

Exploring Big Urban Data

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Abstract. Today, 50% of the world's population lives in cities and the number will grow to 70% by 2050. Cities are the loci of economic activity and the source of innovative solutions to 21st century challenges. At the same time, cities are also the cause of looming sustainability problems in transportation, resource consumption, housing affordability, and inadequate or aging infrastructure. The large volumes of urban data, along with vastly increased computing power and improved user interfaces enable analysts to better understand cities. Encouraging success stories show better operations, more informed planning, improved policies, and a better quality of life for residents. However, analyzing urban data often requires a staggering amount of work, from identifying relevant data sets, cleaning and integrating them, to performing exploratory analyses over complex, spatio-temporal data. Our long-term goal is to enable interdisciplinary teams to crack the code of cities by freely exploring the vast amounts of data cities generate. This talk describes challenges which have led us to fruitful research on data management, data analysis, and visualization techniques. I will present methods and systems we have developed to increase the level of interactivity, scalability, and usability for spatio-temporal analyses. This work was supported in part by the National Science Foundation, a Google Faculty Research award, the Moore-Sloan Data Science Environment at NYU, IBM Faculty Awards, NYU School of Engineering and Center for Urban Science and Progress.