

# Quantifying food waste on cruise ships

Experiences from China

*With rapid economic development and an increase in consumerism, the number of Chinese cruise tourists has risen sharply. Food is central to cruise tourism; however, food waste can be as high as 30%. At Hainan University, Dr Jiayu Wang is attempting to shine a light on food wastage in the cruise industry. The data show that food waste by Chinese passengers is high, and is strongly linked to cultural and social norms. Addressing this issue will require changes to food practices, including a move away from all-inclusive and buffet style dining, and the provision of more authentic Chinese food.*

Over recent decades, rapid economic development in China has gone hand-in-hand with an increase in consumerism. For Chinese citizens, new found purchasing power has come with new found freedom to travel, both domestically and internationally. The cruise industry has been quick to embrace this cohort of potential customers; from 2012 to 2017, the number of Chinese cruise passengers rose from almost 220,000 to around 2.4 million, a figure that is approaching 10% of the total global cruise population.

The same cruise tourism industry is increasingly under fire for promoting practices that are incompatible with sustainability, and with environmental and cultural protection.

The burning of fossils fuels contributes to local air pollution and global climate change; the release of sewage and other waste damages marine and coastal ecosystems. As with many forms of

tourism, food is central to the cruise business model, with most ships offering a range of dining options, many of them on an all-inclusive basis. Estimates suggest that food waste can be as high as 30%, primarily owing to unconsumed left-overs. The impacts of this wastage are numerous; including the waste of energy required to produce, transport, and store the food, the impact on the marine environment by releasing waste food into the water, and/or emissions produced by incinerating waste food, not-to-mention the crass disregard for the problems of food shortages in other parts of the world.

Despite this, most knowledge of food waste in the cruise industry is anecdotal, with few studies systematically considering the scale of the issue or the drivers behind it. At Hainan University, Dr Jiayu Wang is attempting to change this. Along with her colleagues and collaborators (including Dr Na Li, Dr Tiansen Liu, Dr Shuao Yu, Prof Xinpeng Xing, Prof John Quiggin, Prof Glyn Wittwer, Prof Rodney Strachan, and Prof Guangliang Ye), and with the support of the National Social Science Fund of China, Ministry of Education of China, Heilongjiang Province, and the National Social Science Fund of China, Dr Wang is shining a light on food wastage in the cruise industry, with a focus on Chinese tourists.

## BUILDING A PICTURE OF FOOD WASTE

In her quest to quantify the issue of food waste on cruise ships, Dr Wang and her colleagues collected data through observation, informal conversations, and structured interviews with the passengers, tour leaders, and cruise staff on three international cruises. A particularly important aspect of the methodology was to combine observation with interviews,

allowing Dr Wang to confirm that subjects' responses matched their actions. Care was taken to collect data from a demographic cross-section of individuals, so as to account for age, gender, and socio-economic status.

Along with the concept of 'face' (i.e., prestige or publicly perceived value), food plays a pivotal role in Chinese culture. As a consequence of both, food wastage is not uncommon in China, where extravagant and over-supplied dinners are a common tool to carry favour, particularly during special events (e.g., weddings or other celebrations). It is estimated that the food waste of Chinese restaurants could feed 200 million people per year. Dr Wang has found that while the problem of food waste is common across the cruise industry, it is more of an issue among Chinese passengers than among their non-Chinese counterparts, reflecting deep cultural differences.

Dr Wang's research shows that, for a number of reasons, food wastage is strongly linked with buffet restaurants. Firstly, passengers excited by the unlimited supply of food, often available 24 hours a day, are more likely to take more than they can eat. Secondly, overcrowding of buffet lines at peak times results in passengers taking more food than needed, either to avoid a



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repeat visit or to ensure that they are able to obtain what they want. Interestingly, Dr Wang found that this scramble for food is more common among older passengers, perhaps reflecting a generational change

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in attitudes to food availability. The problems of all-inclusive, unlimited, buffet style food are in stark contrast to the experience observed on one of the three

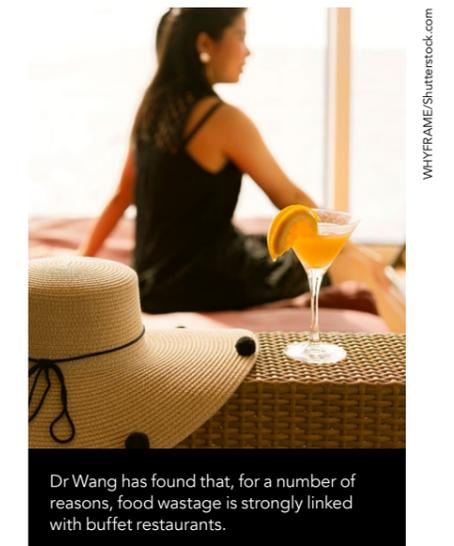
cruises considered. On this ship, which had a particular culinary focus, passengers were advised to order just one course at a time, with portion sizes being smaller than those on other ships. The resulting food wastage was found to be lower.

## FACTORS AFFECTING THE PERCEPTION OF FOOD WASTE

The results of Dr Wang's work have not only shown the scale of the food waste problem, but also highlight the fact that individuals are both aware of the problem



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and worried by it. In general, concerns around food waste are social, ethical and religious, environmental, economic, and/or health related.

From a social standpoint, some participants expressed concern that the behaviour of passengers (e.g., the scramble for food in buffet restaurants) reflected badly on Chinese tourists, who risked losing 'face' in the eyes of their non-Chinese counterparts. The reasons for this divide are both practical and cultural. In terms of the former, food wastage is more common when people are offered foods with which they are unfamiliar; that is, people are more likely waste food they find not to their liking or when they lack the knowledge to judge an appropriate portion size. A more culturally specific aspect is that of FOMO, or 'fear of missing out'. The concepts of materialism, consumerism, and excess are relatively new in China, and have been linked with post-Cultural Revolution (1966 to 1977) behaviours of possessiveness, selfishness, and envy. In this case, if a passenger sees others obtaining food, they feel that they should get some too. Critically, many respondents recognised the issue of food waste, but only as it related to others around them; there was lack of self-reflection regarding their own contribution to the issue.

Moreover, there is a cultural perception that crowded restaurants (i.e., buffet areas on cruise ships) correlate with greater quality and dining prestige. This issue is exacerbated by the demographic make-up of many Chinese cruise tourists, who are mostly older, less educated, and with less travel experience. It is possible that attitudes towards food among elderly Chinese remain influenced by past suffering, most notably the famine of 1959 to 1961. It is also possible that urban

tourists from eastern China, an area with high levels of economic and educational development, behave differently to their rural counterparts, with the perception being that passengers from rural areas may lack the social skills considered the norm in an international environment.

## While the problem of food waste is common across the cruise industry, it is more of an issue among Chinese passengers.

From an ethical standpoint, respondents were generally unmoved by the environmental impacts of food waste, or by the scale of human hunger elsewhere in the world, despite this going against the teachings to Buddhism.

### TOWARDS A MORE SUSTAINABLE FUTURE

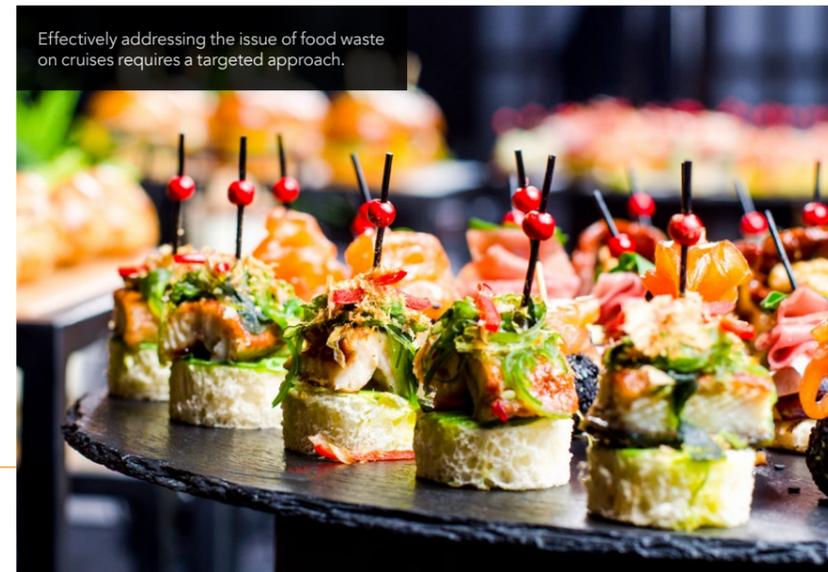
With continued economic and social development, it is likely that the share of Chinese tourists will continue to grow. As such, there is an urgent need to address the damaging practices associated with food waste. Of the three cruises studied by Dr Wang, one had effectively reduced food wastage via a combination

of controlling passenger numbers in buffet restaurants, providing guidance on only ordering one course at a time, and reducing portion sizes. Based on their results, Dr Wang and her colleagues have developed suggestions for a possible roadmap to more sustainable practices.

One suggestion is to incorporate culinary events into cruise schedules, with the aim of educating passengers about new foods and more socially and environmentally acceptable behaviours. For example, tasting events could be used to introduce Chinese passengers to new tastes and textures. It is thought that such an approach would reduce food waste, while also enriching the cultural experience of travel.

Other suggestions include reduced serving sizes in à la carte restaurants,

providing more authentic Chinese food to appeal to Chinese passengers, and tighter controls on overcrowding in buffet restaurants. There is also a place for education; for example, flyers and announcements explaining the consequences of food waste could be distributed. Similar schemes to reduce water use have been successfully introduced around the world, with notices asking guests to reuse towels now ubiquitous in hotels across the globe. In short, effectively addressing the issue of food waste on cruises requires a targeted approach that takes into account the unique cultural and social norms of different passenger groups.



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# Behind the Research

## Dr Jiayu Wang

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### Research Objectives

Dr Jiayu Wang's research expertise focuses on environmental economics, environmental management and sustainable tourism.

### Detail

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#### Bio

Dr Jiayu Wang is an associate professor in Tourism Economics at Hainan University. She gained a PhD in Economics from the University of Queensland. Jiayu also holds a Bachelor's degree in Agricultural and Forestry Economics and Management from Beijing Forestry University. Jiayu has diverse teaching experience, including lecturing in economics and statistics to undergraduate and postgraduate students.

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### References

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### Personal Response

**As part of this study, did you also interview non-Chinese tourists? If not, why not?**

Since our project focuses specifically on Chinese tourists, we did not interview patrons from other origins. However, we interviewed some cruise staff, including waiters, waitress and chefs, many of whom were from North America and Europe. From their point of view, compared with non-Chinese tourists, Chinese people waste more food on cruise ships. The reason disclosed by the cruise staff is the type of cuisine provided: Western food, which is more suited to the taste of foreigners.

**Is this issue specific to the cruise industry, or is it a wider problem of mass tourism (particularly package tourism)?**

We have found that the phenomenon of food waste is quite common in the tourism industry. It's not limited to cruise travel, other mass tourism shares this problem. Package tours are more likely to have food waste and this applies to both Chinese and non-Chinese patrons. Another study carried out by our research team showed that patrons waste enormous amounts of food at hotel breakfast buffet restaurants during their package holidays. The wastage is reduced at buffet restaurants where fines are imposed. This finding is quite new to the existing literature.



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