

Surfonomics Guarda do Embaú, Brazil

the economic impact of surf tourism on the local economy

Marcos Abilio Bosquetti
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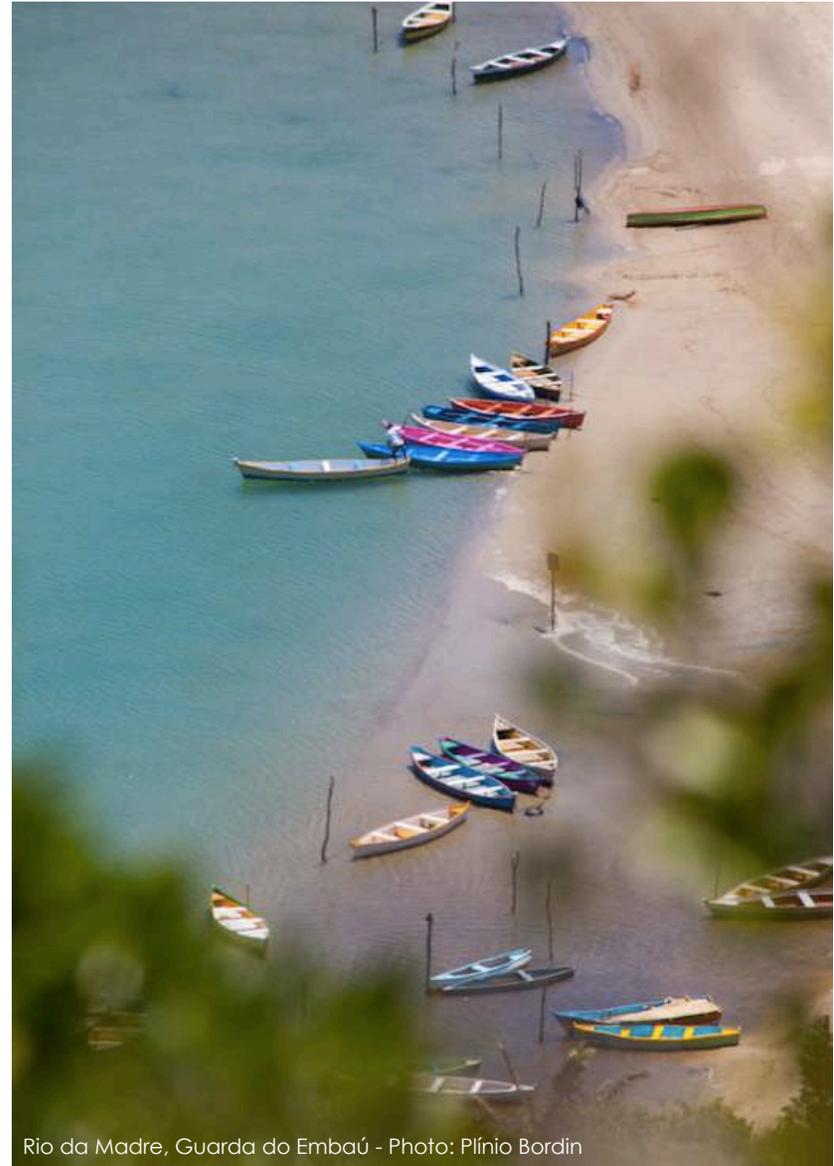
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Rio da Madre, Guarda do Embaú - Photo: Plínio Bordin

Introduction



Guarda do Embaú - Photo: Plínio Bordin

Guarda do Embaú is home to a legendary wave that breaks at the Da Madre River mouth throughout the year. For generations Guarda do Embaú was just a small, sleepy fishing village. In the 1970s, surfers discovered Guarda's epic waves and it is now internationally recognized as one of the best surf spots in Brazil. World-class waves have an enormous social and economic value that may be underestimated by political leaders.

As over-development, absence of an adequate sewage sanitation system, and agricultural pesticides found in Da Madre River threaten the surfing and coastal resources at Guarda do Embaú, understanding the benefits of this world-class surf spot to the local economy is essential in guiding policy makers in the right long-term direction. This empirical study attempts to estimate the direct contribution of surf tourism to the local economy of Guarda do Embaú.

This study applied surf economics, informally known as *Surfonomics*, a method that uses direct expenditure data from visiting surfer tourists to estimate the economic value that a world-class wave brings to the local community. The *Surfonomics* model, created in California, was adapted to the Brazilian context and some features unique to this study were added.

All primary data was collected throughout 2018 at Guarda do Embaú through individual face-to-face survey interviews conducted with 368 surfer tourists and 20 managers of local hotels. Data was analyzed using descriptive statistics to present the findings of this quantitative research. Other studies were used in the discussion of results to widen the understanding of the present empirical study.

To our knowledge, this is the first *Surfonomics* study conducted in Brazil and we hope that its findings can help decision makers make better choices to preserve the surf resources in Guarda do Embaú for future generations. Considering that Brazil has a fast growing surfing population (Bosquetti, Fiates & Ponting, 2017) and a great concentration of surf breaks (McGregor & Wills, 2017), we hope that this study can inspire future research in Brazil and the creation of a national database on surf tourism.

The following pages present: i) Guarda do Embaú World Surfing Reserve, ii) the main threats to the ecosystem and the future of surfing in Guarda do Embaú, iii) a brief overview on Surf Economics, iv) the method used in this research, v) the results of this empirical study, vi) a brief discussion, and vii) the final conclusions.

Guarda do Embaú World Surfing Reserve



Guarda do Embaú - Photo: Plínio Bordin

Guarda do Embaú is a small village located adjacent to the Serra do Tabuleiro State Park, the largest conservation area in the state of Santa Catarina, which boasts a stunning natural environment, including the powerful Da Madre River coming from the mountain and flowing into the sea, an intact estuary

ecosystem, and a mature sand dune system. The village, also known as "Guarda" belongs to the City of Palhoça and it is only 40 miles south of Florianopolis Island, the capital city of the state of Santa Catarina, southern Brazil. Guarda's world-class surf spot attracts surfer tourists from Brazil and abroad.

Surfers visiting Guarda do Embaú can enjoy three surf breaks: *Pico do Canto* (the corner), *Pico do Meio* (the middle), and *Pico da Prainha* (the little beach). The best months for surfing are during the rainy season (summer and part of fall), although waves are consistent throughout the year. During part of the winter and spring seasons, lucky surfers can spot Southern Right Whales from their surfboards while surfing at Guarda do Embaú.

Pico do Canto (the corner) is the most well known wave of Guarda do Embaú. It is formed on the south side of the coast in front of the Da Madre River mouth. In the rainy season this point break forms long and tubular waves. It is a world-class powerful left hand wave for experienced surfers.

Pico do Meio (the middle) is a right and left hand beach break with fast tubes in the middle of Guarda beach for intermediate and advanced surfers.

Pico da Prainha (the little beach) is located on the north side of the coast of Guarda and is accessible by a beautiful half hour trail that starts at the tiny downtown of Guarda Village and reaches a beautiful pristine beach surrounded and protected by the coast. After walking through the tropical forest, surfers will find a white sandy beach and a right hand point break wave suitable for intermediate and advanced surfers.

Guarda do Embaú has hosted local, regional and national surfing competitions such as the 2007 Rip Curl Groom Search, when future world champions Gabriel Medina and Filipe Toledo reached the podium. Guarda Village used to be home of the Brazilian surfing legend, Ricardo dos Santos (in memoriam). The history of surfing in Brazil can definitely not be written without mentioning Guarda do Embaú.

Guarda is also a multi-generational fishing village with a deep inherent respect for their coastal resource. From May to July, Guarda do Embaú beach closes down for artisanal mullet fishing, which means that surfing is not allowed in that beach. During the fishing season surfers can only enjoy the *Pico da Prainha*.

On October 27, 2016 Save the Waves Coalition officially nominated *Guarda do Embaú* into the prestigious network of World Surfing Reserves (WSR). This designation is an international recognition of its unique attributes: natural beauty, sensitive ecosystems, world-class surfing waves, surf culture and local tradition of artisanal fishing.

The nomination of Guarda do Embaú as the 9th World Surfing Reserve and the first in Brazil aims to empower the local community initiatives toward the preservation of this surf paradise for future generations.

The total area of this World Surfing Reserve is 2,5 square kilometers embracing Guarda do Embaú Beach, Prainha Beach, the Da Madre River mouth, and the Coast of Guarda (Gungel, Rosa & Bosquetti, 2017).

After two years of stewardship planning and empirical studies in Guarda do Embaú, the official ceremony and celebration was hosted between October 25 – 27, 2019, when Save The Waves and the Local Stewardship Council officially dedicated Guarda do Embaú as the 9th World Surfing Reserve and the first in Brazil.

The dedication also hosted the I Pan-American Wave Conference in which the results of two empirical studies carried out during 2018 and 2019 on surf tourism and on the Da Madre River water quality were presented to an audience of 250 people, representing all stakeholders: local and state politicians, government agencies, surf celebrities, environmental NGOs, the chamber of commerce, the local community association, and academic researchers.

Guarda do Embaú WSR has inspired the creation of a National Surfing Reserve Program to be implemented in Brazil in collaboration with Save The Waves Coalition.



Threats to Guarda do Embaú



Sunrise in Guarda do Embaú - Photo: Plínio Bordin

The Local Stewardship Council of Guarda do Embaú World Surfing Reserve has identified three main threats to the pristine ecosystem and the future of surfing in this area: coastal development, lack of an adequate sewage sanitation system, and agricultural pesticides found in Da Madre River (Gungel, Rosa & Bosquetti, 2017).

The current zoning regulations allow for new construction on private property holdings at Guarda do Embaú. In the last few years, two large-scale condominium projects have been proposed to the Palhoça City Council. Harmful coastal development threatens the ecological habitat of Guarda do Embaú.

There is a very limited, precarious and outdated coastal sewage infrastructure system to deal with liquid and solid waste at Guarda do Embaú. The absence of an adequate sewage sanitation system is a real threat to the local ecosystem in the form of water pollution, and consequently to surfing.

Da Madre River plays a crucial role in forming strings of dunes and sand banks. The dunes help stabilize the coastline, and the sand banks produce quality waves along Guarda beach. Before flowing into the sea, this powerful river forms in the mountains of the Serra do Tabuleiro State Park and supplies water for agricultural food production and industrial processes in neighboring districts of Guarda do Embaú. The agricultural pesticides found in the river threaten the water quality and biodiversity along the river.

This *Surfonomics* study aims to estimate the direct contribution of surf tourism on the local economy of Guarda do Embaú in order to empower the local community and their initiatives in dissuading coastal uses and projects that might endanger the wave quality and surrounding marine environment.

Surf Economics

Surfing is practiced by approximately 35 million people worldwide (O'Brien & Eddie, 2013). In search of perfect waves, surfers are regularly engaging in surf tourism across the globe (Buckley, 2002; Ponting, 2009), impacting thousands of coastal communities (Martin & Assenov, 2012; Ponting & O'Brein, 2015; Mach & Ponting, 2018).

As harmful coastal development and pollution threaten surf spots, the evaluation of economic benefits derived from surfing, informally known as *Surfonomics* has been used by internationally renowned enviro-surf NGOs such as the Surfrider Foundation and Save The Waves Coalition to justify the protection and conservation of surf resources.

Surf economics or *Surfonomics* applies natural resource economics to better understand the economic value of waves and surfing to local communities, as well as the consumer surplus that surf breaks provide to millions of surfers (Nelsen, 2012).

Surfonomics has contributed to Save The Waves' World Surfing Reserves Program as an advocacy mechanism to influence government policies and help decision makers make better choices to protect key environmental, cultural, economic, and community attributes of world-class surf breaks and their surrounding areas (Save The Waves, 2019).

Over the past decade, Save the Waves has commissioned seven *Surfonomics* studies. Four of them were carried out in World Surfing Reserves: Pichilemu, Chile (Wright, Hodges & Sadrpour, 2014); Huanchaco, Peru (Hodges, 2015); Bahia de Todos Santos, Mexico (Hodges, 2015); and Guarda do Embaú, Brazil (Bosquetti & Souza, 2019). The other three were carried out in Mundaka, Spain (Murphy & Bernal, 2008); Mavericks, USA (Coffman & Burnett, 2009); and Uluwatu, Indonesia (Margules, 2014).

In Australia, a similar study carried out by Neil Lazarow was commissioned by the Gold Coast City Council to support the city's shoreline management plan (Lazarow, 2009). All of these studies applied the Direct Expenditure Method of economic evaluation to estimate the market value of surfing for the local economy. The results of these eight studies sum up to US\$250 million per year.

Surfing also produces significant non-market value, which comes from the welfare and benefits that surfing provides to millions of surfers, but cannot be measured by expenditure methods.

The most common type of non-market value studied in surfing is consumer surplus, estimated by the Travel Cost Method. It represents the aggregate willingness-to-pay above and beyond what people are currently paying to reach the surf location (Scorse & Hodges, 2017). Chad Nelsen, CEO of the Surfrider Foundation, applied the Travel Cost Method to estimate the non-market value of surfing at Trestles, California, and found an average consumer surplus of surfing to be US\$138.00 per person per visit (Nelsen, 2012).

The non-market value of surfing can also be estimated by the Hedonic Price Method. As surfers choose to live close to surf spots, they have no travel costs. However, they pay much higher prices for a house. Therefore, part of the non-market value of surfing would be capitalized into real estate value. Scorse, Reynolds & Sackett (2015) applied the Hedonic Price Method to study the impact of surf breaks on home prices in Santa Cruz, California, and found that beach houses close to surf spots are worth hundreds of thousands of dollars more than similar beach houses far from surf spots.

This brief overview shows the main methods used in empirical studies on the nascent field of *Surfonomics*.

Research Method

This study used the Direct Expenditure Method of economic evaluation to estimate the contribution of surf tourism to the local economy of Guarda do Embaú. The *Surfonomics* model applied in the World Surfing Reserves of Pichilemu, Chile (Wright, Hodges & Sadrpour, 2014); Huanchaco, Peru (Hodges, 2015); and Bahia de Todos Santos, Mexico (Hodges, 2015) was adapted to the Brazilian context and additional features unique to this study were added, as explained below.

Data Collection

The traditional field survey questionnaire designed to interview surfer tourists was prepared to collect not only data on the surfer tourists' demographics and their spending patterns, but also on their perceptions of the surf destination. A new survey questionnaire was designed to interview managers of the local hotels in order to collect data on occupancy rates and percentages of surfer guests per season of the year.

Before starting the collection of data, a four-hour training on how to conduct the individual face-to-face interviews was delivered to the team of interviewers, formed by five tourism students of the Palhoça City Community College. In the same day a pilot test was also done with 10 surfer tourists to address potential issues and improve the questionnaire and approach. The final version of the survey questionnaires can be found in the Appendices.

This study used Convenience Sampling, which is a method for selecting the interviewees based on their proximity to the research site (Creswell & Creswell, 2018). The survey interviews with surfers (people carrying surfboards) were conducted in front of the access to the Da Madre River, which must be crossed to reach the surf breaks. To select surfer tourists, the interviewers first asked whether they were locals or tourists, then asked the survey questions to the surfer tourists and wrote down their answers on

the survey form. The interviewers visited local hotels in Guarda do Embaú to conduct the survey interviews with the manager or owners of the business.

Interviews with surfer tourists were conducted in four phases throughout 2018 to cover different seasons: in the last week of January (summer), in the first week of April (fall), in the second week of July (winter) and in the second week of November (spring). The interviews with managers of local hotels happened in the last week of March (end of the peak season). Over the survey period the interviewers collected usable responses from 368 surfer tourists (269 in the summer, 81 in the spring, and 18 in the fall and winter in total) and from 20 managers of local hotels.

Data Analysis

All data collected were entered manually in a database and analyzed using descriptive statistics to present the findings of this quantitative research. As Brazil lacks research on surf tourism, a study carried out by the Tourism Agency of the state of Santa Catarina (Santur) during the summer of 2019 on tourists in general at the City of Palhoça, where Guarda do Embaú is located, is used in the discussion of the results to widen the understanding of this present study.

This *Surfonomics* study is unique in that it calculates the number of surfer tourists visiting Guarda do Embaú by using data on the village's capacity of tourism accommodation gathered from four accommodation advertising websites (Guarda do Embaú Ponto Tur, Portal da Guarda, Alugue Pousadas, and Booking.Com) as well as the average occupancy rates and the percentages of surfer guests informed by the hotel managers during the individual face-to-face interviews.

This study is also unique in that it takes into account the average number of partners traveling with the surfer tourist to Guarda do

Embaú. Although they might not surf, the money they spend in the village contributes directly to the local economy as well.

The number of surfer tourists visiting Guarda do Embaú is given by the multiplication of the following variables: beds capacity, occupancy rate, percentage of surfer guests, tourists' turnover ratio (days in the month/average length of stay).

Regarding the direct contribution of surf tourism to the local economy, this is calculated through multiplication of the following variables: number of surfer tourists, average daily expenses, length of stay in days, average number of tourists on the trip. Transportation costs to reach Guarda do Embaú are not included in the calculations, as it has very little to no impact on the local economy of the village.

Study Limitations and Suggestions for Further Research

Data on average daily spending and length of stay in Guarda do Embaú were estimated by surfer tourists during the survey interviews and no confirmation of their spending was possible. The same limitation occurred to data on occupancy rates and percentages of surfer guests per season, which were estimated by managers of local hotels.

Surfonomics Guarda do Embaú is a case study that uses a non-probabilistic method of data collection (convenience sampling) and is not random so the findings cannot be extrapolated to the population of surfer tourists or to other surf spots.

Further studies using the Travel Cost Method and the Hedonic Price Method in the real state market to estimate the non-market value of surfing to Guarda do Embaú could provide a more holistic economic evaluation of surfing resources.

Future *Surfonomics* studies carried out in other famous Brazilian surf tourism destinations could provide more insights on the demographics and spending patterns of surfer tourists in Brazil.



Rio da Madre, Guarda do Embaú - Photo: Plínio Bordin

Results

This session presents the research findings related to the surfer tourists' demographics, their spending patterns in Guarda do Embaú, and their perceptions of this surf destination. The descriptive statistics presented in the tables below only refer to surfer tourists from the sample of this case study so it cannot be extrapolated to the population of surfer tourists or to other surf spots. The sentences in **green** highlight the key findings of this *Surfonomics* study.

Age, Gender and Surf Level

Table 1: Surfer Tourists' Age

Age Range*	Frequency	(%)
14 – 19	22	6.0
20 – 29	99	26.9
30 – 39	162	44.0
40 – 49	69	18.8
50 – 59	14	3.8
60 +	2	0.5

44% of the surfer tourists visiting Guarda do Embaú are in their 30's. Their average age is 34 years old.

(*) Data were collected in years of age, but are presented in ranges to facilitate data visualization.

Table 2: Surfer Tourists' Gender

Gender	Frequency	(%)
Male	336	91.3
Female	32	8.7

Only 8.7% of the Surfer tourists visiting Guarda do Embaú are female.

Table 3: Surfer Tourists' Surf Level

Surf Level	Frequency	(%)
Beginner	33	9.0
Intermediate	175	47.5
Advanced	150	40.8
Professional	10	2.7

Not surprisingly only 9.0% of the surfer tourists visiting Guarda do Embaú are beginners. The fast and hollow world-class surfing waves in Guarda do Embaú are for experienced surfers.

Surfing's Influence on Travel and Origin of Surfer Tourists

Table 4: Surfing's Influence on Travel to Guarda do Embaú

Surfing's Influence	Frequency	(%)
Primary factor	306	83.2
Secondary factor	55	14.9
Not a factor	7	1.9

For 98.1% of the surfer tourists, surfing is a primary or secondary factor influencing their decision to visit Guarda do Embaú.

Table 5: Home Country Origin of Surfer Tourists

Country Origin	Frequency	(%)
Brazil	311	84.6
Argentina	29	7.9
Uruguay	13	3.5
Chile	7	1.9
Peru	3	0.8
Portugal	3	0.8
Spain	2	0.5

15.4% of the surfer tourists visiting Guarda are foreigners. The majority of them are from the neighboring countries Argentina and Uruguay.

Table 6: Brazilian State Origin of Surfer Tourists

Brazilian State	Frequency	(%)
Rio Grande do Sul	134	43.1
Santa Catarina	110	35.3
Paraná	26	8.4
São Paulo	17	5.5
Rio de Janeiro	5	1.6
Minas Gerais	5	1.6
Mato Grosso do Sul	4	1.3
Distrito Federal	3	1.0
Goiás	3	1.0
Mato Grosso	2	0.6
Espírito Santos	1	0.3
Bahia	1	0.3

Guarda do Embaú receives more Brazilian surfer tourists coming from the neighboring state of Rio Grande do Sul (43.1%) than from its home state of Santa Catarina (35.3%).

27.5% of the surfer tourists visiting Guarda do Embaú live in Porto Alegre, the capital city of Rio Grande do Sul.

Travel Partners on the Trip, Length of Stay, and Perceptions of Guarda do Embaú

Table 7: Travel Partners to Guarda do Embaú

Number of Travel Partners	Frequency	(%)
None (Travel Solo)	9	2.4
One partner	143	38.9
Two partners	83	22.6
Three partners	114	31.0
Four partners	13	3.5
Five or more partners	6	1.6

Only 2.4% of the surfer tourists travel solo to Guarda do Embaú. 38.9% bring one travel partner and 31.0% bring three with them to the village. On average surfer tourists bring two partners on the trip to Guarda.

Table 8: Length of Stay at Guarda do Embaú

Length of Stay*	Frequency	(%)
Up to 4 days	87	23.6
5 – 8 days	204	55.4
9 – 14 days	61	16.6
15 days +	16	4.4

On average, surfer tourists and their travel partners stay 6 days at Guarda do Embaú.

(*) Data were collected in number of days, but are presented in ranges to facilitate data visualization.

Table 9: Relevance of the Da Madre River to Surfing at Guarda

Level of Relevance	Frequency	(%)
Highly Relevant	262	71.2
Relevant	98	26.6
Not Relevant	8	2.2

97.8% of the surfer tourists perceive Da Madre River as highly relevant or relevant to the surfing at Guarda do Embaú.

Table 10: Factors that would Negatively Impact on the Decision to Return to Guarda do Embaú

Factors	Frequency	(%)
Water Pollution (river/ocean)	368	100.0
Trash (land/water)	322	87.8
Sewage	289	78.5
Other Factors	105	28.5

The three most pointed out factors that would negatively impact the surfer tourists' decision to return to Guarda are water pollution (100%), trash (87.8%) and sewage (78.5%). Other factors are crowded waves and beaches, overt localism, and abusive pricing.

Education and Income

Table 11: Surfer Tourists' Education

Level of Education	Frequency	(%)
Some High-School	16	4.4
High-School Diploma	71	19.3
Some College/University	31	8.4
College/University Degree	225	61.1
Graduate Degree	25	6.8

Table 12: Surfer Tourists' Annual Income in US Dollar*

Personal Annual Income	Frequency	(%)
Prefer Not to Answer	165	44.9
Student Only	27	7.3
Up to US\$9,374	8	2.2
US\$9,375 – US\$18,749	18	4.9
US\$18,750 – US\$28,124	26	7.1
US\$28,125 – US\$37,499	31	8.4
US\$37,500 – US\$46,874	38	10.3
US\$46,875 – US\$56,249	27	7.3
US\$56,250 – US\$74,999	21	5.7
US\$75,000 +	7	1.9

67.9% of the surfer tourists visiting Guarda do Embaú have education at or above university level. It is higher than the result found in the Santur Study (51.7%) conducted in the summer of 2019 with tourists in general visiting the City of Palhoça, where Guarda do Embaú is located.

US\$42,187 is the midpoint of the most frequent income range of the surfer tourists visiting Guarda do Embaú. This value is one and a half times greater than the midpoint of the most frequent income range of the tourists in general (US\$28,125), as found in the Santur Study*.

Findings of the *Surfonomics* study and Santur study suggest that on average surfer tourists have higher levels of education and income than tourists in general.

(*) In Brazil the income is paid and measured monthly. Data on personal monthly income range in Brazilian Reais (R\$) collected from the *Surfonomics* study and the Santur study were converted to US Dollars (US\$) and are presented in annual income basis using the following exchange rate conversions: US\$1.00 = R\$3.20 on 15Jan2018 (*Surfonomics* study) and US\$1.00 = R\$3.72 on 15Jan2019 (Santur study).

Spending Patterns on Accommodation, Food & Beverage, and Miscellaneous

This study uses data from 368 survey interviews with surfer tourists conducted in four phases along the 2018 year: 269 interviews in the summer (peak surf tourism season), 81 interviews in the spring (middle season), and 18 interviews in the fall and winter in total (low/off seasons). Therefore, the spending patterns of surfer tourists visiting Guarda do Embaú were obtained by weighting the average daily expenses of each season. As 73.1% of the interviews with surfer tourists were conducted in the summer, this season had a very strong impact on weighting the average daily expenditure.

Table 13: Weighted Average Daily Expenditure per Surfer Tourist at Guarda do Embaú in 2018 in US Dollar**

Category of Expenditure	Weighted Average Daily Expenditure per Person	(%)
Accommodation	US\$36	59.0
Food & Beverage	US\$19	31.1
Miscellaneous	US\$6	9.9
Total	US\$61	100.0

Research findings show that a surfer tourist visiting Guarda do Embaú spends on average US\$61.00 per day in the village.

(*) Data on spending patterns in Brazilian Reals (R\$) was converted to US Dollars (US\$). Exchange Rate Conversions: US\$1.00 = R\$3.20 on 15Jan2018.



Pico da Prainha, Guarda do Embaú - Photo: Plínio Bordin

Direct Contribution of Surf Tourism to the Local Economy of Guarda do Embaú

This *Surfonomics* study estimates the number of surfer tourists visiting Guarda do Embaú by using data on the village's capacity of tourism accommodation gathered from four accommodation advertising websites* as well as the average occupancy rate and the percentage of surfer guests informed by managers of 20 local hotels during the face-to-face interview conducted in March 2018.

Table 14: Beds Capacity per Types of Accommodation

Type of Accommodation	Beds Capacity	(%)
Hotels	844	64%
Beach Houses for Summer Rental	482	36%
Total	1326	100%

Table 15: Average Occupancy Rate of Hotels & Surfer Guests in Guarda do Embaú per Season

Season of the Year	Occupancy Rate	Surfer Guests
Summer (peak season)	65%	21%
Fall/Winter (low/off seasons)	11%	5%
Spring (middle season)	29%	16%

The number of surfer tourists visiting Guarda do Embaú is given with the multiplication of the following variables: beds capacity, occupancy rate, percentage of surfer guests, tourists turnover ratio (month's days/length of stay).

The direct contribution of surf tourism to the local economy is calculated through multiplication of the following variables: number of surfer tourists, average daily expenses (US\$61.00), average length of stay (6 days), average number of tourists on the surf trip (3 people). The table below presents the estimated revenue from surf tourism per season. Summer is the peak season for surfing and corresponds to 70.4% of the annual revenue from surf tourism, while fall and winter are considered low/off seasons. Furthermore, from May to July, Guarda Beach closes for artisanal mullet fishing, so surfing is not allowed in the two main surf breaks.

Table 16: Number of Surfer Tourists and the Direct Contribution of Surf Tourism to the Local Economy in 2018

Season of the Year	Surfer Tourists	Tourists on the Surf Trip	Revenue from Surf Tourism
Summer	2,715	8,145	US\$2,978,016
Fall+ Winter	218	654	US\$239,119
Spring	923	2,769	US\$1,012,416
Total	3,856	11,568	US\$4,229,551

Research findings suggest that in 2018 surfing attracted 3,856 surfer tourists to Guarda do Embaú. On average they brought two travel partners with them, summing up 11.568 tourists. On average they stayed for 6 days and spent US\$61.00 per day in the village, contributing US\$4.2 million per year to the local economy.

(*) Guarda do Embaú Ponto Tur (www.guardadoembau.com.br), Portal Comunitário Guarda do Embaú (www.guardadoembau.org), Alugue Pousadas (www.aluguepousadas.com.br), Booking.Com (www.booking.com)



A Santur Study conducted in the summer of 2019 at the City of Palhoça (there are no studies in 2018) estimates that 84,983 tourists in general stayed in one of the five beach villages of Palhoça during the summer, contributing with US\$17.8 million to the local economy of the City during that season. The Santur study also estimated that 22% of those tourists stayed in Guarda do Embaú, suggesting the figures presented in the table below.

Table 17: Comparing the Findings of the Santur Study and Surfonomics Study in the Summer Season in US Dollar*

Research Information	Santur Study Summer 2019	Surfonomics Summer 2018
Study Focus	General Tourism	Surf Tourism
Estimation of Tourists	18,696	8,145
Daily Expenditure	US\$30.00	US\$61.00
Length of Stay	7 days	6 days
Total Contribution	US\$3.9 million	US\$3.0 million

(*) Data on daily expenditure in Brazilian Reais (R\$) were converted to US Dollars (US\$) using the followings exchange rate conversions: US\$= R\$3.20 on 15Jan2018 (Surfonomics) and US\$1.00 = R\$3.72 on 15Jan2019 (Santur)

Findings of the *Surfonomics* study and Santur study on the summer, which is the peak season for tourism, shows that surfer tourists and their travel partners account for approximately 44% of the tourists visiting Guarda do Embaú, but they spend on average twice as much as tourists in general and are responsible for around 77% of the tourism contribution to the local economy, leading to the conclusion that surf tourism plays a substantial role in the economy of Guarda do Embaú.



Discussion

Results of this empirical study on the spending patterns and behaviors of surfer tourists visiting Guarda do Embaú World Surfing Reserve (WSR) show that on average a surfer tourist spends US\$61.00 per day in the village, which is in between the US\$45.00 found in Huanchaco WSR, Peru (Hodges, 2015) and the US\$111.00 found in San Miguel WSR, Mexico (Hodges, 2014), but much less than the US\$159 found in Pichilemu WSR, Chile (Wright, Hodges & Sadrpour, 2014). A direct comparison among these results may be jeopardized by differences between countries related to living costs, per capita income, and local currency exchange rates. It is also important to notice that transportation costs to reach Guarda do Embaú were not included in the expenditure figures, as it has very little to no impact on the local economy of the village.

This *Surfonomics* study is unique for considering the average number of partners traveling with the surfer tourist to Guarda do Embaú. Although they might not surf, the money they spend in the village contributes directly to the local economy as well.

Research findings suggest that in 2018 surfing attracted 3,856 surfer tourists to Guarda do Embaú. On average, they brought two travel partners with them on the trip to Guarda and stayed for 6 days in the village, spending on average US\$61.00 per person per day. Based on these findings, it can be estimated that in 2018 surf tourism contributed approximately US\$4.2 million to the local economy of Guarda do Embaú. In the Brazilian context, this figure is a very significant contribution of surf tourism to a small village of only 800 inhabitants. It has a much more important impact than an equivalent figure in a developed economy such as the USA or Australia.

Comparing with a tourism study conducted by Santur (2019) with tourists in general at the City of Palhoça, where Guarda do Embaú is located, surfer tourists and their travel partners account

for approximately 44% of the tourists visiting Guarda, but they spend on average twice as much as tourists in general and are responsible for around 77% of the tourism contribution to the local economy of Guarda do Embaú. It also shows that surfer tourists have on average a higher level of education and income than the tourists in general.

If we had to describe the profile of the surfer tourists visiting Guarda do Embaú based only on the sample and findings of this *Surfonomics* study, we would say that they are on average 34 years old and that only 8.7% are female. 67.9% of the surfer tourists have education at or above the university level, and 91.0% of them are intermediate to professional surfers. For 98.1% of the surfer tourists, surfing is a primary or secondary factor influencing their decision to visit Guarda. In terms of their perceptions of Guarda do Embaú as a surf destination, 97.8% of the surfer tourists perceive Da Madre River as highly relevant or relevant to the quality of the waves, and the three most pointed out factors that would negatively impact their decision to return to Guarda do Embaú are water pollution, trash, and sewage.

This first *Surfonomics* study carried out in Brazil used the most basic form of economic valuation known as Direct Expenditure Method to estimate the contribution of surf tourism to the local economy of Guarda do Embaú, so it does not capture the entire economic value of surfing. Further studies should use the Travel Cost Method and the Hedonic Price Method in the real state market to estimate the non-market value of surfing to Guarda do Embaú. However, findings of the present study are enough to show that Guarda do Embaú is a perfect example of how a small village can benefit from and depend on the preservation of a world-class wave. Therefore, decision makers should take into account that surf tourism is a non-extractive coastal resource that makes a significant contribution to the local economy of Guarda do Embaú.

Conclusions

Using the Direct Expenditure Method of economic analysis we were able to quantify that surfer tourists visiting Guarda do Embaú spend on average US\$61.00 per day. Research findings indicate that in 2018 surfing attracted 3,856 surfer tourists to Guarda do Embaú. On average, they brought two travel partners with them and stayed for 6 days in the village. The result of the multiplication of these variables suggests that in 2018 surf tourism contributed approximately US\$4.2 million to the local economy, which is a very significant contribution to a village of 800 inhabitants considering the Brazilian socioeconomic context.

Comparing this *Surfonomics* study with a study of tourists in general at the City of Palhoça, where Guarda do Embaú is located (Santur, 2019), surfer tourists have on average a higher level of education and income, and spend twice as much as the general tourists. It also suggests that surfer tourists and their travel partners account for 44% of the tourists visiting Guarda do Embaú and are responsible for around 77% of the tourism contribution to the local economy.

This empirical study clearly shows that the economic impact of surf tourism on the local economy of Guarda do Embaú is substantial and should be considered when taking any coastal management decision. It also shows that water pollution, trash, and sewage are the main factors that would negatively impact the surfer tourists' decision to return to Guarda do Embaú.

Guarda do Embaú is a perfect example of how a small village can benefit from and depend on the preservation of a world-class wave. As harmful coastal development, sewage, and agricultural pesticides found in Da Madre River threaten surfing and coastal resources in Guarda do Embaú, it appears that urgent action is needed to preserve this incredible surf ecosystem for future generations.



Pico do Costão, Guarda do Embaú - Photo: Plínio Bordin

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Appendix I

English Version of the Surfer Tourists Questionnaire

Surfonomics Study: Guarda do Embaú WSR → Surfer Tourists



**SAVE
THE
WAVES**
COALITION



1. Age: ____ years old () Male () Female
2. Which factors best applies to your decision to live or visit Guarda do Embaú (please, choose only one):
() Surfing and/or waves was a primary factor
() Surfing and/or waves was a contributing factor
() Surfing and/or waves did not effect my decision to live or visit Guarda do Embaú
3. How would you describe your surfing ability? () Beginner () Intermediate () Advanced () Pro
4. Are you: () visiting Guarda do Embaú or () a resident/worker here?
If you are not visiting Guarda, please go to Question 9
5. Where is your current permanent address? City: _____, State: _____ Country: _____
6. How many days per year (including this trip) do you spend visiting Guarda do Embaú? _____ days
7. How many people came with you to stay here in Guarda? () only myself () _____ people
8. Please estimate your daily expenses in Guarda do Embaú:
Accommodation R\$ _____ Food & Beverage R\$ _____ Miscellaneous R\$ _____
9. In your opinion, how relevant is the preservation of Rio da Madre to the waves/surfing at Guarda do Embaú?
() Highly relevant () Relevant () Not relevant
10. Please, check the factors that would negatively impact your decision to live or return to Guarda do Embaú:
() Water pollution: river/ocean () Trash: land/ocean/river () Sewage () Other factors: _____
11. Your highest level of education:
() Some High School (student or incomplete) () High School Diploma
() Some College/University (student or incomplete) () College/University Degree () Graduate Degree
12. You work: () Full time job () Part-time job () Student only () unemployed at the moment
13. What is the range of your monthly income in Reais (R\$)?
() Up to R\$2,499 () R\$2,500 - R\$4,999 () R\$5,000 - R\$7,499 () R\$7,500 - R\$9,999 () R\$10.000 - R\$12.499
() R\$12.500 - R\$14.999 () R\$15.000 - R\$19.999 () R\$20,000 + () Student Only () Prefer not to answer

Appendix II

English Version of the Hotels Manager Questionnaire

Surfonomics Study: Guarda do Embaú WSR → Manager of Hotels



Name of the hotel: _____

1. Number of guests that can be hosted in this hotel: _____ Guests (Beds Capacity)
2. The occupancy rates and the percentages of surfer guests per season (estimation)

Season	Occupancy Rate (%)	(%) of Surfer Guests
Summer: January, February, March		
Fall: April, May, June		
Winter: July, August, September		
Spring: October, November, December		

3. Average price per guest for one overnight stay

Season	Overnight stay Price (average) per guest (R\$)
Summer: January, February, March	
Fall: April, May, June	
Winter: July, August, September	
Spring: October, November, December	

4. Level of relevance of Rio da Madre for the surfing experience in Guarda do Embaú

() Highly Relevant () Relevant () Not Relevant

5. Factors that you think would negatively impact the tourists decision to return to Guarda do Embaú:

() Water pollution: river/ocean () Trash: land/water () Sewage () Other factors: _____



World Surfing Reserves

About WSR

Mission

WSR proactively identifies, designates and preserves outstanding waves, surf zones and their surrounding environments around the world. The program serves as a global model for preserving wave breaks and their surrounding areas by recognizing the positive environmental, cultural, economic and community benefits of surfing areas.

Background

Save The Waves Coalition, along with key partners National Surfing Reserves (NSR) Australia and the International Surfing Association (ISA), launched World Surfing Reserves in 2009. The initiative creates a global network of Surfing Reserves designed to educate the world about the tremendous universal value of these special places and provide tools to help local communities better protect cherished surf breaks.

How World Surfing Reserves Works

The program is broken down into four main phases: the nomination/application process, the selection process, dedications/enshrinements, and ongoing monitoring and management. After applying and being selected, each WSR location creates a Local Stewardship Council to implement and manage that reserve.

Program Management

World Surfing Reserves Program is governed by a global five-member Executive Committee with the assistance of a Vision Council. Save The Waves Coalition, a 501(c)3 nonprofit organization, serves as fiscal administrator of the initiative. Reserves are implemented through a partnership between WSR and local communities.

To learn more, please visit: www.worldsurfingreserves.org



About SandS

Surf and Sustainability Research Group (SandS) is the first interdisciplinary research group in Brazil, certified by the Brazilian National Council for Scientific and Technological Development (CNPq), that studies the challenges and opportunities for a transition towards sustainability in the surfing world. SandS was created in 2017 at the Federal University of Santa Catarina (UFSC), Florianópolis Island, and aims to encourage collaboration between scholars from Brazil and abroad in studies relating to surf and sustainability. SandS works in collaboration with the International Association of Surfing Academics led by the Center for Surf Research, San Diego State University, California.

To learn more, please visit: www.sands.ufsc.br



Artisanal Mullet Fishing, Guarda do Embaú - Photo: Plínio Bordin