11 The Future of Tracking Tourists' Behaviour and Mobility

What this chapter will cover:

- Emergent tracking techniques such as artificial intelligence (AI), machine learning, deep learning and physiological tracking that are likely to further our understandings of tourists' movement and mobility.
- The role that tracking has played during the COVID-19 pandemic.
- The challenges for tourist tracking and innovation in the future.
- A comparative table to guide researchers in selecting the most suitable tourist tracking method.

Introduction

The field of tracking tourists' mobility is a rapidly evolving space. In the eighteen months that it has taken to write this book, many innovations, along with world events such as COVID-19 have emerged, which have required updates to be made to this manuscript. There is no reason to believe that these changes will not continue to be necessary, as technological innovations are likely to occur at a rapid pace and will, no doubt, be utilised by those involved in tourism research.

The purpose of this chapter is to attempt to investigate the future of the adaptations that are likely to occur with regards to tourist tracking technology and methods. A near-future gaze is taken as technology and world events are evolving so quickly that it is difficult to predict a future beyond the short term. Techniques such as physiological tracking, emergency management, indoor positioning, machine learning and artificial intelligence are assessed along with the future of ethical research conduct. A summary is also made where the pros and cons of each research method is assessed and finally, future research needs are highlighted.

Physiological and emotional tracking

Physiological tracking involves combining spatial and temporal data with physiological data. Shoval et al. (2018) ponder whether the use of this form of data in tourism research equates to the introduction of the MRI in medicine, as it offers the potential for new data to emerge and long standing behavioural questions to be answered. Significantly, the technique offers researchers real time data on both emotions and physiological responses to tourism mobility and experiences. This form of data has, until recently, been very scarce within the field of tourism (Shoval et al., 2018) and has tended to focus on emotional responses. One of the reasons why this technique has scarcely been used is that it is onerous in terms of participant requirement, because an experience sampling method (ESM) is commonly used. This was developed in the 1970s and has been used in psychology and psychiatric studies (see Csikszentmihalyi et al., 1977; Csikszentmihalyi and Larson, 1987) and involves the participants self-reporting at intervals, depending on the study. These intervals could be regular (e.g. before during or after an event), predefined intervals, or when signalled by the researcher (Birenboim 2016).

However, technology has decreased the onus on participants to report their emotions. Real-time emotions have been explored by Pettersson and Zillinger (2011) who used geotags on a GPS device and had participants activate a button when they had positive or negative experience. Following this, Birenboim et al. (2015), combined data from

GPS devices with SMS messages to assess real time emotions in the Aalborg Zoo in Denmark, followed by GPS data and a smartphone application at a Students' Day celebration in a large park in Jerusalem that assessed students' momentary experiences, including their sense of crowding and security. Other research has also explored subjective emotions through techniques such as the creation of virtual environments which were then tested via observation, in order to predict visitor movement and emotions such as fatigue, hunger, and boredom (Loiterton and Bishop, 2008).

Technology has also facilitated new explorations into physiological responses to mobility. Kim and Fesenmaier (2015) explored the emotions of tourists using electro-dermal skin sensor technology and were able to uncover strong differences in emotional responses when their participants visited different attractions. Groundbreaking research by Shoval et al. (2018) moved beyond momentary emotions and explored tourists' physiological reactions to travel. This research explored electro-dermal activity (EDA) over time and space and synthesised four data collection methods to assess travellers' mobility alongside their emotions. The methods included:

1. A survey;
2. Tracking data;
3. Real time surveying techniques through experience sampling methods; and
4. Physiological data.

Specifically, the research team used a survey to collect demographic information; a smartphone application that collected GPS and mobile phone network location data; surveys within the app that collected subjective data that was both location-triggered and time-triggered; and physiological measures of emotions, collected via a clinically developed device that measured skin conductance, heart rate measures, blood pressure, and skin temperature simultaneously. This fascinating and multi-dimensional research was able to demonstrate changes over time in tourists' emotional responses. In particular, emotionally evocative areas were able to be determined. The research determined that heightened emotional responses were not confined to the location of