

Abstract Submitted
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Structural and social aspects of human mobility JAMES BAGROW, Northwestern University, YU-RU LIN, Northeastern University — Research on human mobility has been revolutionized by cellular phone data, capturing activity patterns across extensive populations. A number of interesting features have been discovered, including the ultra-slow growth of human mobility patterns, which cannot be reproduced by traditional random-walk models. However, the spatiotemporal flows and detailed microstructure of human mobility have not been well studied. Inferring complex mobility networks from country-wide data from mobile phone data, we find that human mobility is dominated by a small group of frequently visited and dynamically close locations, forming a primary “habitat” that captures typical behavior, along with subsidiary habitats representing additional travel. These habitats are both well separated and spatially compact. We find that motion within habitats exhibits distinct temporal scaling and that the time delay to enter subsidiary habitats is a primary factor in the spatiotemporal growth of human travel. Mobility is also coupled with social activity. Interestingly, many phone users possess habitats that occupy single temporal and social contexts and display high temporal and social predictability when occupying subsidiary habitats, revealing new connections between human activity and mobility dynamics.

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