

BALANCING THE PEAK AND OFF-PEAK TRAVEL DEMANDS TOWARDS CEMETERIES AND COLUMBARIA

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ABSTRACT

Special events attract extraordinarily high travel demands within a relative short period of time. Managing those travel demands is more critical than that for normal commuting trips since the high demands usually induce more severe impacts to local traffic. The impacts vary amongst different special events due to the difference in their natures. Unlike most of the special events like concerts or football matches that have a fixed date and time, the visitors to grave-sweeping could choose their available date and time to visit around the festival dates. Therefore, the policy measures suggested to manage the demand for other special events in the previous researches cannot be applied directly for the case of grave-sweeping. Grave-sweeping is one of the popular special events in Asia, especially in Chinese societies, where many visitors are attracted to cemeteries and columbaria around the two traditional festivals. The high travel demands cause overcrowding at the sites and congestion on the access roads. Although crowd management plans have been implemented by Police Force on sites to mitigate the traffic impacts, whether the plans effectively control the crowds have not been confirmed by empirical evidences. As there was no research done to study the travel behaviour of visitors of grave-sweeping before, this research is motivated to investigate the visitors' travel behaviour towards cemeteries and columbaria.

This study analyses and models the preferences of cemetery and columbarium visitors on their arrival time and transport mode to the sites. The study used both revealed preference and stated preference methods to ask the respondents for their actual travel decisions for visiting the cemeteries and columbaria, as well as their potential travel decisions under different assigned hypothetical scenarios. A combined time and mode choice model was calibrated based on 3,128 choice decisions of 782 respondents collected in the stated preference survey conducted in two selected cemeteries. The model results show that in-vehicle travel time, total waiting and walking time, travel fare of feeder services, preference of feeder services and preference of chosen time period are the significant factors that influence visitors' travel decisions towards cemeteries and columbaria. The effects of the socio-economic factors are also examined and discussed. Furthermore, this study investigates if the visitors' travel decisions vary across different visiting locations and dates. The combined time and mode choice models are validated using the actual travel decisions of the visitors that the model prediction accuracy is ensured. Based on the model results, this study recommends directions for improving the current crowd management plans to balance travel demands among the peak and off-peak hours towards cemeteries and columbaria around the festivals to minimize the local traffic impacts. It is suggested to promote the traffic measures through digital channels such as through social media to ensure the information on crowd management plans can be reached to each of the individual visitors so that they could adjust their trip decisions according to the management measures.

The contributions of this study are *(1) proposing multinomial logit models that depict the arrival time and associated transport mode choice of cemetery and columbarium visitors during the festivals, (2) finding significant factors that influence the visitors' travel decisions, (3) providing model validation to ensure the model prediction accuracy, and (4) recommending directions for improving crowd management plans to balance travel demands in the peak and off-peak periods.* It is anticipated that the findings can help Police Force establishing appropriate and effective crowd management plans to manage the travel demand and prevent overcrowding at existing cemeteries and columbaria and those to be built in the near future.