

Identifying recreational boater travel pattern using Internet-based map

Yue Cui

*School of Planning, Design & Construction and The Department of Community, Agriculture, Recreation and Resource Study,
Michigan State University*

Follow this and additional works at: <https://scholarworks.umass.edu/ttra>

Cui, Yue, "Identifying recreational boater travel pattern using Internet-based map" (2016). *Travel and Tourism Research Association: Advancing Tourism Research Globally*. 23.

https://scholarworks.umass.edu/ttra/2013/AcademicPapers_Oral/23

This Event is brought to you for free and open access by ScholarWorks@UMass Amherst. It has been accepted for inclusion in Travel and Tourism Research Association: Advancing Tourism Research Globally by an authorized administrator of ScholarWorks@UMass Amherst. For more information, please contact scholarworks@library.umass.edu.

Identifying recreational boater travel pattern using Internet-based map

Yue Cui

School of Planning, Design & Construction

and

The Department of Community, Agriculture, Recreation and Resource Study

Michigan State University

cuiyue@msu.edu

ABSTRACT

Spatial factors are fundamental features of the tourism and recreation phenomenon. Scholars are not only interested in tourists' spatial distribution and movement patterns, but also want to understand the reasons behind tourist movements, travel cost, environmental impacts and social impacts of the movements. However, the systematic studies regarding tourist movement or time budget within are scant, especially at local level. One reason for the lack of research is that the study of spatial behavior in tourism and recreation studies presents significant practical problems in gathering spatial data. Using the Florida Saltwater Fishing Study as an example, this paper offers a method to integrate Internet GIS with on-line survey instruments to collect spatial-referenced data. The survey results suggest that integrating Internet GIS in survey instruments provide a straight-forward, effective, inexpensive, and reliable method of collecting spatially-referenced data.

Keywords: *Recreational Boating, Spatial Data Collection, Internet-Based GIS, Google Maps API*

INTRODUCTION

Tourism/recreation involves the movement of people through time and space both socially and physically. Understanding tourists'/recreationists' flows through time and space, and the factors that affect the time/space relationship have profound implications for planning and management of tourism/recreation resources, product development, and the commercial viability of the related industries. Though spatial factors are fundamental features of the tourism/recreation phenomenon, little empirical or conceptual work has been conducted examining and modeling spatial behavior (Dietvorst & Ashworth, 1995; Shaw & Williams, 2004). The major reason for this lack of research is that the study of spatial behavior in tourism and recreation studies presents significant practical problems in gathering spatial data (Lew & McKercher, 2006).

METHODS

Thus far, three methods are used in tourism/recreation-related spatial data collection: direct observation, tracking people movement through equipment (e.g., cell phone), and identifying spatial movement by questionnaire-based approaches. The method of direct observation can be summed up as: "identify, follow, observe and map" (Thornton, Williams, & Shaw, 1997). Yet, the limited human resources and funding make it impossible to apply direct

observation in a large scale area or an area with complicated spatial configurations, e.g., observing the boaters' trip pattern across United States with unlimited boating routes. Alternatively, the observer may follow the subject(s) at a distance using equipment to record the pattern of their activities over time and space. However, using tracking equipment raised the concern to impinge upon people's right to privacy. Furthermore, this method failed to unveil the purpose and meaning underlying the subjects' decisions and activities, and the factors that affect their behavior. A third method that has been used to spatially characterize tourist/recreationist spatial behavior is a questionnaire. Currently, the major methods to collect spatial information are mail surveys and interviews. For example, Falk, Graefe, Drogin, Confer, and Chandler (1992) used a face-to-face approach, asking boaters exiting an inland bay to plot on a map the route of their boating trip in that day. The fixed size and scale of a paper map constrains the study regions, resolution, and respondent accuracy. In addition, the spatial information has to be digitized and imported into GIS/spatial statistics software for further analysis and modeling. The cost and amount of digitizing spatial information work is extensively higher than inputting regular questionnaire data into a digital format. Additional errors may be introduced during the digitizing process due to the low accuracy and low resolution of the paper map.

Recently, researchers in a variety of disciplines have found that Internet technology is a fruitful area as a means for collecting information, such as in conducting survey research. Advantages of Internet-based survey include access to individuals in distant locations, the ability to reach difficult to contact participants (Garton, Haythornthwaite, & Wellman, 1997), and the convenience of having automated data collection, which reduces time and cost (e.g., Yun & Trumbo, 2000).

The Internet platform also provides opportunities to incorporate various GIS and on-line spatial resources as a component of the Internet-based survey in collecting spatial information. Particularly, the Internet-based map APIs (Application Programming Interface) allow users to freely create their own Internet-based GIS application using others' networked resources, e.g., Google Maps. This enables users to request, create and edit spatial data for a selected geographic region through Hypertext Transfer Protocol (HTTP), and embed the resulting map as an object in any extended web site. Hence, there is no need for respondents to install special GIS software or add-ons for Internet-based survey instruments to collect spatial data.

Using the Florida Saltwater Fishing Study as an example, this paper offers a method to integrate Internet GIS with on-line survey instruments to collect spatial-referenced data (e.g., trip origin, trip destination, on-water location and boating route) in recreation boating studies. This system provides maps and functions with which most people are familiar. It also brings multiple customized GIS layers, e.g., location of marinas, boat launch sites and artificial reefs in Florida to help survey respondents identify their boating routes and points of interests. Through the proposed information platform, survey respondents can quickly and freely interact with Google Maps by APIs, delineate their fishing trips from boat on the map, and answer associated research questions, e.g., time spent on a fishing spot, fish caught and released at this location. This releases the limitation of paper maps in terms of fix scale and area, low accuracy, and data transcription problems. In addition, it significantly reduces the data processing and prevents data entry error. The spatial data and associated attribute data are saved into database, and can be easily transferred either as the "shape" file that most GIS professionals familiar with or in the KML, GEORSS and XML format which most people without GIS expertise are able to use.

RESULTS

Thanks to the GIS incorporating, the internet survey instrument in Florida Saltwater Fishing Study collected 8,500 boating-related fishing trips around Florida costal area within 8 months from August 2012 to March 2013. Respondents drew over 800 trolling routes and indicated about 25,000 fishing spots on through the Internet GIS. Although this system has no

underlying guarantees for using Google Map APIs, we have experienced no major problems (e.g., browser compatibility, Google reliability) in using it to collect spatial data from respondents.

The survey results suggest that integrating Google Map APIs in survey instruments provide a straight-forward, effective, inexpensive, and reliable method of collecting spatially-referenced data. This method can be utilized by researchers in tourism and recreation studies collecting spatially-referenced data to understand tourists' spatial distribution and movement patterns (e.g., Lentnek & Doren, 1969), and to further discover the reasons behind tourist movements (Allen, 1999), travel cost (e.g., Leiper, 1995; Ogilvie, 1933), environmental impacts (e.g., Hamilton, Maddison, & Tol, 2005) and social impacts (e.g., Smallwood, Beckley, & Sumner, 2006).

REFERENCES

- Allen, G. (1999). Cognitive abilities in the service of wayfinding: A functional approach. *The Professional Geographer*, 51(4), 555-561.
- Dietvorst, A., & Ashworth, G. (1995). Tourist behaviour and the importance of time-space analysis. *Tourism and spatial transformations*, 163-181.
- Falk, J., Graefe, A., Drogin, E., Confer, J., & Chandler, L. (1992). Recreational boating on Delaware's inland bays: Implications for social and environmental carrying capacity.
- Garton, L., Haythornthwaite, C., & Wellman, B. (1997). Studying online social networks. *Journal of Computer - Mediated Communication*, 3(1), 0-0.
- Hamilton, J., Maddison, D., & Tol, R. (2005). Climate change and international tourism: a simulation study. *Global environmental change*, 15(3), 253-266.
- Leiper, N. (1995). *Tourism management*. Melbourne: RMIT Press.
- Lentnek, B., & Doren, V. (1969). Spatial behavior in recreational boating. *Journal of Leisure Research*, 1(2), 103-124.
- Lew, A., & McKercher, B. (2006). Modeling tourist movements - A local destination analysis. *Annals of Tourism Research*, 33(2), 403-423. doi: DOI 10.1016/j.annals.2005.12.002
- Ogilvie, F. (1933). *The tourist movement: An economic study*: PS King & Son.
- Shaw, G., & Williams, A. (2004). *Tourism and tourism spaces*: SAGE Publications Limited.
- Smallwood, C., Beckley, L., & Sumner, N. (2006). Shore-based recreational angling in the Rottnest Island Reserve, Western Australia: spatial and temporal distribution of catch and fishing effort. *Pacific Conservation Biology*, 12(3), 238.
- Thornton, P., Williams, A., & Shaw, G. (1997). Revisiting time-space diaries: an exploratory case study of tourist behaviour in Cornwall, England. *Environment and Planning A*, 29, 1847-1868.
- Yun, G., & Trumbo, C. (2000). Comparative response to a survey executed by post, e - mail, & web form. *Journal of Computer - Mediated Communication*, 6(1), 0-0.