The messy side of tourism: secondary impacts of waste in Puerto Vallarta, Mexico

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Abstract

While tourism in Mexico remains a significant economic sector, the waste generated from the thousands of tourists has inevitably put stress on several communities’ waste management systems. In the case of Puerto Vallarta, Mexico, tourism accounts for approximately half of the total waste stream, and it is likely that this has an impact on the lives of local residents. This paper will attempt to examine the impact of the 350 tonnes of garbage that is processed and scavenged through daily at a dump located within the city. The results from a survey conducted in four neighbourhoods at differing proximities from the dump, and key informant interviews, suggest a negative relationship between the waste generated by tourists in Puerto Vallarta and residential quality of life.

Keywords: tourism, garbage, quality of life

Introduction

Tourism remains a significant economic sector for many countries around the world. The impacts generated from tourism can be both positive and negative, and vary in magnitude across host communities. This paper suggests that in addition to the direct impacts of tourism, such as economic development, environmental degradation, and cultural exposure and loss, tourism can have secondary or indirect impacts on a community. In analysing the current literature surrounding tourism and its impacts, it is apparent that the secondary impacts of tourism are rarely addressed. This study examines the ways in which the waste generated by tourism, a secondary impact, affects the host community’s residents. Furthermore, this study contributes to several areas of geographical inquiry, principally: tourism, waste management and geographical quality of life studies. To illustrate the intersection of these three geographical literatures, a case study of Puerto Vallarta, Mexico is presented, where the fundamental question for analysis is whether residents perceive the garbage generated by tourism to have an impact on their residential quality of life.

Literature Review

While the literature that relates to tourism is diverse, we are particularly interested in those studies that relate to the impacts of tourism. Existing research focuses on three domains of impacts: economic, physical environment, and socio-cultural (Mathieson and Wall 1982; Hall and Lew 2009). When looking particularly at the economic impacts of tourism, research has tended to assume, and therefore seek to account for, the positive contribution of tourism to the local economy (Lea 1988;
Strict government policy does not sufficiently minimize environmental role in developing tourism policy that can help protect the environment. Domroes (2001) illustrates how the government can play an active role in developing tourism policy that can help protect the environment. Additionally, Domroes (2001) illustrates how the government can play an active role in developing tourism policy that can help protect the environment. However, in this case study, even strict government policy does not sufficiently minimize environmental impact, as much of the environmental degradation comes from the “tourists’ lack of awareness of the fragility of the marine ecosystem” (Domroes 2001: 13). In addition, other studies such as Mbaiwa (2003) have discussed how tourists’ consumption behaviour and littering, along with the lack of proper waste disposal facilities can contribute to environmental degradation in the tourist destination. Conversely, Shekhar Silori (2004) suggests that a narrow focus on environmental concerns and tourist impacts can lead to a situation in which local economic livelihoods are neglected. In this paper, Shekhar Silori illustrates how a ban placed on tourism in the Nanda Devi Biosphere Reserve, in response to exacerbated environmental impacts, led to migration of residents out of the area to find employment and in turn threatened the preservation of community culture.

Lastly, the influence that tourism has on the host community’s culture has received notable attention within the tourism literature. Within the discussion concerning the social impacts of tourism there is emphasis on the impacts on host community residents and the host-visitor relationship (Archer and Cooper 1994; Pearce 1998; Williams 1998; Hall and Page 2002; Dove 2004; Hinch 2004). It has been suggested that “social-cultural impacts of tourism destination areas are associated with changes in traditional ideas and values, norms and identities of the local people” (Glasson et al. 1995 in Mbaia 2003: 455). In addition to Shekhar Silori’s case study on the Biosphere Reserve in the Himalayas and the social consequences that resulted from the loss of the tourism sector, there have been other studies that illustrate how the implementation of tourism development can have negative impacts on the host community’s culture. Mbaia (2003) discusses how the development of road infrastructure to a remote community in Okavango Delta, Botswana, resulted in the loss of traditional language and dress, and higher incidences of prostitution and crime. Alternatively, there have also been studies that illustrate how tourism can positively impact culture through cultural preservation and understanding. Grünewald (2002) provides a case study that exemplifies how tourism in Porto Seguro, Brazil, has promoted cultural revival for the Pataxo Indians, as well as facilitated cultural understanding among other locals.

Although the literature on tourism is quite comprehensive in relation to the various direct impacts tourism can have on the host community or region, (Brown et al. 1995; Gormsen 1997; Domroes 2001; Mbaia 2003) there is a significant gap in literature that addresses the indirect or secondary impacts of tourism. Relevant to this study, the garbage generated from tourism has only been identified in a handful of cases, and in those, only as a direct impact on the environment. There does not appear to be any research on the indirect impact of garbage, and the waste management system, from tourism on the host community.

Turning to literature that links waste management and its impact on residential health and quality of life, there are studies, such as Giusti (2009), which discuss the relationship between the various pollutants generated at waste management sites and the impacts on health, as well as how they vary according to type of waste disposal practise. Incineration, for example, leads to more air borne pollutants while landfilling increases the risks of...
groundwater contamination; composting and recycling result in fewer health risks, but do not eliminate them. Additionally, there is literature that addresses how the lack of proper waste disposal practises and facilities can be detrimental to residential health. For instance, Boadi and Kuitunen (2005) illustrate in their case study of the Accra Metropolitan Area, Ghana, how improper urban waste disposal facilities, and unplanned dumping sites can increase residents’ risk of respiratory problems from the inhalation of toxic fumes, and exposure to bacterial viruses from the waste contaminating the water. Providing further insight on the link between garbage and health, Berger (1999) presents a case study that articulates how a lack of proper waste management practises can negatively affect the respiratory function of residents living near a large city dump. Similarly, studies like Malmros et al. (1992) illustrate how the employees at waste disposal facilities can be subject to adverse health problems due to their prolonged contact with garbage. Recognizing waste management’s potential health impacts, Baud et al. (2001) propose that waste management policy that protects the quality of life of urban residents requires partnerships with both the public and private sector.

In examining the literature on waste management and health, an obvious link has been identified between human health and exposure to garbage. However, there is limited research on how, in addition to health, overall quality of life can be affected by waste management systems, and how this may vary for residents living near a dump.

Another integral component to this study in Puerto Vallarta is the assessment of residential quality of life. Helburn (1982) suggests that quality of life has an intrinsically geographical dimension, and as a result, its “utility value as a policy tool is so tied to place and as such it is a goal of which geographers must be cognizant and to which geographers can make important contributions” (Helburn 1982: 445). In support for geography being a contributor for policy action, Pacione (2003) suggests that by including a spatial component to quality of life studies one can recognize deprived areas and identify spatial concentrations of certain population groups that have different policy requirements. In conjunction with quality of life studies having utility in policy action, Cutter (1985) also made significant contributions to the study of quality of life by suggesting its application as a tool to compare quality of life in different geographical locations. Furthermore, Cutter (1985) also developed perceptual indicators which are used to accommodate the variation in the perceived importance of determinants of quality of life across space. When looking closely at the determinants that have been utilized in quality of life research, physical and social environment are two recurring domains of study and both are intrinsically geographical. The social and physical environments are both functions of place and geographic location, as the characteristics and influence of these determinants change according to where one lives. Therefore, even unintentionally geography is an integral part of quality of life studies as many factors that influence one’s quality of life are embedded in the area in which one lives. Geographers such as Cutter (1985), Pacione (1982) and Helburn (1982) have made significant contributions to quality of life studies establishing the importance of geography in this broader area of study. Although it has been recognized that quality of life can vary across space, there is a gap in the current literature on how particular variables, such as waste management sites, can have an impact on certain residents’ quality of life.

In examining the literatures pertaining to tourism, waste management and geographical quality of life, it becomes apparent that there have been no studies that explore the secondary impacts of tourism, such as the waste generated and how it in turn impacts the quality of life of residents in the host community.

### Study Area

Puerto Vallarta is located at the head of Banderas Bay, in the northwest corner of Jalisco state, Mexico. Once a small fishing village, Puerto Vallarta, with its coastal location and warm climate, has become the second most popular tourist destination in Mexico. The tourism economy in Puerto Vallarta has been growing since the 1970s and now has an estimated 3 million visitors annually (PuertoVallarta.net 2010). Tourism related activities are claimed to make up at least 50% of Puerto Vallarta’s economy (Massam et al. 2003: 3). The growing dependence on tourism in Puerto Vallarta in the last three decades makes Puerto Vallarta an ideal place to study how tourism affects residential quality of life. Additionally, the location of the dump within the city, along with the inherent wastefulness of its tourist economy, provides an opportunity to study how the garbage generated by tourism is perceived to affect residential quality of life at the intra-urban level. While we cannot attribute all waste at the Puerto Vallarta dump to tourism, it is estimated that roughly half of the 350 tonnes of garbage that are brought to the dump each day can reasonably be attributed to the tourism sector. Therefore, the dynamics of the tourism industry in Puerto Vallarta make it an ideal location to examine how the indirect impacts of waste, as a byproduct of tourism, are perceived to impact the host community residents.

### Methods

In implementing this study we chose a sample size of 25 people from each of four different neighbourhoods within Puerto Vallarta, for a total sample of 100 respondents. The four neighbourhoods that were included in the study differed in terms of direction and proximity to the dump. The neighbourhood furthest in the southwest direction from the dump and closest to the coast and tourist region of Puerto Vallarta is Versalles. The neighbourhood furthest to the northeast from the dump, and inland from the coast, is Ixtapa. The third neighbourhood we chose is Mojoneras, which is the second closest neighbourhood to the dump and is situated northwest of the dump. Lastly, Magisterio, the closest neighbourhood to the dump, is directly south of the dump and is separated by a single street (see Figure 1).

Data were obtained using a survey, made up of twenty-eight questions with concentrations in the areas of health, perceptions
of life, perceptions of the dump, perceptions of tourism, and demographics. Some of the questions were derived from a Quality of Life survey model designed by Alex Michalos (Michalos et al. 2000), with specific questions tailored to address the perceptions of the dump and tourism. The survey was first developed in English and then translated into Spanish by an assistant who spoke fluently in both languages. The survey was then implemented by local Spanish speaking student assistants from the University of Guadalajara satellite campus in Puerto Vallarta. After implementing the survey, the responses were translated into English by the same assistant who originally translated the survey into Spanish. The researchers have no way to ascertain the degree to which meanings may have been lost in translation. However, as one of the authors is also fluent in both languages,
and participated in developing the instrument and interpreting the results, we are confident that this effect would be minimal at worst.

To generally define the research population, the mean age across the four neighbourhood samples is 36 years of age, and the sample is composed of 57% female respondents and 43% male respondents. The average monthly income across all four neighbourhoods is 5,440 pesos monthly (approximately CAN $450).

Results

The results that will be highlighted here represent a selection of questions that pertain specifically to how the dump impacts quality of life across the four neighbourhoods. Additionally, the results chosen for discussion provide some insight as to whether residents perceive the garbage generated by tourism to be a burden.

Analysing the perceptions of tourism and how it impacts Puerto Vallarta, the respondents were asked whether tourism has had positive impacts on Puerto Vallarta. In response 82% of the sample agreed or strongly agreed that tourism has positive impacts on Puerto Vallarta, while only 3% of the population indicated that tourism development has had negative impacts on Puerto Vallarta. These results were anticipated because, as noted previously, tourism makes up a significant share of Puerto Vallarta’s economy, and therefore many residents see the economic effects of tourism play out in their daily lives. Respondents further articulated the perception of positive economic impacts when they were asked to provide ten words describing tourism. In answering this question, 70% of the respondents used words describing economic benefits such as jobs, money, wealth, etc.

In order to effectively analyze whether residents recognize garbage as an indirect impact of tourism, it is necessary to first explore how the dump is perceived across the four sub-samples. As may be expected, residents’ perceptions of the dump were quite negative and responses to several questions suggest that the population perceives the dump as having an impact on residential quality of life. When asked to provide ten words describing the dump, all of the respondents described the dump with negative adjectives such as: filthy, rotten, dirty, unpleasant, ugly, etc. In addition to generally negative impressions, further distinctions can be made. For example, 78% of respondents used words associated with the contamination of air, water or land. Additionally, 38% of the respondents used words such as sickness, infection, diseases, and viruses to describe the dump, suggesting there is a perceived relationship between ill health and the dump. When asked if the dump represented a problem for the residents living in close proximity to it, 92% of the sample acknowledged that it was, further reinforcing the perception that the dump has the potential to negatively impact residential quality of life.

To address whether residential quality of life is affected by tourism or garbage, we begin by analyzing a few indicators of quality of life across the entire sample. When asked how satisfied they were with their overall quality of life, 51% of the respondents were satisfied with their overall quality of life, while the second largest portion of the population responded as being neutral. A significant factor of overall quality of life is physical health and to address this component the respondents were asked how satisfied they were with their physical health. In response 19% of the respondents were very satisfied, while 45% were satisfied with their physical health, suggesting that over 50% or the majority of the respondents were satisfied to some degree with their physical health. In an attempt to more specifically address the relationship between tourism and quality of life, the respondents were asked whether they believe that tourism development in the city is having an impact on the quality of life in their residential neighbourhood. In responding, just over 50% of the respondents saw tourism as having a favourable impact on their neighbourhood’s quality of life, while 16% saw tourism as having no impact and only 14% saw tourism as having an unfavourable impact on quality of life. Overall, residents were generally satisfied with their quality of life and when asked directly, suggested that tourism has a favourable or no impact on their quality of life.

As illustrated by the previous data, the general perceptions of quality of life and tourism are positive, while the overall perception of the dump is negative, and this is consistent across the four neighbourhoods. However, to specifically address whether the garbage generated by tourism impacts residential quality of life, it is essential to look at how the dump and the garbage is perceived across the four neighbourhoods. These neighbourhoods, as suggested previously, are situated at different proximities and directions from the dump and therefore the following questions aim to address how the effects of the dump can vary across space.

In addressing whether residents are generally satisfied with their neighbourhood, each neighbourhood sample was asked if they were satisfied with their current living location (see Figure 2). Magisterio, the neighbourhood closest to the dump, was the only neighbourhood in which over half of the population was unsatisfied with their living location. Additionally in Versalles, the neighbourhood furthest away from the dump, 96% of the respondents were satisfied with their overall quality of life, while the second largest portion of the population responded as being neutral.

Figure 2: Satisfaction with living location (n=25 in each neighbourhood).
spondents were satisfied with their living location, while the remaining neighbourhoods, Ixtapa and Mojoneras, both had 68% of respondents that were satisfied with their living location. The results from this question begin to exemplify the variation in response across space, and suggest the possibility that the dump’s greatest impact may be felt in the neighbourhoods closest to it.

In an attempt to further explore the relationship between the dump and residential quality of life across neighbourhoods, a series of questions focused on specific impacts of the dump: noise, smell, air quality, and water. When asked how their neighbourhood was affected by noise from the dump, Ixtapa had the highest proportion of respondents (at 56%) that saw the dump to have negative effects on their neighbourhood (see Figure 3). This result was unexpected as Ixtapa is the second furthest neighbourhood from the dump and should be less affected by noise from the dump than neighbourhoods closer to it. Nonetheless, this anomaly suggests further consideration of variables such as elevation, specifically intervening topography, that may help in explaining these results. However, with the exception of Ixtapa, the proportion of the respondents that saw their neighbourhood to be negatively affected by noise from the dump decreased as proximity to the dump decreased. Specifically, in Magisterio 20% of the respondents saw negative impacts, in Mojoneras 12% of the respondents recognized negative effects, and in Versalles 8% of the respondents felt that the dump had a negative effect due to noise.

When the four samples were asked if the smell in their neighbourhood was affected by the dump, in all of the neighbourhoods other than Versalles, more than 75% of the population recognized smell to be negatively affected by the dump (see Figure 4). This is reasonable as Versalles is the neighbourhood furthest away from the dump and closest to the coast. Since predominant winds blow from west to east, away from the neighbourhood, smells from the dump would normally be carried further east and inland. Therefore, by prohibiting the movement of air towards the coastal regions, the winds minimize the effects the dump has on smell in this neighbourhood. Most importantly, Magisterio, the neighbourhood immediately adjacent to the dump, had the greatest proportion of respondents, at 88%, that identified the dump as having a negative impact on the smell in their neighbourhood. Apparently proximity outweighs the direction of predominant wind movement at such a close distance. This neighbourhood was followed by Ixtapa with 80% of respondents and Mojoneras with 76% of respondents that recognized the dump to have negative impacts on the smell in their neighbourhood. The results yielded from this question illustrate how the effects of the dump decrease as neighbourhoods increase in distance from it. We recognize again that intervening topography may be an additional variable worth considering in future analyses.

This phenomenon was reproduced when respondents were asked how the air quality in their neighbourhood is affected by the dump. The number of respondents that identify the dump as having a negative impact on their air quality increased as proximity to the dump increased. For instance, in Magisterio 72% of the sample recognized the dump to have a negative impact on air quality, followed by 68% in Mojoneras, 60% in Ixtapa and 12% in Versalles (see Figure 5).

The last question that was asked in relation to how the dump impacts certain factors within a neighbourhood was focused on how the dump affects water quality within each neighbourhood. We should emphasize that in this question, we did not suggest what aspects of water quality respondents should consider. They
were free to interpret this variable however they felt appropriate. We recognize this introduces a question of consistency; however, the aim of the study was to examine perceptions of impacts, rather than to measure impacts in any empirically accurate way. This question yielded results that were intriguing, as again Ixtapa was the neighbourhood in which the greatest share of respondents (at 44%) identified the dump as having a negative effect on their water quality (see Figure 6). Nevertheless, this result may be explained by the fact that Ixtapa is the only neighbourhood where nearly 50% of respondents reported that they drank tap water (either filtered or non-filtered). Conversely in the three remaining neighbourhoods, over 90% of the population drank purchased water, making Ixtapa the only neighbourhood where a substantial proportion of the population is vulnerable to water contamination from the dump. Excluding the results obtained from Ixtapa, Magisterio, the neighbourhood closest to the dump, had the highest percentage of respondents that identified the dump as having a negative effect on their water quality. Again, we should emphasize that the direct relation between the dump and water quality was not measured empirically (e.g. runoff affecting municipal water supply). The study examines residents’ perceptions of the impacts, whether real or not.

In comparing the impact of the dump across the four neighbourhoods, the four neighbourhood samples were asked directly if the dump had a negative impact on their physical health. This question in particular yielded interesting results, as the neighbourhood closest to the dump, Magisterio, had the largest percentage of respondents that identified the dump as having a negative effect on their health. Again, we should emphasize that the direct relation between the dump and health was not measured empirically (e.g. air quality). The study examines residents’ awareness of the impacts, whether real or not.

Although these results are difficult to interpret, one possible explanation may be that residents closer to the dump see the dump on a more regular basis and therefore it is embedded in their daily life. Conversely, residents who live in neighbourhoods further away from the dump do not interact with that landscape regularly and as a result there is a greater likelihood that a negative perception is developed. Another factor important to this analysis is that it is likely that several people who live in closer proximity to the dump work in the dump as informal recyclers, and generate their livelihood within that space. Therefore, they may be less likely to perceive the dump as having negative impacts on their health, as they work in the space daily.

While some tendencies in the relationship between the dump and aspects of quality of life are apparent across space, we are specifically interested in the link between these and tourism. In an effort to assess whether residents in Puerto Vallarta perceive the garbage generated by tourists to have a negative impact on the community, all neighbourhoods were asked to describe the impacts of tourism and whether waste generated by tourism was a burden on the community. When asked to describe the impacts of tourism on Puerto Vallarta, 48% of the population perceived impacts to be positive and 21% of the population perceived impacts to be very positive (see Figure 7). However, when asked directly whether the waste generated by tourism was a burden on the community, 31% of the population strongly agreed, while 23% just agreed (see Figure 8). Therefore, when asked generally about the impacts of tourism, it was exemplified that the majority of the population recognized the impacts from tourism generally to be positive. However, when asked specifically about the garbage generated by tourism, just over 50% of the population agree to some extent that it is a burden (respondents were free to interpret ‘burden’ however they felt). Thus it can be suggested that unless specifically prompted, residents do not automatic-
ly recognize tourism as having negative secondary or indirect impacts on their community. Alternatively, it could be that, on balance, residents perceive the positive impacts to outweigh the negative ones, resulting in overall positive impressions, even if some negative impacts are recognized.

Analysing the results of the survey, it is evident that the impact of the dump on residents generally increases as distance from the dump decreases, and therefore the dump does impact perceived residential quality of life for residents living in closer proximity to it. Consequently, it can be suggested that the garbage generated from tourism, which has been estimated to be 50% of total waste in Puerto Vallarta, does impact host community quality of life in relation to their proximity to the dump. Further exploring the primary question of whether the garbage generated from tourism impacts the host community’s quality of life and whether it is perceived as being a burden, it can be concluded that the general perception of tourism across the entire population is mainly positive and is focused primarily on the direct impacts of tourism. Therefore when asked about the impacts of tourism overall, there is no perceived link to the secondary impacts of tourism such as garbage. However, when residents were prompted specifically about the garbage generated by tourism, residents did identify it to be an issue. While overall, the relationship between tourism and its secondary impacts are not readily identified as being a negative component of tourism, it is obvious that garbage does affect residential quality of life for residents in neighbourhoods in close proximity to the dump.

Conclusion

In examining the existing literature on tourism and its impacts on host communities, it is apparent that minimal research has been done on the secondary impacts of tourism and their effect on residential quality of life. Therefore in contributing the geographic literature on tourism, this study links three particular geographical concerns: geographical quality of life studies, waste management studies, and tourism. Exploring the results of this case study in Puerto Vallarta, three specific conclusions may be suggested: (1) the dump in Puerto Vallarta does impact a variety of aspects of residential quality of life for residents living in close proximity to it and generally follows a distance decay relationship, (2) the relationship between tourism and its secondary impacts is not easily recognized by host community residents, and (3) although not commonly identified as a negative impact of tourism, residents did identify the garbage generated from tourism to be an issue in Puerto Vallarta. It should be emphasized that in reaching these conclusions there has been no attempt to attribute these relationships between garbage and quality of life solely to tourism. Nevertheless, it is reasonable to assert that tourism makes a substantial contribution to the city’s waste, and therefore perceptions of waste and quality of life should be taken as inclusive of residents’ and tourists’ contributions to that waste. Overall this study demonstrates that the effects of tourism are not limited to the easily observable direct impacts, but that there is a range of secondary impacts that affect host communities. Furthermore, this study exemplifies that the tourist industry, due to secondary impacts, can negatively affect residential quality of life in host communities.

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