This paper presents an approach to the collection, mapping, and analysis of cyclists’ experiences. By spatially relating located experiences to the availability of bicycle facilities and other aspects of the urban environment, their influence on cyclists’ experiences can be analysed. 398 cyclists responded and sketched their most recent cycle route and a total of 890 points to locations along the route where they had had positive and negative cycling experiences. The survey was implemented as an online questionnaire built on Google Maps, and allowed up to three positive and three negative experience points to be mapped and classified. By relating the characteristics of the experience points and the routes to the traversed urban area in general, the significance of the preconditions for obtaining positive or negative experiences could be evaluated. Thereby urban spaces can be mapped according to the potential promotion of positive or negative experiences. Further, the method might be applied to assess the effect of proposed changes to the urban design in terms of cyclists’ experiences. Statistical analysis of the location attributes, traffic environments and conflicts, bicycle facilities, urban density, centrality, and environmental amenities indicates that positive experiences, or the absence of negative experiences, are clearly related to the presence of en-route cycling facilities, and attractive nature environments within a short distance of large water bodies or green edges along the route.