

Session 1 / 03 September

Thrift, N. 2014. "The promise of urban informatics: some speculations." *Environment and Planning A* 46 (6):1263-1266. <https://doi-org.ezproxy.cul.columbia.edu/10.1068/a472c>

Koonin, Steven E. and Michael Holland. 2014. "The Value of Big Data for Urban Science." Pp. 137-152 in *Privacy, Big Data, and the Public Good*. New York: Cambridge University Press.
<https://doi-org.ezproxy.cul.columbia.edu/10.1017/CBO9781107590205>

Marshall, A. (2018, June 25). Cities Are Watching You-Urban Sciences Graduates Watch Back. Retrieved from <https://web.archive.org/web/20190204010737/https://www.wired.com/story/mit-urban-sciences-program/>

Optional:

Thakuriah, Piyushimita, Nebiyu Y. Tilahun, and Moira Zellner. 2017. "Big Data and Urban Informatics: Innovations and Challenges to Urban Planning and Knowledge Discovery." In *Seeing Cities Through Big Data: Research, Methods and Applications in Urban Informatics*, edited by Piyushimita Thakuriah, Nebiyu Tilahun and Moira Zellner, 11-45. Cham: Springer International Publishing.
<https://www.ubdc.ac.uk/media/1277/thakuriahbackgroundnsf-a.pdf>

Technical Reference (Optional):

IPython Documentation. <http://ipython.readthedocs.io/en/stable/>

Session 2 / 10 September

Batty, Michael. 2013. "Building a Science of Cities." Chapter 1, pp.13-45 in *The New Science of Cities*. Cambridge, MA: MIT Press. <https://clio.columbia.edu/catalog/12513238>

Townsend, A. M. 2013. "A New Civics for a Smart Century". Chapter 10, pg. 282 – 320 in *Smart cities: Big data, civic hackers, and the quest for a new utopia*. WW Norton & Company. (on reserve at Avery)

Chapter 1, The Measure of Social Value. Mau, S., & Howe, S. (2019). *The metric society: on the quantification of the social*. Polity Press: Cambridge, UK, Medford, MA. (on reserve at Avery)

Technical Reference (Optional):

Downey, Allen. 2013. *Think Python: How to Think Like a Computer Scientist*. Green Tea Press.
<http://greenteapress.com/wp/think-python-2e/>

Session 3 / 17 September

Batty, M. 2016. "How Disruptive Is the Smart Cities Movement?" *Environment and Planning B: Planning and Design* 43 (3): 441–443. doi:10.1177/0265813516645965. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-J7Q2212VPAD5056>

Cohen, B. (2015, August 10). The 3 Generations Of Smart Cities.
<https://www.fastcompany.com/3047795/the-3-generations-of-smart-cities>

Boyd, Danah, and Kate Crawford. 2012. "Critical Questions for Big Data: Provocations for a Cultural, Technological, and Scholarly Phenomenon." *Information, Communication & Society* 15 (5): 662–

79. doi:10.1080/1369118X.2012.678878. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-J7Q2212VPAD5144>

*** Case Study:**

Hillenbrand, Katherine. 2017. Case Study: Boston's Citywide Analytics Team. DataSmart Cities Project, Ash Center for Local Government, Harvard Kennedy School of Government. <https://web.archive.org/web/20190307021903/https://datasmart.ash.harvard.edu/news/article/case-study-bostons-citywide-analytics-team-1043>

Supplemental Readings (Optional):

Kingsley, G. Thomas, Claudia J. Coulton, and Kathryn L.S. Pettit. 2014. Strengthening Communities with Neighborhood Data. Washington, DC: Urban Institute. Pp. 73-114, Chapter 3 "Data and Technology," Pp. 135-148. <https://www.urban.org/strengtheningcommunities>

Goldstein, Ira. 2014. "Making Sense of Markets: Using Data to Guide Reinvestment Strategies." Pp. 75-87 in What Counts: Harnessing Data for America's Communities. San Francisco, CA: Federal Reserve Bank of San Francisco and the Urban Institute. <http://www.whatcountsforamerica.org/>

Green, B. (2019). *The Smart Enough City: Putting Technology in Its Place to Reclaim Our Urban Future*. MIT Press. <https://clio.columbia.edu/catalog/14175416>

Technical Reference (Optional):

Wheelan (2013) Chapters 2 & 3, "Descriptive Statistics" and "Descriptive Deception"

Wheelan (2013) Chapters 4, 8, & 11, "The Central Limit Theorem", "Correlation", "Regression Analysis"

Session 4 / 24 September

Janssen, Marijn, Yannis Charalabidis, and Anneke Zuiderwijk. 2012. "Benefits, adoption barriers and myths of open data and open government." Information Systems Management 29 (4):258-268. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-I822212VPAN3747>

Sawicki, D. S., and P. Flynn. 1996. "Neighborhood indicators - A review of the literature and an assessment of conceptual and methodological issues." Journal of the American Planning Association 62 (2):165-183. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-J7Q2212VPAD5421>

Sawicki, D.S. 2002. "Improving community indicator systems: injecting more social science into the folk movement." Planning Theory & Practice 3 (1):13-32. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-J7Q2212VPAD5456>

Rob Kitchin, Tracey P. Lauriault & Gavin McArdle (2015) Knowing and governing cities through urban indicators, city benchmarking and real-time dashboards. Regional Studies, Regional Science, 2:1, 6-28, DOI: 10.1080/21681376.2014.983149 <http://www.columbia.edu/cgi-bin/cul/resolve?AH-J7Q2212VPAD5528>

Watch ☺ (Stephen Colbert in his previous life):

<http://www.cc.com/video-clips/w6itwj/the-colbert-report-the-word---sink-or-swim>

*** Case Study:**

Schachtel, M.R.B. 2001. "CitiStat and the Baltimore Neighborhood Indicators Alliance: Using Information to Improve Communication and Community." *National Civic Review* 90 (3):253-266. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-J7Q2212VPAD5609>

Supplemental Readings (Optional):

Bostic, Raphael. 2014. "Narrative' and 'Vehicle': Using Evidence to Influence Policy." Pp. 342-355 in *What Counts: Harnessing Data for America's Communities*. San Francisco, CA: Federal Reserve Bank of San Francisco and the Urban Institute. <http://www.whatcountsforamerica.org/>

Coulton, Claudia. 2014. "Using Data to Understand Residential Mobility and Neighborhood Change. Pp. 244-259 in *What Counts: Harnessing Data for America's Communities*. San Francisco, CA: Federal Reserve Bank of San Francisco and the Urban Institute. <http://www.whatcountsforamerica.org/>

Gordon E. Baldwin-Philippi J . (2013) Making a habit out of engagement: how the culture of open data is reframing civic life. In Goldstein B. Dyson L . (eds.) *Beyond Transparency* . San Francisco, CA: Code for America Press. <http://beyondtransparency.org/chapters/part-3/making-a-habit-out-of-engagement-how-the-culture-of-open-data-is-reframing-civic-life/>

Chapter 2, "Small Data, Data Infrastructures and Data Brokers," and Ch. 3, "Open and Linked Data" in Kitchin, Rob. 2014. *Data Revolution: Big Data, Open Data, Data Infrastructures & Their Consequences*. Los Angeles: Sage Publications. <http://methods.sagepub.com.ezproxy.cul.columbia.edu/book/the-data-revolution>

Lindblom, C. E. (1986). Who needs what social research for policymaking?. *Knowledge*, 7(4), 345-366. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-J7Q2212VPAD5722>

Offenhuber, D. (2014). Infrastructure legibility—a comparative analysis of open311-based citizen feedback systems. *Cambridge Journal of Regions, Economy and Society*, 8(1), 93-112. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-I822212VPAN3555>

Perdicoulis, Anastassios, and John Glasson. 2011. "The Use of Indicators in Planning: Effectiveness and Risks." *Planning Practice and Research* 26 (3):349-367. doi: 10.1080/02697459.2011.580115. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-J7Q2212VPAD5928>

Sieber, Renee E, and Peter A Johnson. 2015. "Civic open data at a crossroads: Dominant models and current challenges." *Government Information Quarterly*. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-J7Q2212VPAE0005>

Session 5 / 1 October

Nabian, N. et al., 2013. Data dimension: Accessing urban data and making it accessible. *Proceedings of the Institution of Civil Engineers: Urban Design and Planning*, 166(1). <http://www.columbia.edu/cgi-bin/cul/resolve?AH-J7Q2212VPAE0048>

Quercia, D. et al., 2016. The Digital Life of Walkable Streets. In *Proceedings of the 24th International Conference on World Wide Web - WWW '15*. New York, New York, USA: ACM Press, pp. 875–884. <http://arxiv.org/abs/1503.02825>

Cranshaw, Justin, Raz Schwartz, Jason I Hong, and Norman Sadeh. 2012. "The Livehoods Project: Utilizing Social Media To Understand The Dynamics Of A City." Sixth International AAAI Conference on Weblogs and Social Media. <http://citeseerx.ist.psu.edu/viewdoc/summary;sessionid=F503DE3CE38C23F37695D7C377E63647?doi=10.1.1.365.7792>

*** Case Study:**

NYC311 Case Study (from HBS course pack <https://hbsp.harvard.edu/coursepacks/649419>)

Session 6 / 8 October

Anderson, Chris. 2008. "The End of Theory: The Data Deluge Makes the Scientific Method Obsolete." *Wired*. http://www.wired.com/science/discoveries/magazine/16-07/pb_theory.

Amoore, Louise. 2011. "Data Derivatives: On the Emergence of a Security Risk Calculus for Our Times." *Theory, Culture & Society* 28 (6): 24–43. <https://doi.org/10.1177/0263276411417430>. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-I822212VPAN5034>

Schweitzer, Lisa and Nader Afzalan. Four Reasons Why AICP Needs an Open Data Ethic. *Journal of the American Planning Association*, 83:2 161-167. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-J7Q2212VPAE0253>

Familiarize Yourself with the Following Examples (ie SKIM!):

Crichton, D. (2018, March 02). Algorithmic Zoning Could Be The Answer To Cheaper Housing And More Equitable Cities. <https://techcrunch.com/2018/02/19/algorithmic-zoning-could-be-the-answer-to-cheaper-housing-and-more-equitable-cities/>

Crockford, K., & Ito, J. (2017, Dec 22). Don't Blame The Algorithm For Doing What Boston School Officials Asked. *Boston Globe* Retrieved from <https://search-proquest-com.ezproxy.cul.columbia.edu/docview/1979392083?accountid=10226>

Chabria, A. (2019, August 13). Facial recognition software mistook 1 in 5 California lawmakers for criminals, says ACLU. *The Los Angeles Times*. Retrieved from <https://www.latimes.com/california/story/2019-08-12/facial-recognition-software-mistook-1-in-5-california-lawmakers-for-criminals-says-aclu>

Kobie, N. (2019, June 9). The complicated truth about China's social credit system. *Wired UK*. Retrieved from <https://www.wired.co.uk/article/china-social-credit-system-explained>

Kalamur, Krishnadev. (2019, April 29). How Technology Could Revolutionize Refugee Resettlement. *The Atlantic*. Retrieved from

<https://web.archive.org/web/20190426111615/https://www.theatlantic.com/international/archive/2019/04/how-technology-could-revolutionize-refugee-resettlement/587383/>

Supplemental Readings (Optional):

Johnson, B., & Lichfield, G. (2019, April 6). Hey Google, sorry you lost your ethics council, so we made one for you. *MIT Technology Review*. <https://www.technologyreview.com/s/613281/google-cancels-ateac-ai-ethics-council-what-next/>

Haven, J., & Natalie, A. (2019, April 4). Open Algorithms Law: Testimony by Data & Society to the NYC Council's Committee on Technology. Retrieved from <https://web.archive.org/web/20190805230021/https://datasociety.net/output/open-algorithms-law-testimony-by-data-society-to-the-nyc-councils-committee-on-technology/>

Chapter 9, Transparency and Discipline. Mau, S., & Howe, S. (2019). *The metric society: on the quantification of the social*. Polity Press: Cambridge, UK, Medford, MA. (On Reserve at Library)

O'Neil, C. (2017). *Weapons of math destruction: How big data increases inequality and threatens democracy*. Broadway Books, Chapters 1, 2, 5, 10. *Skim*. (On Reserve at Library)

Zwitter, A. 2014. "Big Data Ethics." *Big Data & Society* 1 (2). doi:10.1177/2053951714559253. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-J7Q2212VPAE0700>

Crawford, Kate, and Jason Schultz. 2014. "Big Data and Due Process: Toward a Framework to Redress Predictive Privacy Harms." *Boston College Law Review*. 55: 93. <https://lawdigitalcommons.bc.edu/cgi/viewcontent.cgi?article=3351&context=bclr>

Chapter 10, "Ethical, Political, Social and Legal Concerns," in Kitchin, Rob. 2014. *Data revolution : big data, open data, data infrastructures & their consequences*. Los Angeles: Sage Publications. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-J7Q2212VPAE0856>

Session 7 / 15 October

Skim...

Hemmersam, Peter, Nicole Martin, Even Westvang, Jonny Aspen, and Andrew Morrison. 2015. "Exploring Urban Data Visualization and Public Participation in Planning." *Journal of Urban Technology* 22 (4): 45–64. doi:10.1080/10630732.2015.1073898. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-J7Q2212VPAE0925>

Harley, J.Brian. "Maps, knowledge, and power" (Chapter 8). In Henderson, George and Waterstone, Marvin. *Geographic thought: a praxis perspective*, 1988. 129-148.

Claudel, M., Nagel, T., & Ratti, C. (2016). From origins to destinations: the past, present and future of visualizing flow maps. *Built Environment*, 42(3), 338-355. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-J7Q2212VPAE1334>

Technical Reference (Optional):

D3plus Documentation <http://d3plus.org/docs/>

Few, Stephen. 2012. *Show Me the Numbers: Designing Tables and Graphs to Enlighten*. 2nd ed. USA: Analytics Press. (non-technical, but practical) <https://clio.columbia.edu/catalog/9419598>

Supplemental Readings (Optional):

Tufte, Edward R. 1983. *The Visual Display of Quantitative Information*. Graphics Press. Chapter 2, "Graphical Integrity". (On Reserve at Avery)

Session 8 / 22 October

Parker, Brenda. "Constructing Community through Maps? Power and Praxis in Community Mapping." *Professional Geographer*, 58:4, (2006): 470-484 <http://www.columbia.edu/cgi-bin/cul/resolve?AH-J7Q2212VP AE1531>

Von Klot, Sandrine, (2012). The Significance of Being Actors. In *Inscribing a square: urban data as public space* (pp. 50–53). New York: Springer.

Dolores Hayden. Part I - Chapter 2 and Chapter 10. *The Power of Place: Urban Landscapes as Public History*. MIT Press, 1995. (On Reserve at Avery. <https://clio.columbia.edu/catalog/1621016>)

Chapter 2, Networked Citizens. Goldsmith, S., & Crawford, S. P. (2014). *The responsive city: engaging communities through data-smart governance*. San Francisco: Jossey-Bass. (On Reserve at Lehman. <https://clio.columbia.edu/catalog/10970648>)

Session 9 / 29 October

Goodchild, Michael F.. "Citizens As Sensors: The World Of Volunteered Geography." *GeoJournal* 69, no. 4 (2007): 211-221. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-I822212VPAN4341>

Paulos, Eric, R Honicky, and Ben Hooker. 2008. "Citizen science: Enabling participatory urbanism." In *Urban Informatics: The Practice and Promise of the Real-Time City*, edited by Marcus Foth. Hershey, PA: Information Science Reference. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-I822212VPAN4120>

Schrock, Andrew R. 2016. "Civic hacking as data activism and advocacy: A history from publicity to open government data." *New Media & Society* 18 (4):581-599. doi:10.1177/1461444816629469. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-J7Q2212VP AE1823>

Coleman D. J. Georgiadou Y. Labonte J . (2009) Volunteered geographic information: the nature and motivation of producers. *International Journal of Spatial Data Infrastructures Research*, 4: 332–358. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.475.6345&rep=rep1&type=pdf>

**** Case Study:***

Waze Connected Citizen (from HBS course pack <https://hbsp.harvard.edu/coursepacks/649419>)

Supplemental Readings (Optional):

Boulos, M.N.K., B. Resch, D.N. Crowley, J.G. Breslin, G. Sohn, R. Burtner, W.A. Pike, E. Jezierski, and K.Y.S. Chuang. 2011. "Crowdsourcing, citizen sensing and sensor web technologies for public and environmental health surveillance and crisis management: trends, OGC standards and application examples." *International Journal of Health Geographics* 10 (1):67. <https://ij-healthgeographics.biomedcentral.com/articles/10.1186/1476-072X-10-67>

Haque, U. (2018). Mutually Assured Construction. In *Humanizing Digital Reality* (pp. 41-46). Springer, Singapore. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-I822212VPAN4023>

Brown, A., Franken, P., Bonner, S., Dolezal, N., & Moross, J. (2016). Safecast: successful citizen-science for radiation measurement and communication after Fukushima. *Journal of Radiological Protection*, 36(2), S82. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-I822212VPAN4610>

Barns, Sarah. "Mine your data: open data, digital strategies and entrepreneurial governance by code." *Urban Geography* 37.4 (2016): 554-571. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-J7Q2212VPAE2021>

Session 11 / 12 November

Elwood, Sarah, Michael F. Goodchild, and Daniel Z. Sui. "Researching volunteered geographic information: Spatial data, geographic research, and new social practice." *Annals of the Association of American geographers* 102.3 (2012): 571-590. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-J7Q2212VPAE2059>

Familiarize Yourself with the Following Examples (ie SKIM!):

Brown, A., Franken, P., Bonner, S., Dolezal, N., & Moross, J. (2016). Safecast: successful citizen-science for radiation measurement and communication after Fukushima. *Journal of Radiological Protection*, 36(2), S82. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-I822212VPAN4610>

Bonner, S. (2012). Safecast. In *Inscribing a square: urban data as public space*(pp. 50–53). New York: Springer.

Okolloh, O. (2009). Ushahidi, or ‘testimony’: Web 2.0 tools for crowdsourcing crisis information. *Participatory learning and action*, 59(1), 65-70. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-J7Q2212VPAE2159>

Supplemental Readings (Optional):

Monmonier, Mark. 1996 Chapters 1, 2, 3, 4, and 10 *How to Lie with Maps*. University of Chicago Press. (On Reserve at Lehman and Science & Engineering. <https://clio.columbia.edu/catalog/2668118>)

Zook, Matthew, Mark Graham, Taylor Shelton, and Sean Gorman. 2010. "Volunteered Geographic Information and Crowdsourcing Disaster Relief: A Case Study of the Haitian Earthquake." *World Medical & Health Policy* 2 (2): 6–32. doi:10.2202/1948-4682.1069. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-J7Q2212VPAE2323>

Peattie, Lisa. "Representation." In *Planning, rethinking* Ciudad Guyana. Ann Arbor, MI: University of Michigan Press, 1987, pp. 111-152. ISBN: 0472080695. (On Reserve at Avery.)

Session 12 / 19 November

Whyte, W. H. (1980). The social life of small urban spaces. New York : Project for Public Spaces, 2001, c1980. (*On Reserve at Avery.*)

... in dialogue with Plaza Life Revisited project by SWA (on Courseworks)

Weiser, M. (1991). The computer for the twenty-first. *Century in Scientific American* 265, 3(1991), 66-75. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-J7Q2212VPAE2625>

Weiser, M. (1993). Ubiquitous computing. *Computer*, (10), 71-72. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-J7Q2212VPAE2702>

Offenhuber, D., Lee, D., Wolf, M. I., Phithakkitnukoon, S., Biderman, A., & Ratti, C. (2012). Putting matter in place: Measuring tradeoffs in waste disposal and recycling. *Journal of the American Planning Association*, 78(2), 173-196. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-J7Q2212VPAE2733>

Nissen, M. (2014, May 15). Unseen Sensors: Constantly Sensing but Rarely Seen. Retrieved from <https://web.archive.org/web/20190627143126/https://designmind.frogdesign.com/2014/05/unseen-sensors-constantly-sensing-rarely-seen/>

Supplemental Readings (Optional):

Section 1. Greenfield, A. (2010). *Everyware: The dawning age of ubiquitous computing*. New Riders. (*On Reserve at Avery.*)

Section 2 Bits and Atoms. Ratti, C., & Claudel, M. (2016). The city of tomorrow: Sensors, networks, hackers, and the future of urban life. Yale University Press. <https://clio.columbia.edu/catalog/12315868>

Session 13 / 26 November

Kontokosta, C. E. (2016). The quantified community and neighborhood labs: A framework for computational urban science and civic technology innovation. *Journal of Urban Technology*, 23(4), 67-84. <http://www.columbia.edu/cgi-bin/cul/resolve?AH-J7Q2212VPAE2923>

Chapters 7 and 8. Goldsmith, S., & Crawford, S. P. (2014). *The responsive city: engaging communities through data-smart governance*. San Francisco: Jossey-Bass. (*On Reserve at Lehman.*) <https://clio.columbia.edu/catalog/10970648>

Jacob, Nigel. 2015. City Accelerator Guide for Embedding Breakthrough Innovation in Local Government. (<https://www.livingcities.org/resources/286-city-accelerator-guide-for-embedding-innovation-in-local-government>)

**** Case Study:***

Mark43 and Lab CDMX Experiment 50 Case Studies (from HBS course pack <https://hbsp.harvard.edu/coursepacks/649419>)

Mayor's Office of New Urban Mechanics. Boston Smart City Playbook.
(<https://monum.github.io/playbook/>)

Supplemental Readings (Optional):

National League of Cities. 2016. Trends in Smart City Development: Case Studies and Recommendations. <https://www.nlc.org/sites/default/files/2017-01/Trends%20in%20Smart%20City%20Development.pdf>

Crawford, Susan. 2015. Bluegrass, Blight, and the Future of Cities; How a fiddler and an astrophysicist introduced predictive analytics to Cincinnati. <https://www.wired.com/2015/09/how-a-fiddler-and-an-astrophysicist-brought-predictive-analytics-to-cincinnati/>

“Chapter 3: Cybernetics and Urban Renewal.” Light, J. S. (2005). *From Warfare to Welfare: Defense Intellectuals and Urban Problems in Cold War America*. Johns Hopkins University Press.
<http://www.columbia.edu/cgi-bin/cul/resolve?AH-J7Q2212VPAE3702>