and relationship with performance and satisfaction. *Personnel Psychology,* 60, 541-572.

Luthans, F., Youssef, C. M., & Avolio, B. J. (2007). *Psychological capital : Developing the human competitive edge*. Oxford: Oxford University Press.

Meng, H., Luo, Y., Huang, L., Wen, J., Ma., J., & Xi, J. (2019). On the relationships of resilience with organizational commitment and burnout: A social exchange persepctive. *International Journal of Human Resource Management*, 30, 15, 2231-2250.

Netz, Y., Wu, M.-J., Becker, B. J., & Tenenbaum, G. (2005). Physical activity and psychological well-being in advanced age: a meta-analysis of intervention studies: American Psychological Association.

Ozkara, A. B., Kalkavan, A., Alemdag, S., & Alemdag, C. (2016). The role of physical activity in psychological resilience. *Sport and Health*, 24.

Peugh, J. L., and Enders, C. K. (2005). Using the SPSS mixed procedure to fit cross-sectional and longitudinal multilevel models. *Educational and Psychological Measurement,* 65, 717-741.

Plante, T. G., Coscarelli, L., & Ford, M. (2001). Does exercising with another enhance the stress-reducing benefits of exercise? *International Journal of Stress Management,* 8(3), 201-213.

Reivich, K. J., Seligman, Martin, E. P., & McBride, S. (2011). Master resilience training in the U.S. Army. *American Psychologist,* 66(1), 25-34.

Rethorst, C. D., Wipfli, B. M., & Landers, D. M. (2009). The antidepressive effects of exercise. *Sports Medicine,* 39(6), 491-511.

Robertson, I. T., Cooper, C. L., Sarkar, M., & Curran, T. (2015). Resilience training in the workplace from 2003 to 2014: A systematic review. *Journal of Occupational and Organizational Psychology*, 88, 533-562.

Sarkar, M., & Fletcher, D. (2014). Ordinary magic, extraordinary performance: Psychological resilience and thriving in high achievers. *Sport, Exercise, and Performance Psychology*, 3, 46-60.

Siltaloppi, M., Kinnunen, U., & Feldt, T. (2009). Recovery experiences as moderators between psychosocial work characteristics and occupational well-being. *Work & Stress,* 23(4), 330-348.

Southwick, S. M., & Charney, D. S. (2012). *Resilience: The science of mastering life's greatest challenges*. Cambridge, United Kingdom: Cambridge University Press.

Strumpfer, D. J. W. (2003). Resilience and burnout: A stitch that could save nine. *South African Journal of Psychology,* 33(2), 69-79.

Taylor, A. H. (2000). Physical activity, anxiety, and. *Physical activity and psychological well-being*, 10.

Taylor, W. C. (2011). Booster Breaks: An easy-to-implement workplace policy designed to improve employee health, increase productivity, and lower health care costs. *Journal of Workplace Behavioral Health,* 26, 1, 70-84.

Thomas, S., Reading, J., and Shephard, R. J. (1992). Revision of the Physical Activity Readiness Questionnaire (PAR-Q). *Canadian Journal of Sport Sciences*, 17, 338-345.

Watson, D., Clark. L. A., and Tellegen,A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology*, 54, 1063-1070.

West, B. T. (2009). Analyzing longitudinal data with the linear mixed model procedure in SPSS. *Evaluation & the Health Professions,* 32*,* 207-228.

Whelton, S. P., Chin, A., Xin, X., & He, J. (2002). Effect of aerobic exercise on blood pressurea meta-analysis of randomized, controlled trials. *Annals of internal medicine,* 136(7), 493-503.

Wipfli, B. M., Rethorst, C. D., & Landers, D. M. (2008). The anxiolytic effects of exercise: a meta-analysis of randomized trials and dose–response analysis. *Journal of Sport and Exercise Psychology,* 30(4), 392-410.

Yeung, R. R. (1996). The acute effects of exercise on mood state. *Journal of psychosomatic research,* 40(2), 123-141.

The Football Betting Market and the Super Bowl Effect: A Question of Efficiency

Ladd Kochman
Kennesaw State University

Luc Noiset
Kennesaw State University

David Bray
Kennesaw State University

Abstract

Wagers placed on the opponents of the past season's Super Bowl winner in the first game of the new season produced an impressive wins-to-bets ratio of 69.0 percent. Betting on opponents in the first three games and in the first five games also beat the spread with ratios of 62.5 percent and 55.8 percent, respectively. The underlying assumption is that bettors' extrapolation makes reigning champions overrated and, in turn, inflates point spreads to the opponents' advantage.

Background

Researchers have long sought exceptions to the efficiency of the securities market and have generally concluded that the few that are discovered are short-lived. No less numerous are those who hunt for mistakes in the football betting market, who likewise find that regular profits are elusive. When other researchers looked for real-life examples of imperfect decision-making in support of anomalies identified in behavioral economics, they discovered ample illustrations in the football betting market as well as the anomalous returns that resulted from the faulty thinking behind the subsequent bets.

Bennett (2019) reported that betting on the opponents of college teams in the first game of the year that had ranked in the previous year's Associated Press Top 25 poll enjoyed a W/B ratio significantly greater than the 52.4-percent break-even rate over the 2008-2016 seasons when risking $11-to-win-$10. Bennett attributed

the losing strategy to backward-looking bettors and their over-reliance on outdated information. Fodor et al. (2013) followed the success of bets in the first game of the season that were placed on teams in the National Football League (NFL) during the 2004-2012 years that had qualified for the playoffs in the previous season[1]. The strategy led to a 35.6-percent—or 64.4 percent for wagers on opponents. The authors reasoned that losing bettors had clung to outdated perceptions and failed to update valuations.

Earlier research also focused on a holdover bias among bettors. Kochman (2000) investigated the W/B ratio of Super Bowl (SB) winners in the first five games of the new season over the 1988-1997 span. Believing that bettors' perceptions of the reigning champions would change little, Kochman placed imaginary wagers on their opponents and garnered above-average returns. No attempt was made to isolate a "Super Bowl effect" in fewer or more than five games.

Methodology

Kochman's shortcoming invited a retest of the efficiency of the sports betting market when challenged by the SB effect. Scores by NFL teams for the 30 consecutive years ending in 2021 were compared with respective point spreads to decide wins, losses and wins-to-bets ratios. Our hypothesis is that bets on opponents of the prior season's SB champion would beat the point spread in (1) the first game, (2) the first three games, (3) the first five games and (4) all games in the new season with regularity exceeding the 52.4-percent breakeven rate. Our source of data was the internet site NFL Teams ATS.

Results

Remarkably, the strategy of betting on the opponents of the prevailing SB winners for the 1992-2021 years in the first game of the ensuing season beat the spread at a significantly nonrandom rate of 69 percent. See appendix. Binomial distribution calculations show that there is only a 5.3 percent probability of getting 20 or more wins in this sample of twenty-nine first games of the season when the probability of beating the spread is indeed the 52.4 percent breakeven rate. Moreover, there is only a 3.6 percent probability of achieving 55 or more wins out of the 88 first three games of the season. It appears that there does exist an information gap about the relative competitiveness

of teams at the beginning of the season, and that bettors erroneously use a team's reputation in the previous season (Superbowl Champs) to place bets at the beginning of the new season. An inefficient betting strategy that leaves room for exploitation by placing bets on the opponents of Super Bowl Champs. As the season progresses, our results show that the betting becomes better informed. The binomial distributions for the first five games of the season shows a 22.9 percent probability of achieving the 82 wins or more out of the 147 games in out sample. For the entire season the probability is 92.4 percent that there would be 252 wins or more out of the 511 games when the true probability of winning is the breakeven 52.4 percent.

Conclusions

The steady decline in W/B ratios from one game to all games when betting on the opponent of the past season's SB champion would seem to suggest that wagers on the reigning champions could eventually become profitable as the season played out. It was not too surprising then that betting on those SB winners in the year's sixth game and beyond produced a W/B ratio of 53.3 percent (or 70 out of 364) and, in a broader view, the picture of a market that errs, corrects, and then overcorrects.

Endnote

1. Since the Super Bowl is held in the calendar year following the regular NFL season, references to the new year or new season would be the same year in which the Super Bowl is played.

References

1. Bennett, R. "Holdover Bias in the College Football Betting Market." Atlantic Economic Journal, Vol. 47(1), March 2019.

2. Fodor, A., M. DiFilippo, K. Krieger, and J. Davis. "Inefficient Pricing from the Holdover Bias in the NFL Point Spread Market." Applied Financial Economics, September 2013.

3. Kochman, L. "Securities Market Efficiency and the Reigning Super Bowl Champions." Review of Business, Spring 2000.

Appendix

Wins-to-bets ratios when betting on opponent of the reigning Super Bowl champion (1992-2021)

Year	Reigning Champ	Game 1	Games 1-3	Games 1-5	All Games
1992	Washington	1/1	3/3	4/5	10/17
1993	Dallas	1/1	2/3	2/5	8/19
1994	Dallas	0/1	2/3	2/5	9/18
1995	San Francisco	1/1	1/3	3/5	10/17
1996	Dallas	1/1	2/3	3/5	10/18
1997	Green Bay	0/0	2/2	4/4	9/17
1998	Denver	1/1	1/3	1/5	7/19
1999	Denver	1/1	3/3	3/4	7/16
2000	St. Louis	1/1	2/3	2/4	10/16
2001	Baltimore	0/1	1/3	2/5	8/17
2002	New England	0/1	1/3	3/5	10/16
2003	Tampa Bay	1/1	2/3	3/5	9/16
2004	New England	1/1	2/3	3/5	6/18
2005	New England	1/1	2/3	3/5	9/18
2006	Pittsburgh	0/1	2/3	3/5	8/15
2007	Indianapolis	1/1	2/3	2/5	8/17
2008	New York Giants	1/1	2/3	3/5	5/17
2009	Pittsburgh	0/1	2/3	3/5	10/15
2010	New Orleans	0/1	1/3	2/5	10/17
2011	Green Bay	1/1	1/3	1/5	6/17
2012	New York Giants	1/1	2/3	3/5	8/15
2013	Baltimore	1/1	2/3	3/5	9/16
2014	Seattle	0/1	2/3	3/5	8/18
2015	New England	1/1	2/3	3/5	8/16
2016	Denver	0/1	0/3	2/5	7/16
2017	New England	1/1	2/3	3/5	7/19
2018	Philadelphia	0/1	2/3	3/5	9/18
2019	New England	1/1	2/3	3/5	8/16
2020	Kansas City	1/1	3/3	4/5	11/19
2021	Tampa Bay	1/1	2/3	3/5	8/18
Totals		20/29	55/88	82/147	252/511
Wins to Bets on opponents		69.0%	62.5%	55.8%	49.3%
Binomial Prob. (p = .524)		5.3%	3.6%	22.9%	92.4%

Cruising the South: A Review of River and Small Ship Cruises Along Southern U.S. Waterways

Mark Mitchell, Coastal Carolina University
Michael Dowd, Coastal Carolina University
Taylor Damonte, Coastal Carolina University

Abstract

The ports of the Southern United States provide consumers access to ocean cruises, with 60 percent of all U.S. ocean cruise passengers using a Florida port. The river and small ship cruise segment is receiving increased attention by consumers and cruise ship operators alike. While the majority of world-wide river cruises explore European Rivers (such as the Danube and Rhine Rivers), there is growing interest among consumers to explore the rivers and coastal waterways of the United States. This manuscript provides an overview of river and small ship cruise activity in the Southern United States in four geographic clusters and waterways: (1) Lower Mississippi River; (2) American Heartland and Tributaries to the Mississippi River; (3) South Atlantic Coast; and (4) Mid-Atlantic Coast. The existing cruise options in each market are identified. The growth options for cruise line operators are explored, as are possible limitations to industry expansion in the Southern United States.

Introduction

Viking River Cruises is a global leader in river cruises with over 60 specially-designed river ships traversing Europe, Asia, and Africa (Wood, 2021). In March of 2020, Viking announced plans to enter the United States river cruise market with the introduction of the ship, The *Viking Mississippi*. The ship is much larger than its European river ships, which are specially designed to operate within the limits of bridge heights and narrow lock systems in that region. The *Viking Mississippi* will serve the upper and lower Mississippi River between St. Paul, MN and New Orleans, LA (Clausing, 2020). Here is how Viking described the ship (Viking Mississippi, 2022):

> *"Hosting 386 guests in 193 all outside staterooms, the new state-of-the-art Viking Mississippi is inspired by our award-winning*

Viking Longships® and ocean ships and will feature clean Scandinavian design, as well as public spaces that are familiar to guests but that have been reimagined for Mississippi River voyages. Purpose-built for the Mississippi, the ship's cutting-edge design, expansive windows and comfortable amenities will make it the first truly modern cruise ship in the region."

In addition to entering the Mississippi River cruise market in 2022, Viking also entered the Great Lakes cruise market with the introduction of the *Viking Octantis*, a 655-foot vessel that is the largest cruise ship to sail the Great Lakes and to dock at its home port of Milwaukee, WI. This expedition ship will split time between Antarctic Expedition cruises and the Great Lakes region (Lewis, 2022).

River travel is nothing new in the United States as folklore runs deep with images of Mark Twain and Paddlewheel ships running up and down the Mississippi River and other waterways. Current industry leaders American Cruise Lines started sailing in 2000 while the American Queen Steamboat Company (now known as American Queen Voyages), started sailing in 2012 (Sampson, 2020). Both have seen accelerated growth in recent years. Together, the two firms offer river cruises along the Mississippi, Columbia, Snake, Ohio, Cumberland, Hudson, and Tennessee rivers in the United States. Traditionally, the ships used have been paddlewheel-style ships though American Cruise Lines has been introducing more modern designed river ships into their fleet since 2018 (Clausing, 2020).

The introduction of the global leader Viking to the United States river cruise and Great Lakes markets highlights the attractiveness and growth potential of the United States river and small ship/expedition cruise markets. The purpose of this manuscript is to provide an overview of U.S. river and small ship cruises with a focus on the geographic markets and waterways of the Southern United States. First, an overview of river cruising is offered, including a comparison to larger vessel ocean cruising. Second, the current state of the United States river and small ship/expedition cruise industry is provided. Third, a listing of current (and announced) river and small ship cruises in the Southern United States is presented. Next, some future markets that intuitively offer potential to cruise lines are offered. Finally, some limitations to the future growth of the industry are provided.

An Overview of the River Cruise Industry and Experience

Scholarly research does not provide a formal definition of a river cruise. Broadly put, a river cruise is a multi-day voyage taken for leisure purposes on a river vessel along navigable rivers or inland waterways where passengers spend the night on the vessel (von Balen et al., 2014). The vessels may also pass through connected lakes and rivers, including seacoasts if the waterways are connected (Bosnic and Gasic, 2019). As such, day trips on rivers (such as the *Natchez* in New Orleans, LA), wildlife excursions (such as whale watching tours in Hilton Island, SC) or harbor tours (such as Tampa, FL) are not included in this category.

The river cruise industry is heavily concentrated in Europe, which serves approximately 90 percent of river cruise passengers. The majority of these cruises are on the Danube and Rhine rivers and their tributaries. In 2018, there were 1.64 million river cruise passengers in the European Union compared to 7.8 million ocean cruise passengers (or, river cruises are loosely about 20 percent the size of the ocean cruise market) (Tomej and Lund-Durlacher, 2020). Steinbach (1995) notes that European counties offer extensive networks of navigable waterways traversing through historic towns with castles, wineries, and monasteries located along the waterways. Cruises get the added benefit of visiting multiple countries (and experiencing multiple cultures) on their journey. Dimitrov and Stankova (2019) found that attractive tourist destinations tend to make river cruises from those locations more appealing to consumers, which further increases the appeal of that destination city.

A river cruise vacation allows the traveler to unpack just once for their vacation and to never change hotels rooms. They travel on smaller vessels with 100-400 passengers to smaller destinations which allows for a deeper engagement with the way of life for the locals. With fewer passengers aboard, cruisers can make more personal connections with their fellow passengers and the ship's staff. River cruises are typically offered as all-inclusive vacations that combine staterooms, meals (and alcohol), guest lectures and enrichment programs, entertainment, and most shore excursions for one price. Many cruises include a pre-cruise hotel stay and transfers to the ship. The pace is casual as is the dress code. Shore excursions tend to be cultural or educational (history, military history, national parks, etc.). Passengers seeking the above travel experience can avoid flying

overseas (spending both money and time) to begin their cruise vacations (section relies heavily on Zable, 2022). Zable (2022) offers the following description of U.S. river cruises:

> *"But it's about the destinations on and off the ship, including shore excursions that cater to a variety of interests and activity levels. Passengers can zip line through Oregon's lush forests, sip wine on a vineyard terrace while enjoying the view of Columbia River and Mount Hood following a guided walk of Maryhill Winery in Washington, spend an afternoon sorting shrimp, blue crab, and more, or listen to Civil War history at Vicksburg. As for the Great Lakes, you can kayak through the Straits of Mackinac in Michigan or the sea caves of the Bayfield Peninsula while at Wisconsin's Apostle Islands. Or, opt for a naturalist-led hike on Wisconsin's Ice Age National Scenic Trail to discover glacial landforms and local wildlife along the way."*

Table 1 provides a broad comparison between the smaller ship river and coastal waterway cruises and larger-ship ocean cruises (see Woodruff and Woodruff 2022 for more detail).

Table 1: A Comparison of River and Ocean Cruises

	River and Small Ships	Ocean Ships
Port location	Often in center of city	Often in outskirts of city
Ship length	300-400 feet	1,000 feet or more
Number of decks	4-6	10-16
Number of passengers	100 - 400	2,500-5,000
Boarding process	Less cumbersome	More cumbersome
Cost	More expensive per day	Less expensive per day
Meals	Included	Included
Alcohol	Included	Additional Charge
Port Cities	Smaller communities	Larger cities
Cabins	Fewer options	More options
Number of restaurants	1-2	10 or more
Number of bars	1-2	Many more
Entertainment options	Fewer	Many more
Health spa	Not common, can get services in port cities	Commonly available
Casino gambling	Not available	Commonly available
Motion sickness	Less likely to occur	More likely to occur
On-land excursions	Included	Additional charge
Passenger age	Tend to be older	Tend to be younger

On-land scenery	More interesting	Less interesting
On-board shopping	Limited	Prevalent

The Importance of Southern U.S. Ports for Ocean Cruises

Though the focus of this study is river and small ship cruising, it must be acknowledged that Southern U.S. ports provide access to ocean cruises for millions of cruise passengers each year. The ports of the Southern United States, particularly those located in Florida (Jacksonville, Port Canaveral, Fort Everglades/Fort Lauderdale, Miami, and Tampa) serve as embarkation/debarkation ports for cruise ships sailed by the larger ocean cruise lines such as Carnival Cruises, Royal Caribbean Cruise Lines, Norwegian Cruise Lines, Disney Cruises, and others.

According to the Cruise Lines International Association (CLIA), approximately 8.2 million passengers (about 60% of U.S. cruise ship passengers) in 2019 set sail from one of the ports in Florida (McLean, 2022). Many cruise lines stop in Key West, FL as part of their itineraries. In 2019, the cruise industry generated $9.04 Billion in direct spending, created 158,992 jobs that amounted to $8.06 Billion in wages in the state of Florida. Five cruise lines have their headquarters in Florida: Carnival; Disney Cruises; MSC Cruises; Norwegian Cruise Line; and Royal Caribbean International (CLIA, 2019).

New Orleans is both a port of call for ocean cruises and a beginning/end port for Mississippi River cruises. The Port of New Orleans expected 285 sailings through the port in 2022 that would account for approximately 1 million passengers. These cruise passengers are expected to purchase more than 300,00 room night stays in the city and spend more than $125 million. Ninety (90) percent of New Orleans cruise passengers travel to Louisiana to cruise with 73 percent spending 1-2 additional days in the city (purchasing good and services). The above data includes the estimated 31,300 river cruise passengers, which is one of the fastest growing segment of the Port NOLA's business (Port of New Orleans, 2021).

Carnival Cruise has operated its ships out of the port of Charleston, SC since 2010. However, the current homeport contract was not renewed, meaning Carnival will discontinue using Charleston as a beginning/ending post for its cruises in 2024 (Rademaker, 2022). The city's desired to redevelop the port terminal grounds and ongoing legal challenges by conservation groups led to the decision.

Approximately 70 cruises a year leave Charleston (The Associated Press, 2022). The city will continue to be a port of call for other courses, especially the smaller cruise ships outlined in this study. The South Carolina Ports Authority will allow no more than 104 ship visits per year and ships are limited to 3,500 or fewer passengers (Sward, 2022). In 2010, ocean cruises were projected to have an economic impact over $37 Million in the Charleston area, the last year a figure was available (SCSPA, 2010).

The Current State of the U.S. River and Small Ship/Expedition Cruise Industry

There are currently 12 cruise lines offering river cruises in the United States and the Great Lakes region. These firms vary in the size of their fleets, variety of cruises offered, and variety of markets served. They are listed here in alphabetical order: (1) American Cruise Lines; (2) American Queen Voyages; (3) Hapag-Lloyd Cruises; (4) Lindblad Expeditions (National Geographic); (5) Pearl Seas Cruises; (6) Plantours Cruises; (7) Ponant Cruises; (8) Silversea Cruises; (9) St. Lawrence Cruises Lines; (10) Tauck; (11) UnCruise Adventures; and (12) Viking River Cruises.

There are 11 distinct geographic clusters of waterways in the United States and Canada: (1) Lower Mississippi River; (2) American Heartland and Tributaries to the Mississippi River; (3) Upper Mississippi River; (4) Great Lakes & Saint Lawrence Seaway; (5) New England Coast and Canadian Maritimes; (6) Mid-Atlantic Coast; (7) South Atlantic Coast; (8) Pacific Northwest – Puget Sound; (9) Pacific Northwest – Snake & Columbia Rivers; (10) California Coast; and (11) Alaska & British Columbia Coast. Some cruises combined these clusters in one trip, such as American Queen Voyages' 16-day *Boston to Nassau* cruise that combines the New England Coast, Mid-Atlantic Coast, and Southern Coast before completing its journey in the Bahamas off the coast of Florida.

Given the focus of this manuscript on the markets and waterways of the Southern United States, the focus here will be on four market regions: (1) Lower Mississippi River; (2) American Heartland and Tributaries to the Mississippi River; (3) South Atlantic Coast; and (4) Mid-Atlantic Coast. Table 2 shows the major cruise providers in each market.

Table 2: Representation in Each Market by Carrier

Geographic Market	American Cruise Lines	American Queen Voyages	Lindblad Expeditions	Viking River Cruises
Lower Mississippi River	X	X		X
American Heartland and Tributaries to Mississippi River	X	X		
South Atlantic Coast	X		X	
Mid-Atlantic Coast	X	X		

River Cruise Passenger Profile

Approximately 80 percent of river cruise passengers are Baby Boomers with the remaining 20 percent typically being people in their 50's attracted to the addition of yoga rooms, gyms and unique gathering areas to modern riverboats. These target markets are active travelers with the time and money needed to explore the United States at the slower pace of the riverboat (Sampson, 2020). The river cruise industry tends to follow a one-port-per-day model, with ports typically visited in the daylight hours for a specific amount of time. Some researchers have noted that this model may need to be modified in the future as the next generation of consumers (i.e., Generation X) reports a preference for a less structured cruise experience with docking times expanded and overnights stays in select ports to allow more interaction with the local community (Cooper et al, 2019).

To continue to expand the market for river cruises beyond its primary Baby Boomer market, cruise operators are currently focused on family travel, small group travel (such as girlfriend's get-away cruises) and passenger willingness to spend more on upper-level cabins. In the post COVID-19 market, many consumers are attracted to the smaller ships cruising closer to home and the desire to reconnect with family and friends (Edenedo, 2022).

Riverboat Cruise in-Port Passenger Spending

Clarkston, WA is a river port city where cruises begin and end. Research conducted by the Port of Clarkston found that riverboat

passengers spent approximately $148 per person in 2019. Visitors typically arrive the day before a river cruise and purchase local lodging, which increases the amount of local spending (Port of Clarkston, 2021).

Research on visitors to Vicksburg, MS who arrived by river cruise ship spent approximately $76 per day for their one-day visit to the community (Vicksburg Post Editorial Board, 2019). Research sponsored by the city of Natchez, MS suggests approximately half of river cruise passengers to their city (via American Cruise Lines or American Queen Voyages) elected to take the cruise line's complimentary on-shore excursion (Natchez, 2019). This suggests there may be a dichotomy in visitors to ports based on purchases where some passengers spend much while others spend little (beyond their included excursion).

Current Cruises Offered in the Southern United States

Lower Mississippi River

The region of the Mississippi River running from New Orleans, LA to Memphis, TN is often referred to as the Lower Mississippi. This region is the largest U.S. river cruise market in the United States with three firms offering ten different itineraries year-round without concerns of river freezing that can occur in Northern U.S. markets. Here, cruise operators can assign their largest ships, including the *Viking Mississippi* (386 passengers) and American Queen Voyage's *American Queen* (436 passengers, the largest steamboat ever built). Cruise experts recommend Spring and Fall cruises to avoid the summer heat and winter chill when enjoying on-deck relaxation and in-port excursions (Rhodes, 2021). Here is a list of the most common port stops in this region across all operators:

- New Orleans, LA
- Oak Alley, LA
- Houmas House, LA
- Baton Rouge, LA
- St. Francisville, LA
- Natchez, MS
- Vicksburg, MS
- Greenville, MS
- Helena, AR

- Tunica, MS
- Memphis, TN

Table 3 provides a look at the itineraries available to river cruise travelers.

Table 3: Cruise Offerings on the Lower Mississippi River

Cruise Line	Cruise Name	Cruise Length # of Passengers	Cruise Embark and Debarking Location
American Cruise Lines	New Orleans (Roundtrip)	8 Days / 7 Nights 150-190 Passengers	New Orleans, LA to New Orleans, LA
American Cruise Lines	Highlights of the Mississippi River	5 Days / 4 Nights 150-175 Passengers	New Orleans, LA to New Orleans, LA
American Cruise Lines	Lower Mississippi River Cruise	8 Days / 7 Nights 150 – 190 Passengers	New Orleans, LA to Memphis, TN (and reverse)
American Cruise Lines	Mississippi River Gateway Cruise	11 Days / 10 Nights 150-185 Passengers	New Orleans, LA to St. Louis, MO (and reverse)
American Queen Voyages	Roundtrip New Orleans	8 Days / 7 Nights 166 Passengers	New Orleans, LA to New Orleans, LA
American Queen Voyages	Lower Mississippi River	9 Days / 8 Nights 436 Passengers	New Orleans, LA to Memphis, TN
American Queen Voyages	Lower Mississippi River	9 Days / 8 Nights 245 Passengers	Memphis, TN to New Orleans, LA
Viking River Cruises	New Orleans & Southern Charm	8 Days / 7 Nights 386 Passengers	New Orleans, LA to New Orleans, LA
Viking River Cruises	Heart of the Delta	8 Days / 7 Nights 386 Passengers	New Orleans, LA to Memphis, TN (and reverse)
Viking River Cruises	Mississippi Holiday Season	8 Days / 7 Nights 386 Passengers	New Orleans, LA to Memphis, TN (and reverse)

American Heartland and Tributaries to the Mississippi River

The portion of the Mississippi River running from Memphis, TN to St. Louis, MO (or across the river to Alton, IL) can be considered the Mid-Mississippi River area or "American Heartland" with the tributary waterways of the Ohio, Cumberland, and Tennessee Rivers emptying into the Mississippi River in this region. Cruise operators

can connect the following larger cities: Pittsburgh, PA; Louisville, KY; St. Louis, MO; Nashville, TN, Chattanooga, TN, and Memphis, TN. As noted earlier, cruise experts recommend Spring and Fall cruises to avoid the summer heat and winter chill when enjoying on-deck relaxation and in-port excursions (Rhodes, 2021). Here is a list of the most common port stops in this region across all operators:

- New Madrid, MO
- Cape Girardeau, MO
- St. Louis, MO
- Paducah, KY
- Savannah, TN
- Dover, TN
- Clarksville, TN
- Nashville, TN
- Florence, AL
- Decatur, AL
- Chattanooga, TN
- Pittsburgh, PA
- Marietta, OH
- Maysville, KY
- Cincinnati, OH
- Louisville, KY
- Henderson, KY

Table 4 provides a look at the itineraries available to river cruise travelers.

Table 4: Cruises in American Heartland & Mississippi River

Cruise Line	Cruise Name	Cruise Length # of Passengers	Cruise Embark and Debarking Location
American Cruise Lines	Ohio River Cruise	11 Days / 10 Nights 150 Passengers	Pittsburgh, PA to St. Louis, MO
American Cruise Lines	Music Cities Cruise	8 Days / 7 Nights 175-190 Passengers	Memphis, TN to Nashville, TN (and reverse)
American Cruise Lines	Tennessee Rivers	8 Days / 7 Nights 175-185 Passengers	Nashville, TN to Chattanooga, TN (and reverse)

American Queen Voyages	Pittsburgh to Louisville	9 Days / 8 Nights 436 Passengers	Pittsburgh, PA to Louisville, KY (and reverse)
American Queen Voyages	Louisville to St. Louis	9 Days / 8 Nights 436 Passengers	Louisville, KY to St. Louis, MO
American Queen Voyages	Nashville to Chattanooga	9 Days / 8 Nights 436 Passengers	Nashville, TN to Chattanooga, TN
American Queen Voyages	Nashville to Memphis	9 Days / 8 Nights 436 Passengers	Nashville, TN to Memphis, TN
American Queen Voyages	Louisville to Nashville	9 Days / 8 Nights 166 Passengers	Louisville, KY to Nashville, TN

South Atlantic Coast

The waters of the South Atlantic Coast include many port cities with large volumes of ocean cargo, such as Norfolk, VA; Charleston, SC, Savannah, GA, and Jacksonville, FL. Additionally, Charleston, SC and Jacksonville, SC are home port to many ocean cruise ships. In recent years, small ship cruise lines like American Cruise Lines and expedition cruise lines such as Lindblad Expeditions have been connecting these coastal communities and interested travelers. Tours in this region tend to run from November to April. Here is a list of the most common port stops in this region across all operators:

- Norfolk, VA
- Kitty Hawk, NC
- Beaufort, NC
- Wilmington, NC
- Charleston, SC
- Beaufort, SC
- Hilton Head, SC
- Savannah, GA
- Jekyll Island, GA
- St. Simons Island, GA
- Amelia Island, FL
- Jacksonville, FL
- Green Cove Springs, FL
- Palatka, FL
- Lake George, FL
- St, Augustine, FL

Table 5 provides a look at the itineraries available to southern Atlantic cruisers.

Table 5: Cruise Offerings on South Atlantic Coast

Cruise Line	Cruise Name	Cruise Length # of Passengers	Cruise Embark and Debarking Location
American Cruise Lines	Historic South and Golden Isles	8 Days / 7 Nights 110-110 Passengers	Charleston, SC to Amelia Island, FL (and reverse)
American Cruise Lines	Great Rivers of Florida	8 Days / 7 Nights 100 Passengers	Jacksonville, FL to Jacksonville, FL
American Cruise Lines	East Coast Inland Passage	15 Days / 14 Nights 109 Passengers	Baltimore, MD to Amelia Island, FL (and reverse)
American Queen Voyages	Roundtrip Jacksonville	12 Days / 11 Nights 202 Passengers	Jacksonville, FL to Jacksonville, FL
American Queen Voyages	Roundtrip Amelia Island	12 Days / 11 Nights 202 Passengers	Fernandina Beach, FL to Fernandina Beach, FL
Lindblad Expeditions	Exploring the Low Country	7 Days / 6 Nights 62 Passengers	Fernandina Beach, FL to Charleston, SC (and reverse)
Lindblad Expeditions	Wild South Carolina Escape	6 Days / 5 Nights 62 Passengers	Charleston, SC to Charleston, SC

Mid-Atlantic Coast

While many cruises visit New York City, the focus of this manuscript is Southern U.S. Waterways. As such, Baltimore, MD will be used as the northern-most port. Cruise operators (such as American Cruise Lines) package history-focused tours in this region under such names as "*American Revolution Cruise*," or the "Chesapeake Bay Cruise" and visit such historically important cities as Williamsburg, VA, Yorktown, VA, Annapolis, MD, and others. Given the weather, tours in this region tend to run from March to December. Here is a list of the most common port stops in this region across all operators:

- Baltimore, MD
- Norfolk, VA
- Williamsburg, VA
- Yorktown, VA

- Washington, D.C.
- Mount Vernon, VA
- Cambridge, MD
- St. Michaels, MD
- Annapolis, MD
- Crisfield, MD
- Tangier, VA

Table 6 provides a look at the itineraries available to Mid-Atlantic cruisers.

Table 6: Cruise Offerings on Mid-Atlantic Coast

Cruise Line	Cruise Name	Cruise Length # of Passengers	Cruise Embark and Debarking Location
American Cruise Lines	American Revolution	11 Days / 10 Nights 109-170 Passengers	Baltimore, MD to Baltimore, MD
American Cruise Lines	Chesapeake Bay	6 Days / 5 Nights 100-170 Passengers	Baltimore, MD to Annapolis, MD (and reverse)
Lindblad Expeditions	Wild Chesapeake Escape	6 Days / 5 Nights 62 Passengers	Annapolis, MD to Annapolis, MD

Untapped Markets for Southern U.S. River and Small Ship Cruises

At the time of this writing, cruise lines are working with boat manufacturers to bring forward updated boat designs that will allow the development of new river cruise experiences by allowing access to waterways that cannot be sailed with existing ships. For example, one river cruise specialist (American Cruise Lines) has plans to introduce up to twelve catamaran-style twin-hull river boats over the next several years. The design allows the vessel to cruise in more shallow waters as well as ocean coastal waterways along the East Coast, Pacific Northwest, and Alaska. American Cruise Lines' CEO Charles Robertson noted the transformative effect of the new ship design (Jainchill, 2022):

> *"There's a lot of new itinerary potential. We go to about 100 ports in total now, and this boat can go to hundreds more. It can get into*

some really cool nooks and crannies in Maine and get further south down the waterway in Florida and do more in the Chesapeake Bay. It can hit these gems of towns that have really never been on cruise itineraries before."

From the above statement, there could be expanded river and small ship ocean coast cruise activity in existing service areas in the American South in the Chesapeake Bay, South Atlantic Coast, and other areas. The ocean-going vessels could consider cruises that connect port cities along the Florida Coast, including: Jacksonville; St. Augustine; Port Canaveral; Fort Pierce; Fort Lauderdale; Palm Beach; Miami; Key West; Fort Myers; St. Petersburg; and Tampa.

At this time, no cruise line offers small ship cruises on the Gulf of Mexico. New ship designs may allow cruises that connect cities from Florida (such as Tampa, Panama City, and Pensacola) to Alabama (Mobile) to Mississippi (Pascagoula, Biloxi, and Gulfport) to Louisiana (New Orleans) to Texas (Galveston and Corpus Christi) (see worldportsource.com for a listing of port cities by state).

As noted earlier, the river cruise model of one-port-per-day visited in daylight hours for a specific amount of time with activities pre-selected by the cruise operator may need to be modified in the future as the next generation of consumers (i.e., Generation X) reports a preference for a less structured cruise experience with docking times expanded and overnights stays in select ports to allow more interaction with the local community (Cooper et al, 2019). One can imagine 2- to 5-day river cruises similar to the short-duration ocean cruises offered by major cruise lines. For example, Carnival offers 2- and 3-day cruises from Miami to the Bahamas (see carnival.com). Perhaps this short-duration cruise model could be effectively used by river and small ship cruises in the Southern United States in such attractive destinations as New Orleans, Memphis, Charleston, or Jacksonville.

Limitations to River and Small Ship Cruise Industry Growth

Historically, river cruise lines follow a one-port-per-day schedule with activities tailored largely to an older adult audience. Passengers cannot linger longer in a desired port as the ships must keep to their planned itineraries. These factors combine to limit the market size for river cruise passengers. The river cruise segment is expected to grow

2% from 2022 to 2032. Some cruise operators are trying to expand the overall market by appealing to younger cruises, expanding the summer cruise season, expanding into winter-month voyages, and expanding into new waterways (Futuremarketinginsights.com, 2022). Most of the American South provides for year-round cruising. As noted earlier, new ship designs may allow new waterways to be added to the river and small ship cruise industry.

The cruise industry is very capital-intensive and requires a significant investment to introduce and update a fleet of ships (Cooper, 2014). It can take 12-18 months for a cruise ship to be built (Ma, 2022). The reader will note there was a period of time over two years between Viking's announcement of their intent to provide Mississippi River cruises in March 2020 and their maiden voyage in August 2022 (McCormack, 2020). At the time of this writing, interest rates are rising, which will increase the cost of the needed capital to allow for industry expansion. These rising costs may delay planned expansion by cruise operators.

At time of this writing, inflation rates are hovering around 40-year high levels. Higher inflation rates have a two-fold impact. First, current prices go up. Second, as a result of the price increases, the purchasing power of one's saving is reduced (Thangavelu, 2022). For most consumers, a river cruise is discretionary spending that can be altered or abandoned as prices rise or savings dwindle. In such a case, some consumers may forgo planned cruise vacations.

Cruise operators have been struggling with staffing issues as the effects of the COVID-19 global pandemic continue. Some employees who used to serve on cruise ships have not returned to the industry while new employees have not been recruited and trained. Some ocean cruise operators have had to limit passenger counts due to staffing shortages. Others have eliminated or combine on-board services, such as Carnival closing some restaurants on some ships (Thomaselli, 2022). Given the high fixed cost nature of the business, cruise lines needed at least the critical mass of passengers just to cover their fixed cost of operation. Limiting passengers can have a significant impact on overall profitability.

Other issues such as climate concerns (Futuremarketinginsights.com, 2022), maritime terrorism (Bowen et al, 2014), and the lingering effects of the COVID-19 global pandemic could influence the river cruise industry in the future. Hines (2021) noted that many cruise passengers find the small ships with few

passengers preferable to the larger ocean ships while cruising during the COVID era.

Concluding Remarks

River cruises were gaining in popularity before the COVID-19 global pandemic hit in Spring 2020. River cruise bookings were about 20 percent of all cruise bookings (Hines, 2021). Research by the American Automobile Association (AAA) found that 40 percent of Americans are considering a cruise vacation in the next two years with Millennials even more eager (52 percent) for cruise vacations (Edmunds, 2022). The pent-up demand for travel spending (and cruise vacations, in particular) has helped propel cruise bookings above their pre-COVID levels. The Southern United States offers access to ocean cruises, river cruises, and small ship cruises for interested consumers. The region is well-positioned to benefit from this increased consumer spending and activity in the future.

As outlined here, there are four main geographic clusters for river and small ship cruises in the American South: (1) Lower Mississippi River; (2) American Heartland and Tributaries to the Mississippi River; (3) South Atlantic Coast; and (4) Mid-Atlantic Coast. The cruise offering of major cruise providers have been presented to illustrate the size and scope of the industry in the Southern United States. New ship designs are being introduced which will allow for new itineraries and destinations. New competitors are bringing their style of cruising to Southern waterways. With a temperate climate that allows for year-round cruising, it would appear the Southern states should benefit from the rising tide of interest in river and small ship cruises in the future.

References

Bosnic, I., & Gasic, I. (2019). River cruise industry: trends and challenges. Economic and Social Development, 43rd International Scientific Conference on Economic and Social Development – "Rethinking Management in the Digital Era: Challenges from Industry 4.0 to Retail Management" / Ribeiro, Humbero; Costa, Marco; Cerov, Ljerka - : Varazdin Development and Entrepreneurship Agency, 2019, 32-41.

Bowen, C., Fidgeon, P., & Page, S. (2014). Maritime tourism and terrorism: customer perceptions of the potential terrorist threat to cruise shipping. *Current Issues in Tourism, 11*(7), 610-639.

Carnival.com (2022). *Cruise planning – trip duration of 2-5 days.* Conducted online: www.carnival.com

Clausing, J. (2020, March 30). *Viking entering U.S. market in a big way.* Travel Weekly. https://www.travelweekly.com/River-Cruising/Viking-River-Cruises-unveils-look-of-first-US-ship

CLIA (2019). *Cruise industry impact: Florida.* https://cruising.org/-/media/Infographics/Enhanced%20Public%20Health%20Measures/2019%20Economic%20Impact%20Key%20States/Florida

Cooper, D. Holmes, K., Pforr, C. & Shanka, T. (2019). Implications of generational change: european river cruises and the emerging Gen X market. *Journal of Vacation Marketing, 25*(4), 418-431.

Cooper, T. (2014, October 16). *How Carnival Corporation is investing $2 billion in its future.* The Motley Fool. https://www.fool.com/investing/general/2014/10/16/how-carnival-corporation-is-investing-2-billion-in.aspx

Dimitrov, M. & Stankova, M. (2019). Enhancing the destination image through promoting popular river cruise destinations," CBU International Conference Proceedings, ISE Research Institute, 7(September), 49-55. https://ideas.repec.org/a/aad/iseicj/v7y2019i0p49-55.html

Edenedo, N. (2022, April 4). *ASTA's first river cruise expo gives advisors firsthand experience.* Travel Weekly. https://www.travelweekly.com/River-Cruising/ASTA-first-river-cruise-expo-firsthand-experience

Futuremarketinginsights.com (2022). *River cruises market outlook (2022-2032).* https://www.futuremarketinsights.com/reports/river-cruises-industry-overview

Hines, M. (2021, February 23). *River cruising was gaining popularity when COVID-19 hit. Is the smaller-ship experience even more appealing now?* USA Today. https://www.usatoday.com/story/travel/cruises/2021/02/23/covid-19-travel-river-cruise-interest-high-ocean-cruises-paused/6736406002/

Jainchill, J. (2022, January 18). *American Cruise Lines plans major expansion with small, catamaran-style vessels.* Travel Weekly. https://www.travelweekly.com/Cruise-Travel/American-Cruise-Lines-plans-major-expansion

Lewis, C. (2022, May 6). *Great Lakes cruising season kicks off in Milwaukee with Viking Octantis, the largest cruise ship to sail the lakes.* Milwaukee Journal Sentinel. https://www.jsonline.com/story/travel/wisconsin/2022/05/06/great-lakes-cruise-ship-milwaukee-viking-octantis/9657310002/

Ma, H. (2022, May 17). *How long does it take to build a cruise ship?* Cruise Hive. https://www.cruisehive.com/how-long-does-it-take-to-build-a-cruise-ship/72148

McCormack, F. (2020, April 3). *Edison Chouest to build Viking river cruise boat.* The Waterways Journal Weekly. https://www.waterwaysjournal.net/2020/04/03/edison-chouest-to-build-viking-river-cruise-boat/

McLean, J. (2022, February 21). *A look at the 1st cruise liner to operate out of JaxPort since the start of the pandemic.* News4Jax.com. https://www.news4jax.com/news/local/2022/02/21/a-look-at-the-1st-cruise-liner-to-operate-out-of-jaxport-since-the-pandemic/

Natchez (2019). *Economic impact of the Mississippi River cruise industry (city of Natchez, Mississippi).* https://www.natchez.ms.us/DocumentCenter/View/926/Natchez-Pilgrimage-Tours-Economic-Impact-Report

Port of Clarkston (2021). *Riverboats in the Lewis Clark Valley - passenger activities and spending.* https://portofclarkston.com/wp-content/uploads/2021/04/LewistonClarkstonRiverboat-Final.pdf

Port of New Orleans (2021, November 23). *285 cruise ship calls estimated for Port of New Orleans in 2022*. Cruise Industry News. https://www.cruiseindustrynews.com/cruise-news/26281-285-cruise-ship-calls-estimated-for-port-of-new-orleans-in-2022.html

Rademaker, M. (2022, May 25). *South Carolina Ports announces end of Carnival cruise contract.* Live5News.com. https://www.live5news.com/2022/05/25/south-carolina-ports-announce-end-carnival-cruise-contract/

Rhodes, E. (2021, December 21). *What to know about Mississippi River cruises — from the cruise lines to top itineraries.* Travel + Leisure. https://www.travelandleisure.com/cruises/river-cruises/mississippi-river-cruise

Sampson, H. (2020, February 27). *River cruising in America is growing among boomers. But plenty of people still don't know it's a thing.* The Washington Post.

https://www.washingtonpost.com/travel/2020/02/27/river-cruising-america-is-growing-among-boomers-plenty-people-still-dont-know-its-thing/

SCSPA (2010). Cruises float $37 million to Charleston area economy. https://www.crda.org/news/local_news/cruises-float-37-million-to-charleston-area-economy/#:~:text=An%20economic%20development%20engine%20for,in%20economic%20activity%20each%20year.

Steinbach, J. (1995). River related tourism in Europe - An overview. *GeoJournal, 35*(4), 443-458.

Sward, S. (2022, June 4). *Charleston just told Carnival it can no longer sail out of its port starting in 2024, here's why*. Travel News. https://www.travelawaits.com/2769976/carnival-cruise-lines-not-sailing-out-of-charleston-south-carolina-2024/

Thangavelu, P. (2022, June 10). *How inflation impacts your savings.* Investopedia.com. https://www.investopedia.com/articles/investing/090715/how-inflation-affects-your-cash-savings.asp

The Associated Press (2022, May 31). *Carnival Cruise Line no longer departing from Charleston after 2024.* WJCL.com. https://www.wjcl.com/article/carnival-cruises-charleston-south-carolina/40151226

Thomaselli, Rich (2022, May 30). *How cruise lines are struggling with staff shortages.* Travel Pulse. https://www.travelpulse.com/news/cruise/now-cruise-lines-are-struggling-with-staff-shortages.html

Tomej, K. & Lund-Durlacher, D. (2020). Research note: river cruise characteristics from a destination management perspective. *Journal of Outdoor Recreation and Tourism, 30*, 1-5.

Vicksburg Post Editorial Board (2019, *December 19). Economic impact of American Queen: riverboat cruises puts focus on riverfront development and litter.* Vicksburg Post. https://www.vicksburgpost.com/2019/12/19/economic-impact-of-american-queen-riverboat-cruises-puts-focus-on-riverfront-development-and-litter-problem/

Viking Mississippi (2022). *Ship Description*. https://www.vikingrivercruises.com/ships/mississippi/viking-mississippi.html

Von Balen, M., Dooms, M. & Haezendonck, E. (2014). River tourism development: the case of the port of Brussels. *Research in Transportation Business & Management, 13*(December), 71-79.

Wood, N. (2021, November 9). *The 10 top river cruise lines.* US News & World Report. https://travel.usnews.com/features/top-river-cruise-lines

Woodruff, D. & Woodruff, M. (2022, April 6). *River cruise vs ocean cruise: what's the difference?* Sometimessailing.com. https://sometimessailing.com/river-cruise-versus-ocean-cruise/

Worldportsource.com (2022). *USA ports by state*. http://www.worldportsource.com/states.php

Zable, S. (2022, March 18). *These river cruises explore the most beautiful coasts in the U.S. — From New England to the Great Lakes.* Travel + Leisure. https://www.travelandleisure.com/cruises/river-cruises/river-cruises-in-the-us

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