

CREATING A HEURISTIC FORMULA TO BYPASS AUTOMATION

PRELIMINARY ANALYSIS

JANUARY 31, 2020

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WHAT'S THE GOAL

- To continue to provide customers with an **efficient virtual process**
- To **streamline** the quote-generation process
- To find a way to **stay ahead of the curve** when, for example, companies introduce rate changes

WHAT WAS DONE

- 24,000 quote combinations were pulled from the ComboCompare results database into **Python**.
- The dataset was **analyzed and transformed** so that it could be used to teach a machine learning algorithm.
- It was confirmed that one could find a formula that would **approximate the results** returned by ComboCompare.

WHAT WAS LEARNED

- The dataset used to find the formula will need to contain **all possible combinations** as much as possible.
- The dataset will need to be **thoroughly analyzed** so that it's well understood how all the pieces fit together.
- **Many different learning algorithms** will need to be tried so that the system will perform reasonably well.

WHAT TO WATCH OUT FOR

- This system is **not guaranteed to perform better than the current automation**, but if it's taught in the right way, then it's likely to be more robust going forward.
- This system will need to **rely on data generated by ComboCompare to learn**, so the automation won't go away immediately, but it may be possible to phase it out.
- This system will need **a lot of training time and supervision to start**, but if the right supports are put in place, then it may be able to learn on its own and update itself in the future.

| | Coefficient |
|--|---------------|
| age | -5.965691e+03 |
| premium | 3.425055e+00 |
| inflation | -7.275958e-12 |
| company_Lincoln MoneyGuard III | 1.091394e-11 |
| gender_Female | -3.053407e+04 |
| gender_Male | 3.053407e+04 |
| marital_Married | 1.146455e+04 |
| marital_None | -1.146455e+04 |
| schedule_10 Years | -3.644118e+04 |
| schedule_Single Pay | 3.644118e+04 |
| company_Lincoln MoneyGuard II 2020 | 0.000000e+00 |
| company_Nationwide CareMatters II | 0.000000e+00 |
| company_Pacific Life PremierCare Choice 2019 | 0.000000e+00 |
| company_Securian Financial SecureCare UL | 0.000000e+00 |

WHAT THE BENEFITS ARE

- Right now, insurance quotes come from a database that's automatically populated with data from ComboCompare. One benefit of using a machine learning system is that **insurance quotes can be calculated using a heuristic formula** instead.
- Sometimes, the database doesn't contain a result for a quote that you need. A second benefit to using a machine learning system is that **it may be able to give an estimate by predicting a quote** instead of returning N/A.
- The JavaScript front end can mistakenly return bad data on its own, even if the correct result was stored in the database. A third benefit of a machine learning system is that the front end can calculate the quote using the heuristic formula, **mitigating the potential downsides of calling out to the database directly**.

WHAT'S UP NEXT

- Develop **domain expertise** to better understand how the current system works and what improvements could be made.
- **Analyze the available data** to better understand what the algorithm will be working with and how it should be transformed.
- Try out lots of different machine learning algorithms to discover the one that will **create the best heuristic formula**.