In order for planners to determine the most effective ways to increase ridership in their communities there is a need for better data on how and where cyclists ride. With limited budgets and staff time, however, local planning agencies do not always have the resources to conduct robust data collection efforts. In recent years a new method for collecting travel data has emerged that has the potential to provide high quality bicycle data at dramatically lower costs: the use of global positioning system (GPS) sensors in smartphones. Researchers at the University of Texas recently evaluated the usefulness of one such smartphone application – “CycleTracks” - to collect bicycle route data. While they found the app to be useful for collecting a large dataset, to this point there has been only limited analysis of the data in terms of its usefulness for bicycle planning. Employing ubiquitous geographic information systems (GIS), the present study utilizes the Austin CycleTracks dataset to present an innovative procedure by which planners can use GPS route data to identify barriers in the local bike network where planning or policy intervention might help increase ridership. Recent studies involving GPS route data have led to a better understanding of the factors that influence cyclists’ route choice decisions. Menghini, Carrasco, Schussler and Axhausen (2009), Broach, Dill and Gliebe (2012) and Hood, Sall and Charlton (2011) used GPS data to develop route choice models for cyclists in Zurich, Portland and San Francisco, respectively. Of the many factors that influence route choice decisions, total trip length was found to be highly significant in all three studies. Using this assumption, the method presented in this paper identifies potential barriers by pinpointing areas in the bike network where GPS traces show significant, repeated deviations by cyclists from their shortest possible path. While deviations from the shortest path by an individual cyclist may not tell the whole story, with over 3,600 trips in the CycleTracks dataset, repeated deviations from the shortest path reveal hot spots that warrant closer examination. Austin is used as a case study to show how these hot spots can be used by planners to glean information about the route characteristics that cyclists tend to prefer or avoid, and how this information can be used to inform future planning or policy decisions to increase ridership.

References

