Supplemental Methods

Study area

The study was performed in Iquitos, the largest urban center in the Peruvian Amazon. Human population density in Iquitos is high, with most of its ~390,000 inhabitants living within a 10 km^2 area at an average household size of 6 people per house [24]. The regional economy is informal (33% of the economically active population is either unemployed or informally employed) and major industrial development circumscribed to small-scale fishing, oil and lumber extraction, and tourism. Since 1999, Iquitos has been the base of a long-term collaborative research study focusing on the ecological and epidemiological determinants of dengue virus transmission, which, in recent years, incorporated a strong behavioral component by focusing on the role of human mobility on dengue transmission [19,20,25-27]. Iquitos can be accessed by air, by boat along surrounding rivers, and by automobile only from a few nearby towns [28], but it is mostly a relatively isolated city. Consequently, by focusing on intra-urban mobility rather than movements away from the city, we captured a majority of the locations in study participants' activity spaces [29].

Semi-structured movement interview

The goal of the SSI was to capture positional and temporal information on routine human mobility of study participants [20]. It consisted of a series of questions to trigger recall about the locations that the interviewee visited during the two weeks preceding the interview, as well as the frequency and duration of visits to each location. To allow for geocoding of locations visited by interviewees, the interviewee was first asked to provide an address for each location. If the address was unknown, the interviewee was asked to call someone at that location to obtain the

address using a mobile phone provided by the interviewer. If the address was still unknown, the interviewee was asked to describe the whereabouts of the location to the best of his or her ability, relying on a combination of giving directions to the location and/or identifying it on a printed map developed using contemporary, high-quality satellite imagery (Quickbird, Digitalglobe, CO). In all cases, a member of the field team would then visit the location and geocode it for subsequent analyses. The location's coordinates, along with an open-ended description of the location's classification (e.g., friend's house, butcher shop), were recorded in a geographic information system [30]. For our analyses, we followed the methods described by Perkins et al. [29] and grouped each location as belonging to one of the following eight land use types: residential, commercial, recreational, educational, religious, healthcare, institutional, or other.