

## The Influence Of Signage And Proximity Of Recycling Bins On The Volume Of Recycling Materials Generated At A Hotel.

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According to the Rocky Mountain Lodging Report (1998), there are approximately 220,000 available rooms in Salt Lake County. Based on the average occupancy rate, this translates into approximately 150,000 occupied rooms on any given day. According to Encyclopedia Britannica, waste, in the United States, is generated at an average rate of approximately 4.4 pounds (2kg) per person per day. If each room has only one guest per room, this would generate a minimum of 660,000 pounds (or 264 tons) of waste every day. Large festival and special event exacerbate the problem of waste. During the 2002 Winter Olympics, for example, the Salt Lake Organizing Committee anticipates booking 100% of the available rooms for the sixteen days of the event. Full occupancy of the rooms with a minimum of two guests per room would generate 1,936,000 pounds a day or 30,976,000 pounds (12,390 tons) of additional garbage total during the Olympics. This places an unseen burden on the taxpayers and the city employees at the Salt Lake County landfill.

One of the basic components of sustainability is recycling. Recycling can improve the quality of the environment, reduce the amount of material waste generated, and reuse materials as secondary products (Lansana, 1992). White (1999) indicated that 40 percent of recyclable materials were included in the total waste in Los Angeles. Ellul (1995) cites that, "European Union (EU) generates over two billion tons of waste each year, of which 80% can be recycled, ...". Recycling could assist in resolving the problem of waste disposition if the 80% of the materials were removed from the system.

The hospitality and tourism industry has an important obligation to help address the waste problem. Tourism must find a way to wisely use their attractions and resources to fulfill today's needs without exhausting the resources. This is the main premise of sustainable tourism. Through many decades of trial and error, developers and researchers have evolved the basic premise and principles of sustainable tourism.

Sustainable tourism principles have the potential to significantly change the current trends regarding the development and management of tourism. Historically, tourism development focused on facilitating the masses and ignoring any and all negative impacts on the environment. Unfortunately, as tourism continues to grow, it is essential that tourism managers identify effective means to minimize the negative consequences of large number of tourists.

Indeed, many researchers and people believe there is absolutely no true nature of sustainability and there is no definable exception relating to the context, control and position of those who try to define it. Sustainability is an ideal situation toward which we can strive. The notion of sustainability encompasses several aspects including environmental, social, cultural, and economical (Mowforth & Munt, 1998; Milne, 1998).

Hall and Lew (1998) cite that, "The concept of sustainability first came to public attention with the publication of the World Conservation Strategy (WCS) in March 1980" (p.2). The WCS was supported by the International Union for Conservation of Nature and Natural Resources (IUCN) with assistance of the United Nations Environment Education Programme (UNEP), The World Wildlife Fund (WWF), the Food and Agriculture Organization of the United Nations (FAO), and the United Nations Educational, Scientific, and Cultural Organization (UNESCO). The purpose of WCS was the conservation of Earth's living resources in confrontation with diverse international environmental problems such as ecosystem degradation, extinction of endangered species, loss of forest, and so on. The WCS was designated by experts from 100 countries. Particularly, the notion of sustainable development supported by WCS focused on the relationship between economic development and the conservation and sustainability of natural resources (Hall & Lew, 1998).

Hall (1998) cites that "Sustainability is an essentially contested concept that is a concept the use and application of which is inherently a matter of dispute. The reason for this is the degree to which the concept is used to refer a balance or wise use in the way in which natural resources are exploited"(p.13). The sustainability is closely related to our coexistence with environment. We live on a planet, which has limited resources available. Therefore, the sustainability is not an option but an obligation for human beings to survive.

However, recycling programs traditionally rely primarily upon voluntary participation among residents or users. Voluntary participation in a recycling program is positively correlated with education messages and environmental awareness. Goodwin et al (1997) researched the importance of visitors' education and environmental awareness among guests in a park. Educational and interpretive information were found to have a positive influence on visitors at protected areas. The research provided appropriate methods to elicit voluntary participation in protecting the area.

The tourism industry has been aware of the importance of the environment, and has been involved in and concerned with environmental management, related to reasons not only for (recognizing) both (the) importance of environment and the impact of industry operations but also for saving money and providing reliability. Many researchers have been looking for appropriate methods to provide positive influence on the environment. Among them, Stipanuk (1996) cites a researcher, R.H. Holbrook who received significant attention for his article, "How May the Hotel Reduce Cost and Waste?". He stressed the 'waste' management required attention due to the importance of minimizing costs and conserving resources. Under the basic premise of Holbrook, waste can be a resource through the materials' reuse and recycling (Stipanuk, 1996).

Those two essential components of waste recycling and reuse have a strong relationship with both operators' and participants' effort and roles. This study will provide an example of the relationship with the hotel guests' participation and a hotel operators' active role in a recycling program.

Increasing participation in a recycling program is a great challenge. There will be diverse methods to encourage people to the participation of the program. Among them, convenience is one of the significant components in encouraging people to participate in recycling programs. Closer proximity of accessibility (closer collection receptacle proximity) may contribute to positive voluntary participation to a greater degree than bins located further away. Signage may also provide an encouragement to voluntary participation. Those two factors have a strong relationship with participation (Widner & Roggenbuck, 2000; Lansana, 1992).

Lansana (1992) indicated some problems of participation such as time, additional effort, storage space, and other requirements imposed by participation. In addition, recycling demands time and energy to save, sort, and deliver the recyclable materials. The need for storage space has created concern among managers. An evaluation of non-recyclers in Somerville, Massachusetts, 16% of non-recyclers blamed their landlords for the failure of participation due to the lack of space for sorting recyclable materials (Lansana, 1992).

People might resist recycling because it is inconvenient, or they believe that recycling materials are just tossed in garbage anyway. Lansana (1992) stresses the importance of accessibility and convenience to the participation of the recycling program. These factors may negatively influence voluntary participation in the recycling program.

### **Purpose of Study**

The purpose of this study was to examine the influence of the recycling bin locations, the style of the bin, and the presence of recycling signs on the volume of recycling material generated at a hotel. The results of this research may provide an understanding of and guidelines for increasing awareness and participation in recycling programs at many tourism destinations and facilities. (In addition), the literature review examined the tools utilized in the recycling of renewable resources and identified potential methods of recycling (in addition) to reviewing the role of recycling in sustainable tourism. The focus of this study was to determine if the proximity of recycling bins and signage would influence the amount of recycling materials generated.

## Hypotheses

Hypotheses of this study were formulated as follows:

**HA1.** On days that the moral appeal sign and the in-room recycling bin are present there will be a greater volume of recycling material generated than on days other treatments are present.

**HA2.** On days that the in-room recycling bins are present there will be a greater volume of recycling material than on days that a central recycling bin and informational sign is present.

## Methods

For this study, the sample was drawn from guests who used a year around tourism accommodation during the summer of 2001. The hotel that had agreed to participate in the study is the University Guest House located at 110 South Fort Douglas Blvd. Salt Lake City, Utah. All study participants were guests who had been randomly assigned by the room assignment within the facility.

Depending on the date of arrival, participants received one of three treatments. There were three different treatments over a 6-week time period on the selected floor. Each two-week period had a slightly different treatment. During the first two weeks the study participants were assigned to hotel rooms with a wicker recycling bin (called the Waste-Not-Basket) provided by JRS Amenities (Ltd). The bin had each compartment marked with an informational label (aluminum, plastic, glass, and paper). There were no visible recycling signs posted anywhere in the hotel. During the third and fourth weeks participants had access to the in-room recycling bins marked with an informational labels (aluminum, plastic, glass, and paper). An additional recycling sign using a moral appeals message was posted in the room. The fifth and sixth weeks included a centralized recycling bin on the floor provided by Winsor Barrel Works. The bin was marked with an informational label (aluminum, plastic/glass, and paper). Recycling signs using a moral appeals message were posted in the rooms.

It should be noted that any misplaced non-recyclable materials were separated and not included in the calculation for the day. Recyclable materials which were placed outside the doors, on the floor or on furniture and not in the recycling bins were included in the data. The measurement of recycling materials generated at the central location bin were calculated in a similar fashion each day. The number of occupied rooms was noted for each day. ( The first sentence reads that misplaced material was not included in the calculation, the second sentence states that they were)

## Results

The recycling materials generated at the hotel were measured using a Pelouze Scales (Model PE 10), which has a capacity of 10 lb (5000 g). All measurements were consistently recorded in the measurement of ounces.

Among the three treatments, the outcome of recycling materials was greatest during Treatment 2. Treatment 2 (in-room recycling bin and signage) generated an average of 3.64 ounces per room whereas, Treatment 1 (in-room recycling bin only) generated an average of 2.70 ounces per room per day. Treatment 3 (central recycling bin and signage) generated the lowest average of 0.74 ounces per room per day.

Treatment 2 (in-room recycling bin and signage phase) generated the greatest amount of recycling materials for each type of material (plastic per room/per day = 0.40367, aluminum = 0.12043, paper = 2.06678, and glass = 1.05740. The means for Treatment 1 (in-room recycling bin only phase) and Treatment 3 (central recycling bin and signage phase) were significantly less for each type of material.

## Summary of Results

There was a statistically significant ( $p = .000$ ) difference in recycling materials generated on days when the in room recycling bin and signage was present when compared to the central recycling bin and sign was present. . There was a statistically significant ( $p = .021$ ) difference in recycling materials generated when the in room recycling bin only was present when compared to the central recycling bin and sign was present. Although there was not a significant difference between Treatment 1 and 2, this demonstrates that the single most influential element was in fact the presence of the in-room recycling bin.

## Discussion

The purpose of this study was to examine the influence of signage and proximity of recycling bins on the volume of recycling material generated at a hotel. It was hypothesized that on days that the moral appeals sign and the in-room recycling bin were present there would be a greater volume of recycling material generated than on days other treatments were present. Comparing Treatment 2 (in room recycling bin and signage) and Treatment 3 (central recycling bin and signage), Treatment 2 generated a greater volume of the recycling materials than Treatment 3. However, when comparing the outcomes of Treatment 1 (in room recycling bin only) and Treatment 2 (in room recycling bin and signage), Treatment 2 generated greater amounts of recycling material than Treatment 1, but the analysis was not statistically significant. In addition, it was also hypothesized that on days that the in-room recycling bins were present there would be a greater volume of recycling material than on days that a central recycling bin and informational sign is present. There was a statistically significant ( $p=0.006$ ) difference in outcomes when comparing Treatment 1 (in room recycling bin) and Treatment 3 (central recycling bin and signage).

The national average of 4.4 lbs of waste generated daily may not be representative of hotel guests and tourists. Glen (1999) provided in his article that the average recycling rates of the State of Utah were lower than national average approximately 20 percent. In this study, the average hotel guest generated 4.0 oz of recycling materials per day, based on the average recycling rate. There were approximately 220,000 available guest rooms in Salt Lake area. Based on the outcomes of this study, the expected outcome of recycling materials in a day will be 880,000 oz (55,000 lb). During 2002 Winter Olympics if all available rooms were occupied then approximately 935,000 pounds of recycling materials would be generated during the duration of the event. This estimate may be more conservative since there were no food related facilities such as a restaurant, snack bar, or other dining services in the designated hotel. The hotel guests in this study may not be representative of the entire hotel industry. Therefore, guests at hotels with dining and snack facilities, or related amenities may generate greater food related waste or recycling materials than guests at this hotel.

Glenn (1999) mentioned that many state's recycling rates are in the 10 to 20 percent range. Hotel guests may come from an area where there is a greater or lesser emphasis on recycling, influencing their tendency to participate in a voluntary recycling program. Some guests may expect the provision of opportunities to recycle and feel that a hotel has failed in being responsible if a recycling alternative is not available. An event such as the 2002 Winter Olympics may support or provide independent statements influencing visitors and participants to assume a "green" attitude regarding their involvement in voluntary programs, such as recycling.

In this study, the method of assessing the outcome of recycling materials was compared with each treatment phase. A higher volume of recycling materials resulted with the in-room recycling bin and signage than with any other treatment. With regard to outcome of recycling materials, findings in this study support previous research by Luyben and Bailey's (1979) and Lansana (1992). Lansana observed that the provision of waste storage containers and collection points had a great deal of influence on the participation in recycling programs. This was true for this study as well. Therefore, we conclude that the proximity of the recycling bin has the greatest influence on the amount of recycling materials generated. When the collection point or recycling bin is located some distance from the guest room, the guests are less likely to participate in the recycling program. The overwhelming conclusion of this study demonstrated that the presence of in-room recycling bins contributed to higher per room collection of materials than the central recycling bins.

The results of this study further support the conclusions of Vining and Ebreo (1992). The previous study indicated earlier that no single strategy would significantly or effectively change all environmental behaviors. A combination methods; internal (sign) and external (proximity) encouragement to participate in the recycling program generated a higher participation rate than when any one of the methods were utilized separately. The in-room recycling bin and sign present generated a higher volume of recycling materials than the in-room recycling bin only and the sign only in the room. Although it did not significantly increase the amount of recycling materials with the addition of the moral appeals sign, the combination of the in-room recycling bin and the sign did increase the volume of materials. The cost of the sign was insignificant when compared to the cost of the bins, therefore, it is concluded that the provision of the sign should be continued to encourage and educate the guests.

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