“Mapping Architecture”

An excercise in data visualization

Shipra Gupta
Major Studio 08, final project
Instructor, Yuri Gitman
Parsons School of Design, MFA DT

ABSTRACT

The project aimed at geo-tagging all buildings in Manhattan by different conditions (age of construction, style, etc) into a visual display. Inspired by two past projects: Zipcode by Ben Fry and Million Dollar blocks by the Justice Mapping Center, I wished to see if the architecture of the city could reveal patterns and if those patterns could help in developing an interactive application that could serve both like a travel guide or research tool.

The project further aimed to stretch the study in various major cities of the world to gain an insight on whether same patterns were reflected, sort of like a contour map. Those patterns can then be used to for retrieving information for preservation of buildings or urban planning.

"Chrysler" building, an art deco architecture stands tall in the midst of residential housing, most probably built in federal style of the early twentieth century.

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Motivation

What can data reveal to us? Reams of statistical data hides emergent patterns not easily seen by the human eye. Its a careful visual reorganization of the data, whether by hand or through computational means that can reveal the systems underlying the apparent chaos.

My motivation was to pick up a data set and visualize it graphically. Perhaps the trickiest part was to come up with a hypothesis. Exactly what did I want to study? What held possibilities for revelation. After a lot of searching into freely avaiable data sets and an inability to make any correlations, it struck me that the building I lived in was built in 1890. The fact somehow was awe-inspiring, as it was like living in a time machine.

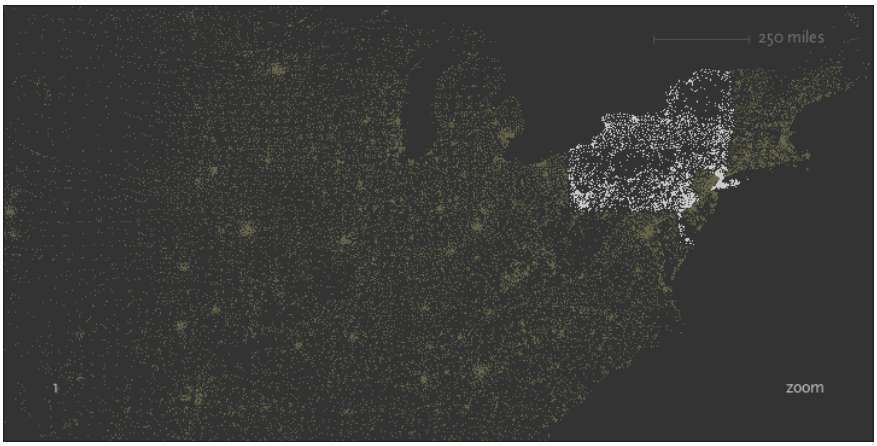
I also remembered my time in India. The southern portion of Bombay (also known as the fort area) is full of old architecture, buildings that are atleast a hundred years old. Its construction is quite similar to the construction of Greenwich village architecture here in Manhattan. The architecture is similar, the way the space looks and feels is similar (I guess it also has something to do with what was considered to be the ideal road width, intersection size etc of those times). The above two places were also warm and friendly as opposed say the midtown skyscrapered and 'imperial' part of the city. More warm and friendly than the spaces that had 'modern architecture', devoid of all the frills and fun adorning former buildings.

And then it struck me - does architecture contribute to the way one experiences space? If yes, then to what degree? Are tourists more attracted to more friendly spaces than non-friendly ones? Can tourist spending determine that? Can the spending justify preservation or breaking down of older architecutre? And so on... the questions increased and there were several correlations to made.

Precedents

(a) Zipcode - Ben Fry

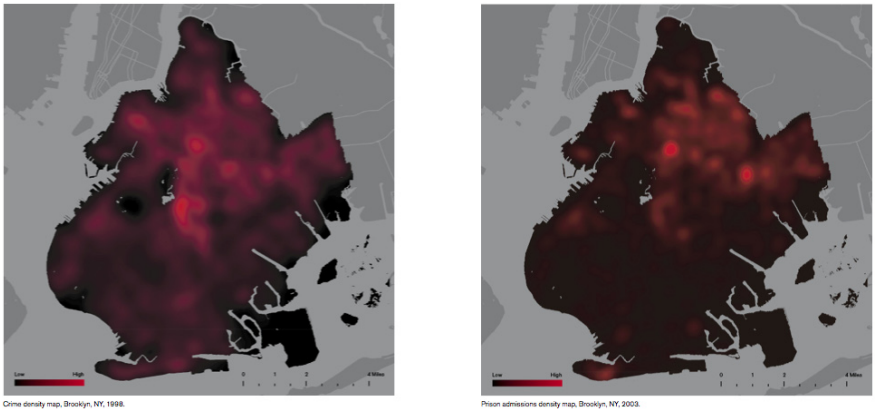
Zipcodes geo-codes the zipcodes of all locations in the United States of America (excluding Alaska and Hawaii). It reveals patterns as to how the the codes maybe distributed. For example, codes starting with '0' cover the whole of Jersery. The numbers increase from '0' to '9' as we move left towards the west coast.



Zipcode by Ben Fry

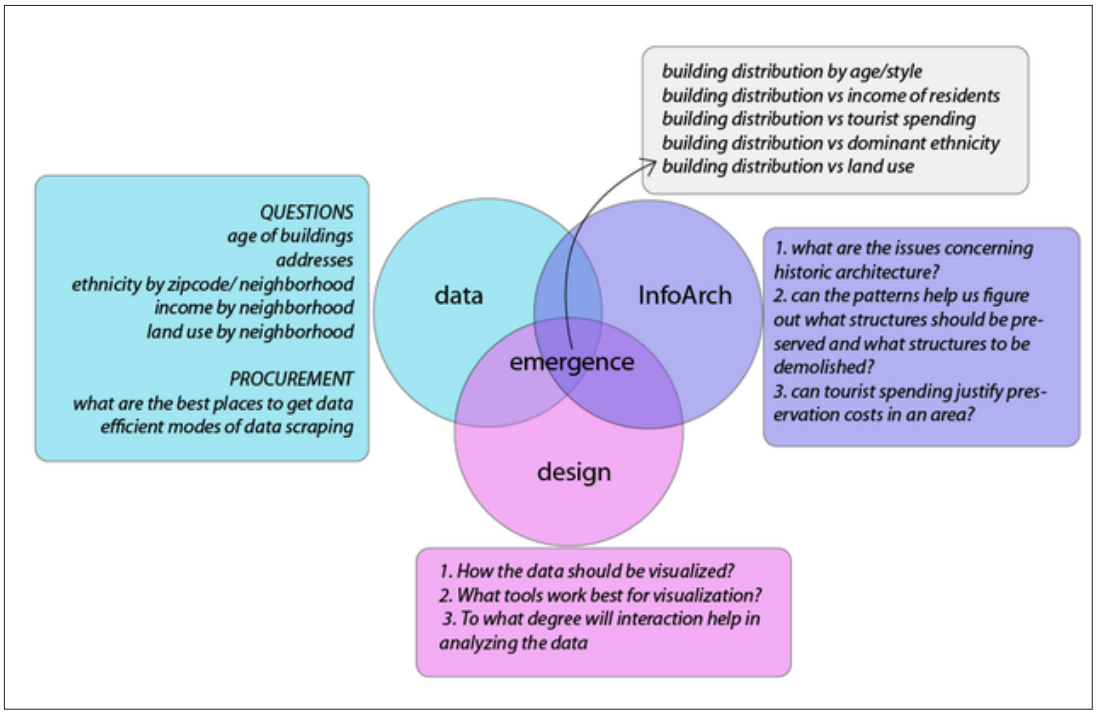
(b) Million Dollar Blocks by Justice Mapping Center

The project geo-tags the addresses of people (from Brooklyn) who were incarcerated in US prisons. It tracks the number of times they were incarcerated and released. It also maps the amount of money (or citizen taxes) that go into keeping them in jail. It reveals that these blocks are the poorest areas in the region and how poverty goes hand in hand with lack of opportunities. It suggests that instead of spending money in incarcerations, it should be spent in rehabilitation and development.



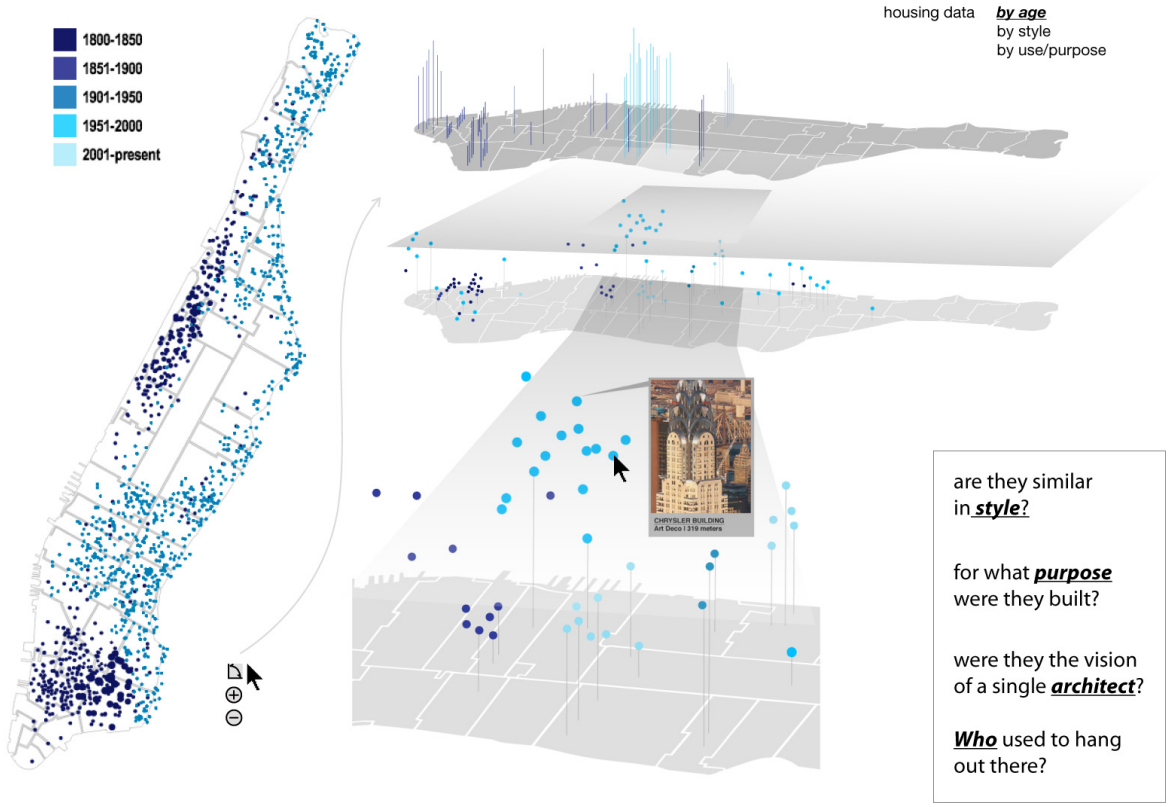
Million Dollar Blocks by Justice Mapping Center

Prototypes: Role + Look and Feel

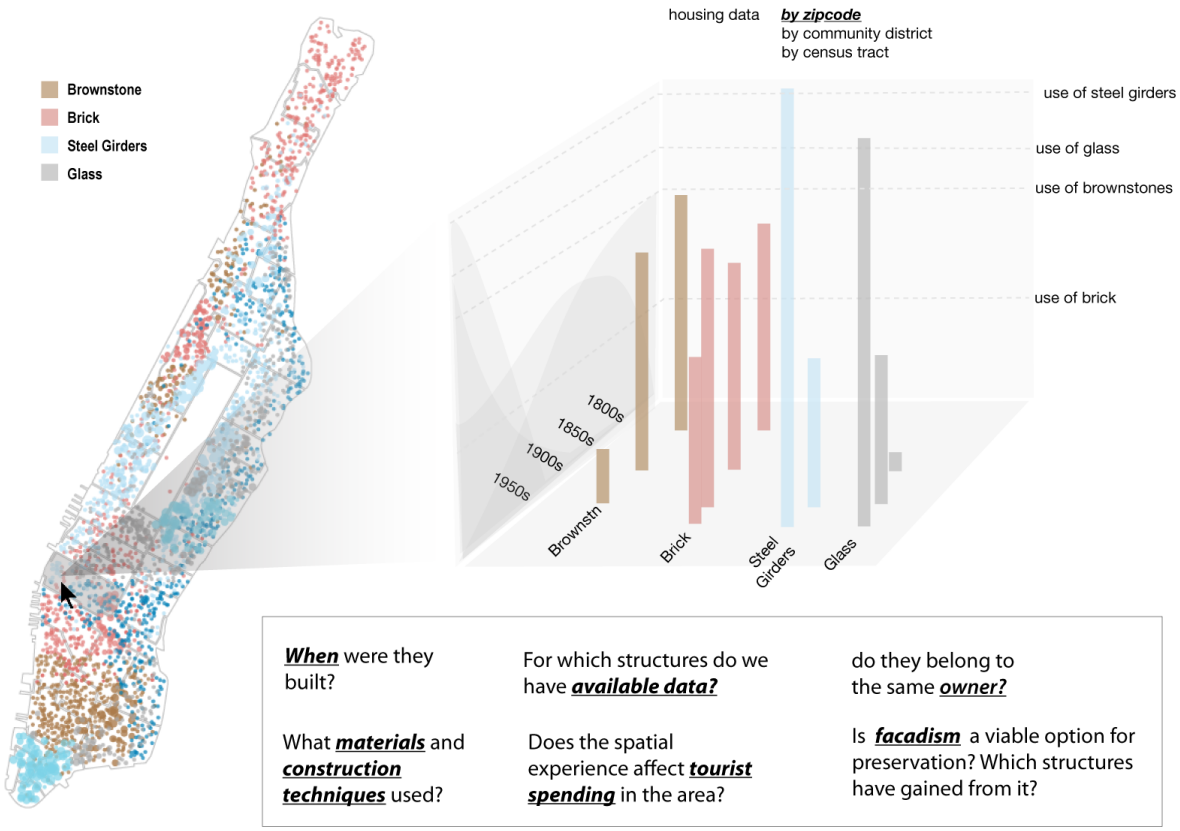


Venn Diagram charting areas of study/ research

TOURIST EXPERIENCE - *How do I plan my tour based on architecture?*



PRESERVATION &URBAN PLANNING: *Which structures should/can be preserved?*



When were they built?

What ***materials*** and ***construction techniques*** used?

For which structures do we have ***available data?***

Does the spatial experience affect ***tourist spending*** in the area?

do they belong to the same ***owner?***

Is ***facadism*** a viable option for preservation? Which structures have gained from it?

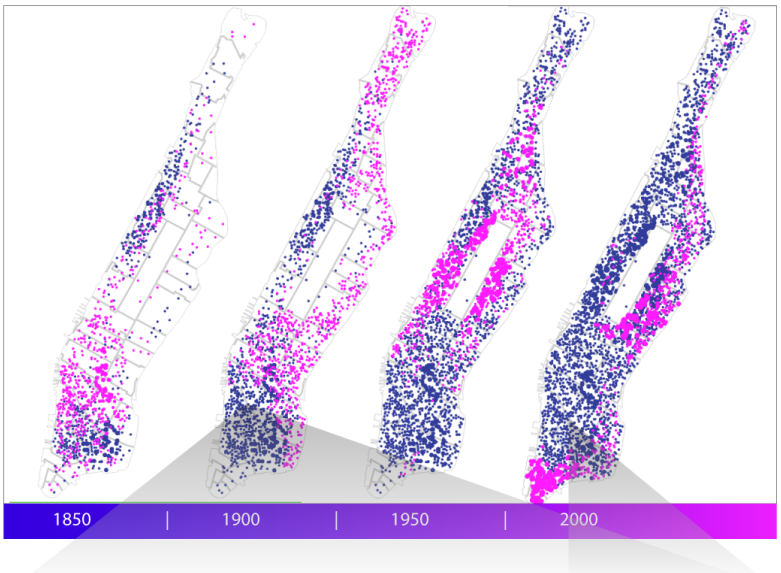
ACADEMIC: *Classroom, museum, reference material*

When were they built?

What maybe their ***shared history?***

What was the pattern of ***city growth***?

What ***demographic profiles*** inhabit a certain kind of architecture?




Worker settlements at Grove court, Commerce street and Henry street

Shared history: points of comparison

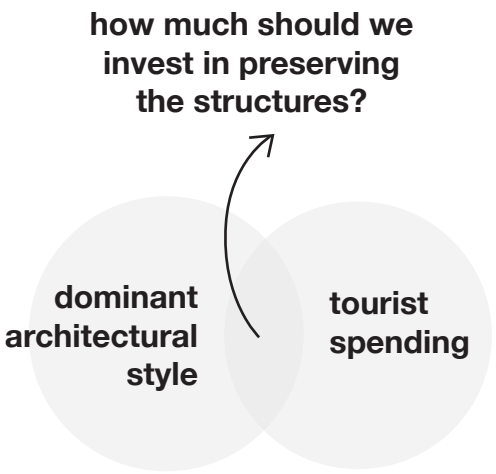
Time: heavy industrialization vs prevalent economic conditions

Residents: immigrants and workers vs who lives there now?

Demographic: economic strata vs present economic strata

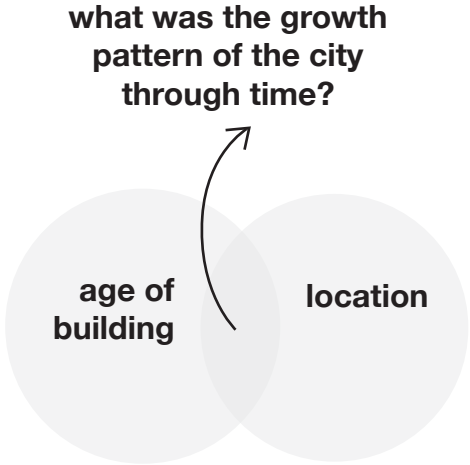
Construction: brick vs new renovation techniques?

Height: 1-2 floors vs average height of buildings of that time



(a) Data on Buildings

Age
Style
Materials
Construction Technology
Use or Purpose
Floor Plans
Owner
Architect
Rent

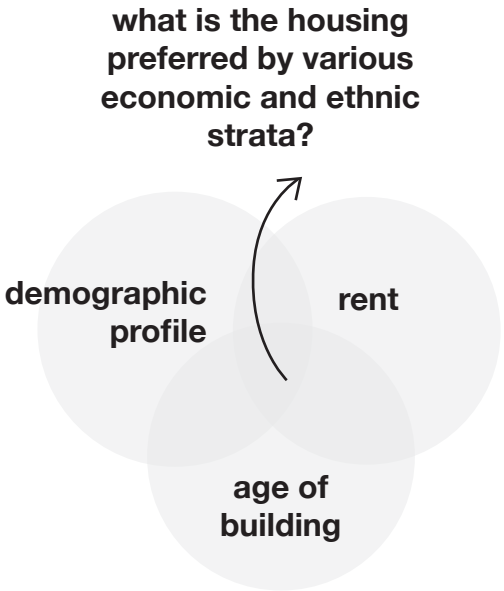


(b) Location/ Area

Demographic Profile
People who hang out there
Tourist Spending

(c) Patterns

Growth of the city
Revenue generating areas
Safe or Dangerous areas
Land Use
Need for renovation



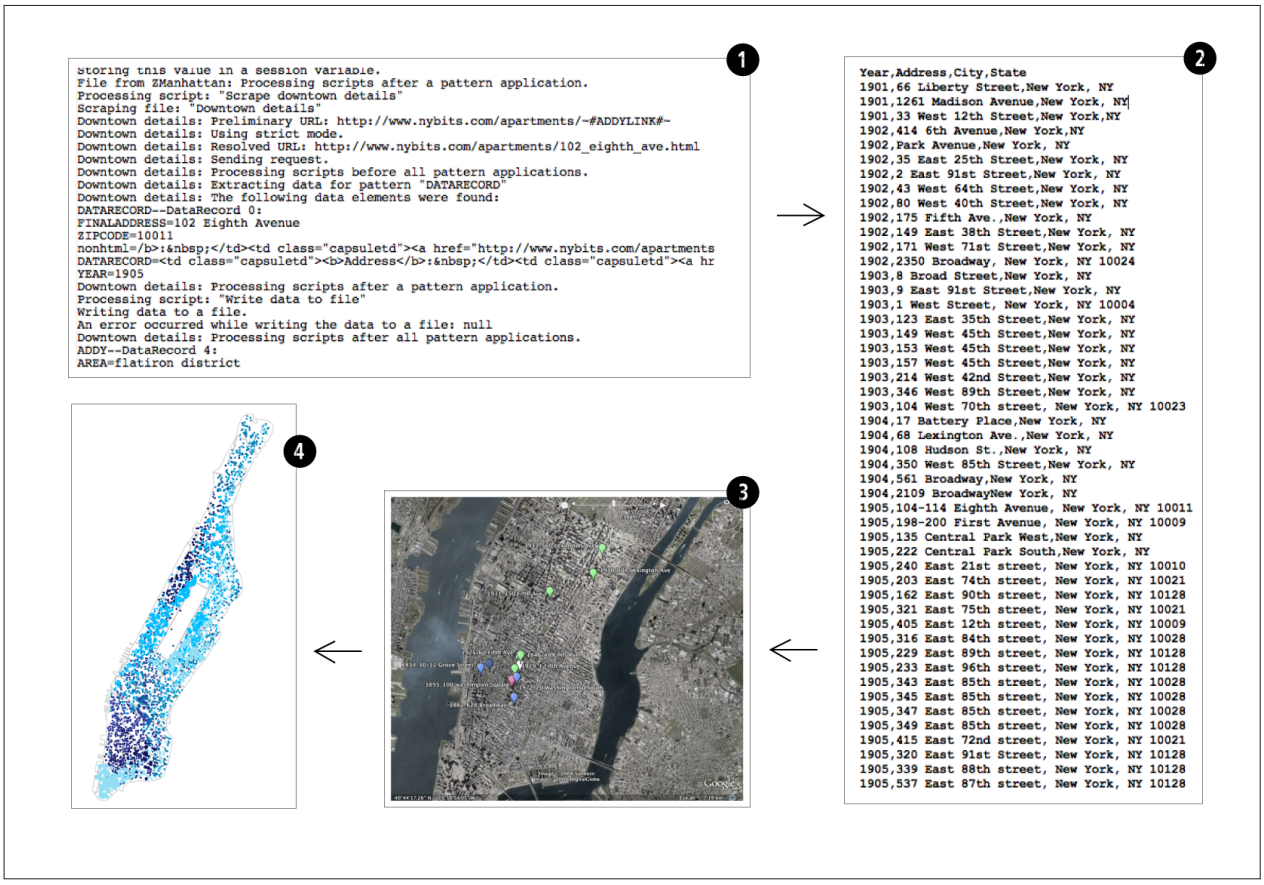
From the explored user scenarios possible data sets were extracted which could reveal patterns in the above mentioned fields. Venn diagrams further illustrate and enable the comparisons that can be generated.

Data Mining and Geotagging

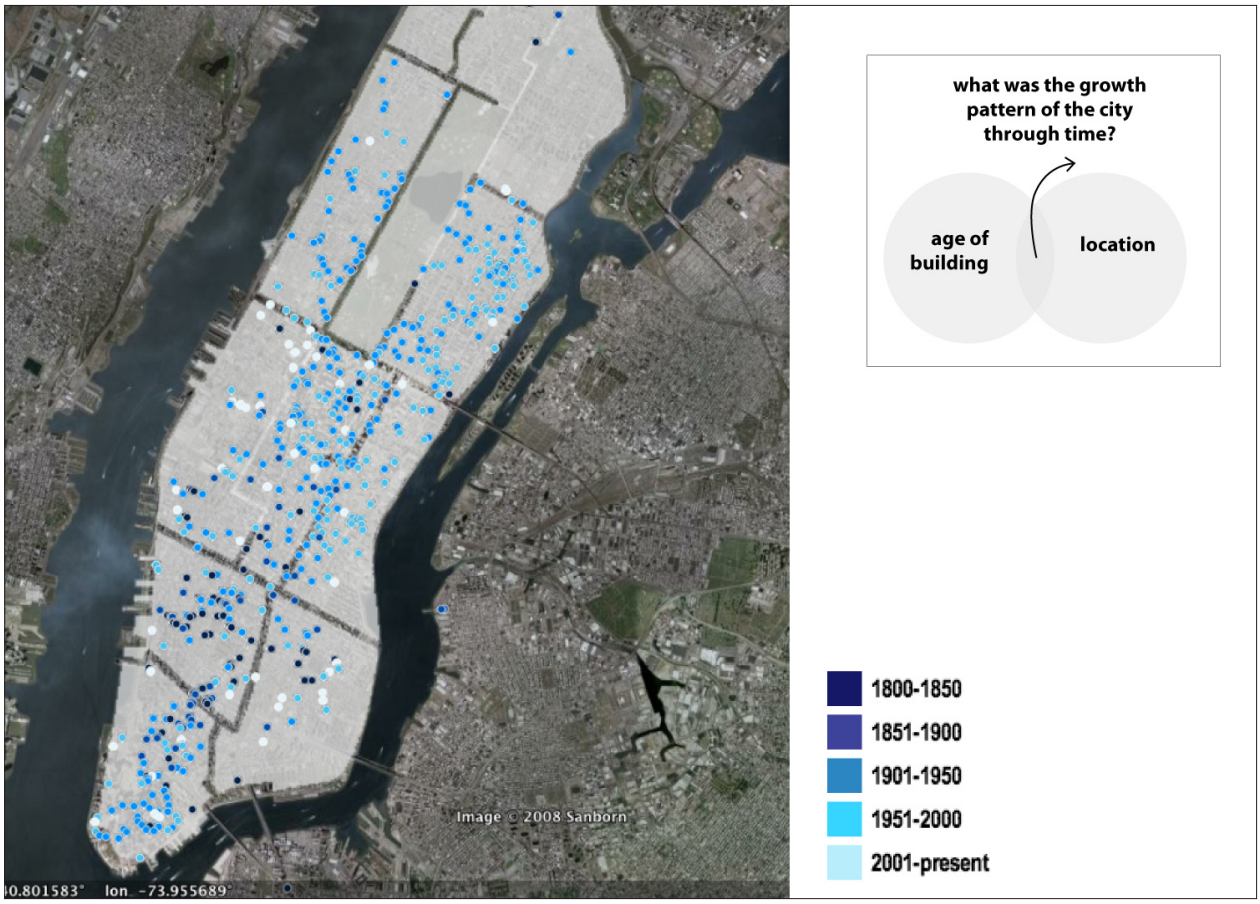
Since location and age data was most freely available on the web, I accumulated data by web-scraping the following websites:

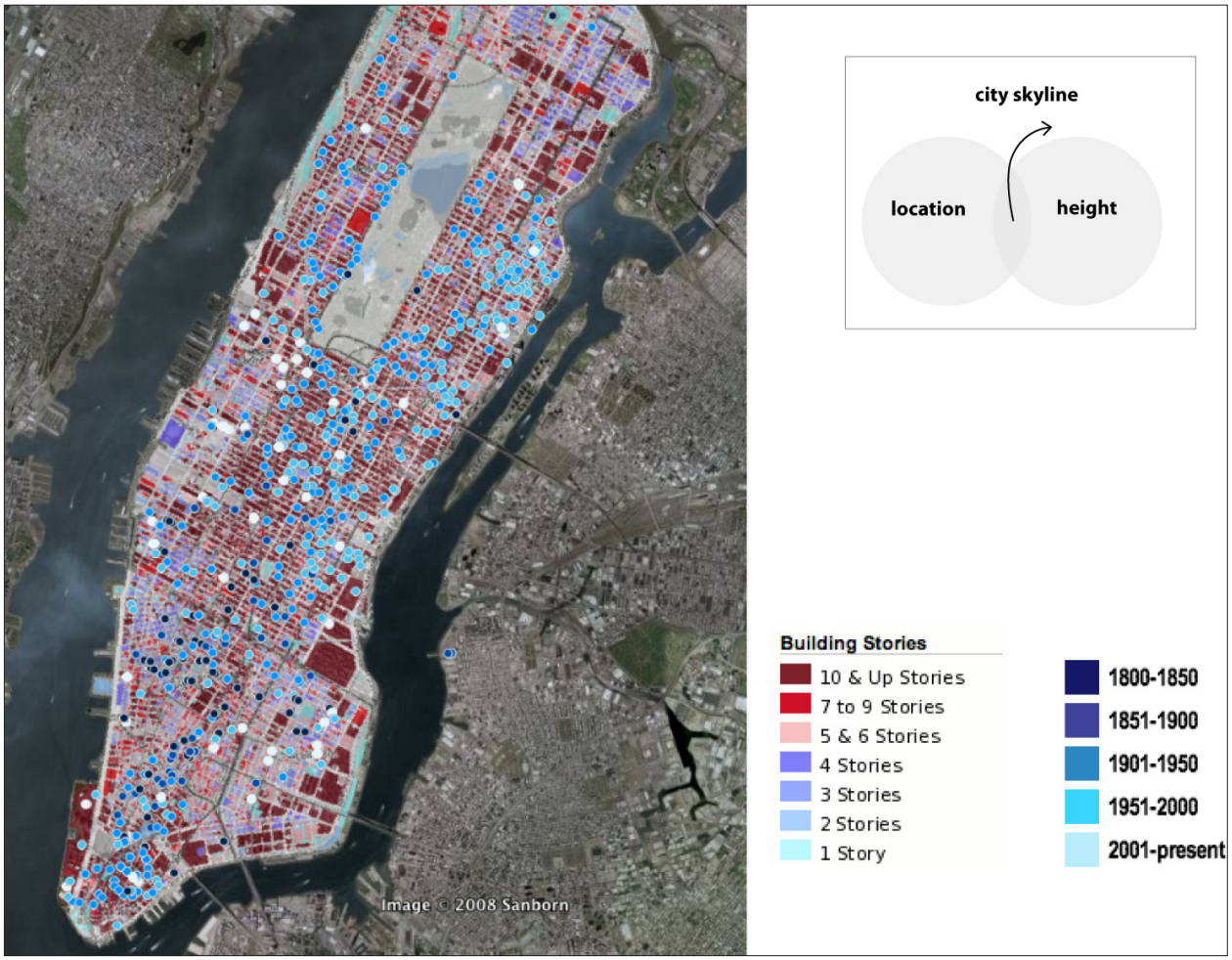
www.nyc-architecture.com
www.newyorkarchitecture.info/
www.wirednewyork.com
www.nybits.com

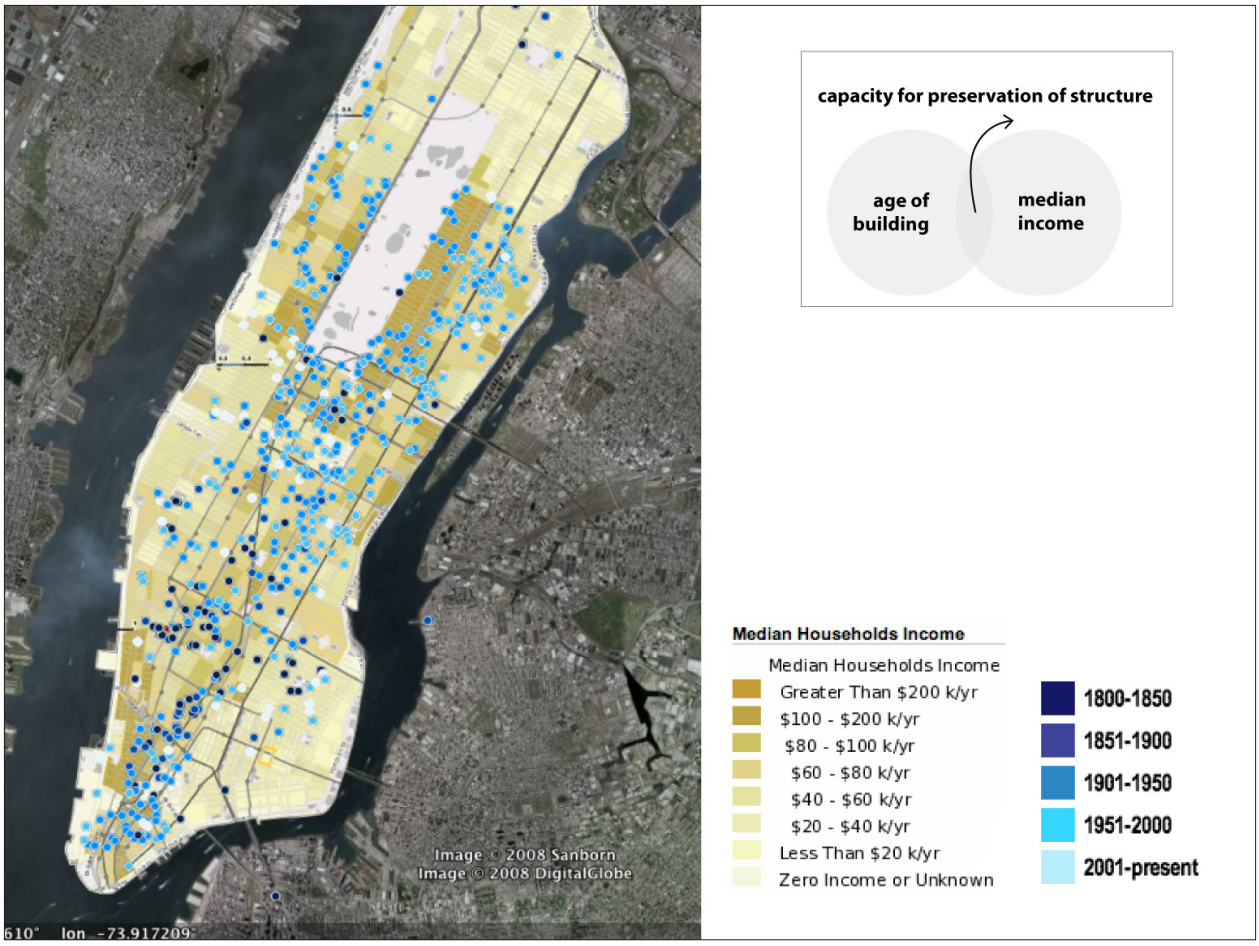
The process was encountered with some technical difficulties, but on the whole, the workflow involved (a)accumulating data, (b)organizing it into a text file, (c)using the text file to geo-code addresses into kml for google earth application and (d)saving latitude and longitude values in a table for later input into Processing1.0 application.



Implementation Prototypes: visualization in Google Earth



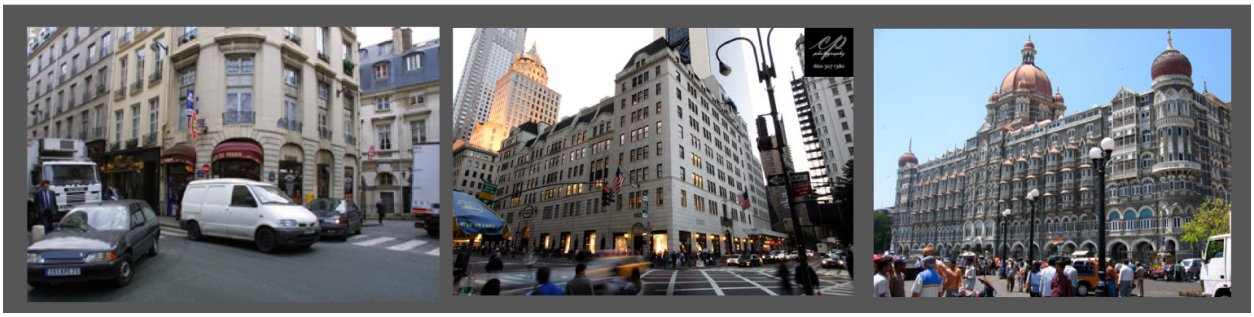


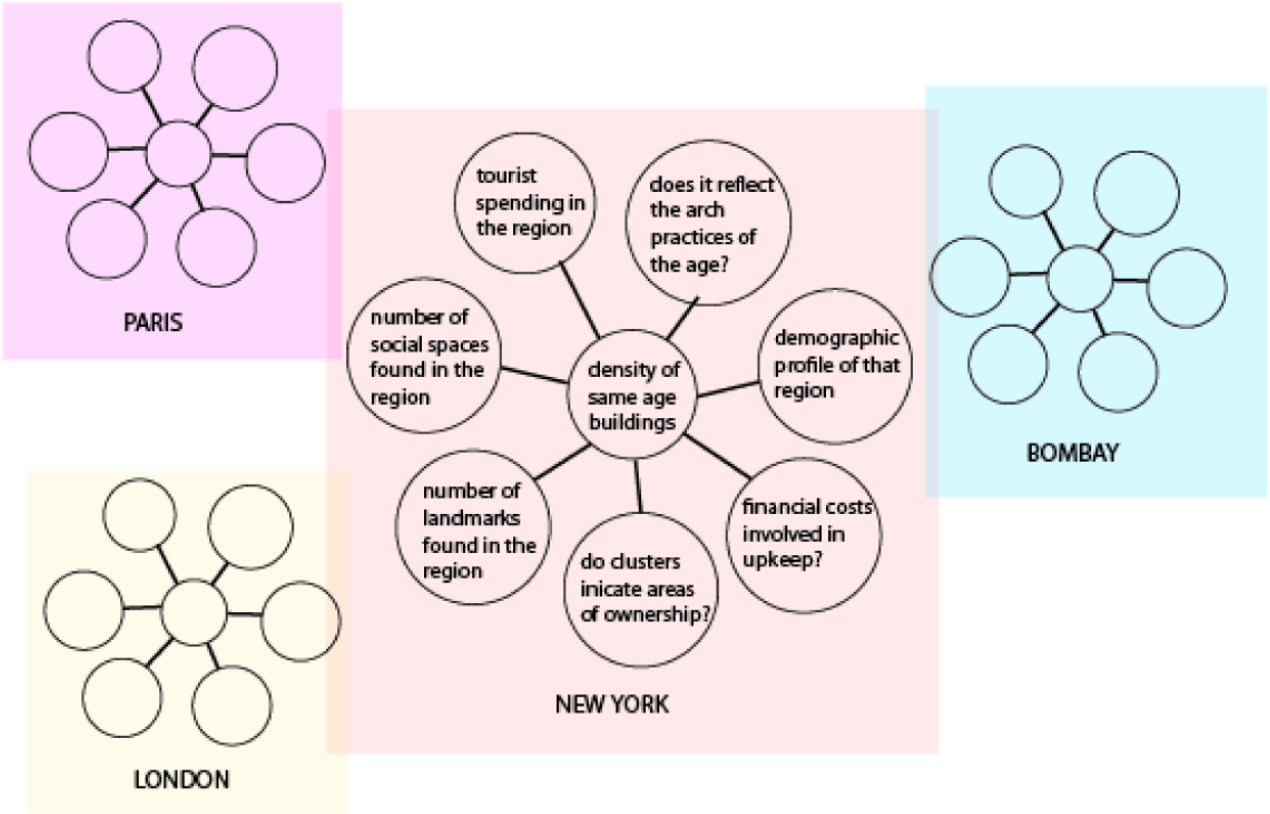


To visualize patterns quickly, the data was input into google earth and was layered with civic data from maps generated from the website: propertyshark.com

Future Directions

1. Enlarge the data-set
2. Visualizing and implementing interface
3. Comparing data-set with data-set from other cities





References

Data Sources:
www.nyc-architecture.com
www.newyorkarchitecture.info/
www.wirednewyork.com
www.nybits.com

Inspiration:
http://acg.media.mit.edu/people/fry/zipdecode/
http://www.ph.ucla.edu/epi/snow.html
http://www.justicemapping.org/expertise/