One of the major needs that DOHMH analysts request is the ability to seamlessly transfer geospatial data from latitude and longitude points to many of the administrative boundaries that New York City is divided into. This process is called “reverse geocoding,” in which coordinates are coded into either addresses or place names. This contrasts from the idea of geocoding above, another need of the DOHMH which has already been addressed. Reverse geocoding is a useful process for the DOHMH since, as a public agency, the main goal is to better serve the city residents, and combine health initiatives with various political and social initiatives. Health data has an extra layer of confidentiality attached to it. Health information cannot be linked to a specific identity, so grouping the information creates enough noise to obscure individual and identifying records. For example, using community districts as an aggregate for health data is useful to those within the agency because it adds that noise, and community districts is the first level at which policymaking can take place, in this case among community boards.

Healthcare data is under special considerations as opposed to other kinds of data, in that in the United States, the Health Insurance Portability and Accountability Act (HIPAA) of 1996 contains a title for outlining the policies and procedures related to maintaining the privacy and security of individually identifiable health data. Protected health information (PHI) is defined as any information about health status, health care, or payment for health care that can be linked to a specific individual. There are eighteen identifiers that must be treated with special considerations, and the data must undergo de-identification and anonymization to prevent linking back to the original dataset before being disseminated. One of the identifiers is any geographic information that’s smaller than the state level. There is an exception to this, in that the first three digits of zip codes can be used and combined as long as the number of individuals and records is greater than 20,000 in that combined area.

Within the DOHMH, United Hospital Funds boundaries (UHFs) are frequently used for the aggregation of health related data. The DOHMH conducts its Community Health Survey yearly, and is released at the UHF level. UHFs are just combined zip codes, and therefore are great for the aggregation of sensitive health data. This is just one example of de-identifying health data. Within the agency, doing this sort of process with coordinate data involves an analyst joining points and polygons until all the points have their corresponding administrative boundary identifiers. Geocoding worked the same way, however with the presence of GeoPortal, it takes no time for analysts with Excel sheets of addresses to find the corresponding geographies and coordinates for each entry. Building something similar for the reverse can also prove useful.

This project was first tackled through the interactive way. In ArcGIS Online and ArcGIS Enterprise, the Web AppBuilder can be used to build interactive web apps that carry out data processing, visualization, analysis, and summarization for GIS data. The Web AppBuilder allows users to build applications without knowing or looking at any code. The applications are created in JavaScript and HTML, and are easily customizable using the built in themes and widgets. Considering that the DOHMH already has an Enterprise server, building this reverse geocoder in the Web AppBuilder is a simple technical process. The main considerations for making this web app is being able to clearly communicate to the user what the steps and the results should be. The Web AppBuilder is specifically based on a map, which can prove to be intuitive for the end user.