**PROJECT CHARTER**

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| --- | --- |
| **Project ID** | Not Applicable |
| **Project Name** | Formulating a New Real Denial Rate |
| **Project Manager** | Khawm L Mung |
| **Project Sponsor** | Dr. Stephen Wheat |

**Project Information**

**Historic of Versions**

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| --- | --- | --- | --- |
| **Date** | **Author** | **Reason for new version** | **Version** |
| 04/10/2023 | Khawm L Mung | Initial commit | 1 |
|  |  |  |  |

**Business Need, Problem or Opportunity**

The financial crisis of 2008 sent a shockwave throughout the economy and it primarily resulted from the poor handing of loans in the housing market by lenders to debtors. By analyzing of the key components in a housing market, the denial rate of mortgage applications, researchers can try and better understand trends in the housing market leading up to, during, and after the crisis. However, the conventional denial rate of mortgage applications were found to be ineffective. A group of researchers at Urban Institute has developed their own method of calculating a real denial rate for the years of 1999 up to 2014. This research project aims to devise a new real denial rate for the year of 2014 to 2021.

**Project Objectives**

A real denial rate for mortgage applications can be used to better understand the trends in the housing market. These trends can then be compared with trends of the past to try and see if the new real denial rate can be used as a predictor for a potential housing bubble. A new real denial rate will also help answer research questions that can be formulated from hard data.

**Expected Benefits**

The key benefit of this project is the ability to devise a new method, or algorithm, for calculating a real denial rate on just data obtained from HMDA dataset. This new method of calculating a real denial rate will be achieved without use of any propreitary data. Then, the real denial rate can be used to answer research trends and questions related to the housing market and mortgage applications. These findings will help decsion-making entities such as banks and the government form better educated decisions on housing policies.

**Project Organization**

In this project, I will be the sole researcher and participant. Dr. Stephen Wheat will be my project advisor to guide me through with this project to complete it satisfacorially.

**In Scope Out of Scope**

* Housing Market Data Acts dataset
* Analysis of large data using Python and packages such as Numpy and Pandas
* Formulating a new algorithm with only HMDA data
* Proprietary data
* Creating an interactive web-based data visualizer
* Training a Machine Learning model that can understand trends produced by research

**Key Deliverables**

* Cleaned and formatted HMDA data for the years 2018-2021
* A new method, algorithm, for calculating a real denial rate using only HMDA data
* Report on trends using the new real denial rate

**High-Level Timescale**

<Use the diagram below to identify your key milestones.>



Milestone 1: Raw data from 2018-2021 is cleaned and formatted properly for better data analysis.

Milestone 2: A new real denial rate algorithm is formulated.

Milestone 3: Furthere analysis on HMDA data is done over the period of 2014-2021 using the new real denial rate to look for trends in the data and answer proposed research questions.

Milestone 4: Compile research findings in a paper and present.

There will not be any constraints to this project.

**High-Level Budget**

There is no need for budget for this research project. Much of the work will be done on campus and on the Titan computer for large data analysis.

**Key Project Assumptions**

<Outline key project assumptions which can impact the project if proven false.>

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| --- | --- | --- | --- |
| **ID** | **Assumption** | **Importance** | **Impact if false** |
| 1 | Publicly available HMDA dataset is sufficient in formulating a new denial rate | High | High impact |
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**Key Project Risks**

<Outline key project risks which can impact the project if they materialize.>

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| --- | --- | --- | --- | --- |
| **ID** | **Risk** | **Probability** | **Impact** | **Mitigation** |
| 1 | Dataset is large and could get corrupted due to poor handling | Low | Medium | Can always obtain same dataset as it is publicly available |
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**Success Criteria**

<List the criteria on which the success of the project will be measured.>

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| --- | --- |
| **ID** | **Success Criteria** |
| **1** | **A new real denial rate using only HMDA data is created** |
| **2** | **Research trends are explored and answered using the new denial rate** |
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**Project Charter Sign-off**

<List the names of the approvers of this Project Charter.>

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| **Name** | **Role** | **Approved on** | **Signature** |
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