

**Applicant Information** New York City Department of Buildings + Town+Gown

**Organization/Company Website**

<https://www1.nyc.gov/site/buildings/index.page>  
<https://www1.nyc.gov/site/ddc/about/town-gown.page>

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**Organizational Description**

The Department of Buildings promotes the safety of all people that build, work, and live in New York City by regulating the lawful use of over one million buildings and construction sites across the five boroughs. With a focus on safety, service, and integrity, the Department enforces the City’s Construction Codes, Zoning Resolution, and the New York State Multiple Dwelling Law.

The Department enforces compliance with these regulations and promotes worker and public safety through its review and approval of building plans, permitting and licensing functions, and inspections. In addition to Code and Zoning compliance review, emergency response and professional analysis of accidents to prevent future incidents, the Department has strengthened its education and outreach programs to provide the construction industry, property owners and tenants with a heightened understanding of safety awareness.

The Department is committed to providing efficient service to all New Yorkers by continuously assessing the equitable distribution of resources to meet the safety and permitting needs of residents across all five boroughs; enhancing the quality of life for all New Yorkers and making our City safer.

**Project Title \*** Getting It Right: Building Age and Typology for NYC’s Buildings

**Project Abstract \***

Getting a better approximation of the age of a NYC’s building can improve assigning the building to a structural type that includes type of construction and relevant building code in effect. Mapping the age and type of building would help NYC DOB and the City on a number of fronts, which include enabling NYC DOB to be more effective in enforcing building and construction safety and evaluating risk when adjacent or nearby subsurface construction is proposed. Furthermore, the more precise characterization of NYC buildings will improve efforts by the City to craft policies aimed at energy efficiency (TWG) as it drives to 80% GHG reductions by 2050 (80X50) and determining natural disaster vulnerability of its building stock (HAZUS).

## **Project Description & Overview \***

This project will focus on Brooklyn with the purpose of developing a map of building age and associated original building materials using Sanborn maps, 2-D digitized historic real estate and insurance maps, open NYC data (Pluto, HPD, LPC, DOB), and other data sources that collectively provide a richer source of information than what is reflected in other data systems presently in use. Once this project demonstrates the proof of concept, the methodology created by the student team could then be expanded across all areas of the city.

Building age data (DATE BUILT) in the City's PLUTO database/map (at <https://www1.nyc.gov/site/planning/data-maps/open-data/dwn-pluto-mappluto.page>) for buildings initially constructed before WWII is often imprecise, if not wrong, and hampers understanding the original building's age and associated constructed characteristics for NYC DOB's building safety enforcement activities and for the City's energy policies and laws in connection with its 80X50 initiative. This imprecision has been transferred to the building characteristics portion of the HAZUS predictive model for NYC building failure rates for hurricane and earthquake scenarios.

## **Relevance \***

Having more precise dates of original building construction, associated with building materials and typologies, is of great interest to NYC DOB to help it supplement its complaint-driven building safety enforcement practices. It will also help design professionals and DOB plan reviews for most types of alterations, as the NYC Building Codes allows designers to make use of provisions of codes existing at the time of erection. Without precise dates and building typologies, local laws intended to move the City toward 80X50, in particular those related to building energy use, cannot themselves be more precise since a large percentage of buildings are improperly treated as though they are the same. This leads to them be exempt, when they should not be. Additionally, once a city-wide map with precise dates and typologies exists, related short-comings embedded into the HAZUS model applications for the city can be reduced, thereby increasing the utility of HAZUS in predicting damage from hurricane and earthquake modeling.

## **Datasets \***

<https://www1.nyc.gov/site/planning/data-maps/open-data/dwn-pluto-mappluto.page>

An example of maps for Brooklyn

<https://digitalcollections.nypl.org/collections/atlasses-of-new-york-city#/?tab=navigation&roots=2:f415fc20-bc69-0132-4124-58d385a7bbd0>

This tabula/episcopo link, which is not for this present project, provides an example of how building typology can be used to approximate energy consumption.

<http://episcopo.eu/building-typology/country/de/>

Other data, such as from NYC Housing Preservation Department (from the prior NYC Tenement Department), NYC Landmarks Preservation Commission and NYC DOB may be made available as the work progresses.

## **Learning Outcomes/Deliverables \***

The deliverables will consist of an interactive visualization or similar product that illustrates building age and typology in Brooklyn as described above along with a final report that provides the methodology and analyses used and findings.

1. As part of the domain research component, the students will gain a deep understanding of the urban built environment as it relates to public safety.
2. This geospatial data analysis/mapping of precise raster-type data will enable the students to use all data analytic skills learned to date and possibly require them to pick up other techniques required by the project.
3. As part of developing the data visualization map, the students will should develop theories with respect to building age and building condition and/or energy use determined from open source data and develop a predictive model for future use by the agency. This is in addition to the map, the importance of which cannot be overstated.

**Competencies \***

All students should have excellent data analytic skills, since the bulk of the data is historical, and geospatial data analytic skills, and an interest in the buildings in a dense urban environment under conditions of climate change would be helpful.