

Problem: Predicting level of revenue for renovation and remodeling projects in Charlotte

There are tens of thousands of new construction and existing construction projects in Mecklenburg county every year. Most of the larger and important projects, if not all of them, require permitting. As a new licensed contractor, Ramanso Construction can easily identify that many projects are up for grabs in the state of NC but some of them are worth more than others. But where to focus targeting or accepting projects for homes and locations for future homes for building projects is still up for debate. Instead of reaching out to potential clients seemingly sporadically or waiting to hear from the perfect client, the goal is to use permitting data to identify the level of revenue a home project can produce in Charlotte? In other words, I need to create a model that can predict which homes in Mecklenburg county are best for maximum revenue in the remodeling and renovation industry. This would be the first step to find jobs and clients for maximizing profits in the industry.

Client: Ramanso Construction/ Investors / Homeowners

1. Ramanso Construction is the number 1 client, as a newly licensed contractor, for growing their remodeling business and saving time on all potential clients while setting realistic and honest expectations for them, when it comes to budgeting and time commitment.
2. Real estate investors may use the prediction to better optimize their project portfolio by considering better revenue opportunities, which should improve their profitability.
3. Homeowners, especially those inexperienced in remodeling their homes, will obtain more accurate budgeting expectations and use the information to evaluate how beneficial the work would be for the re-evaluation of their homes.

Current Data: Data on Building Permits, Value of Homes, and Demographics

[Building Permits data](#) is maintained by the city of Charlotte and is open and available to use.

This will provide information on residency, contractors, type of project, dates, costs, fees, and more for permits pulled for all construction they apply to from 2019 to 2023.

Secondly, [data](#) on the value of homes for different parts of the county are also available for the county by the county as well. And any specific homes that don't fit the parameters of the data can be obtained on zillow or redfin.

Lastly, voter registration data on different households are readily available with demographic information.

Methodology:

- Wrangle the data from all sources as mentioned in the **Current Data** section.
- Clean data from each data source and isolate the dependent variable as the "Contract Cost".
- Exploratory Data Analysis tasks and questions:
 - Visualizations of contract costs.
 - Compare them for all the different types of projects and overall.
 - Are there more projects for expensive parts of town? I would expect it to be so.
 - Are construction plans for different age groups and races more likely?

- How much variance is there for different types of projects? If there is a huge difference between them what could be the cause for it?
- Building permit data typically contains both numerical and categorical data, so both regression and supervised classification algorithms shall be used to predict the building permit costs
 - Regression: cost to contract a project
 - Classification: Small, moderate, large revenue, or binary (Under 50k and over 50k)
- Document and summarize results with conclusion and additional steps such as profit margin aspects to explore

Deliverables:

A GitHub repository containing the work completed for each step of the project, including:

- A slide deck
- A project report