**Mango Supporting Documentation**

**Our Solution**

The solution is called mango. Why the name mango? We want to make financial services as common and accessible as mango trees are in Zambia. They're everywhere! It's an app that will allow users to manage all their insurance needs in one place. With it, users would be able to browse and buy insurance plans from different insurance companies. They'd also be able to pay their premiums, file claims, receive customer support directly from the insurance companies selling the plans and receive real time updates on the state of their plans e.g. claim and application decisions, payment reminders and confirmations, premium adjustments. We'd also collect premiums on behalf of the insurance companies. By supporting multiple payment providers like Zoona, Mobile Money, Talk Time etc, we'd make payments more streamlined for insurance providers while giving clients multiple payment options.

**Data Supporting Solution**

The first thing we noticed through the data was that roughly 85% of respondents didn't even know what insurance was. Of the 15% that had heard of insurance, 20% of those had insurance. This shows lack of knowledge is a huge factor.

Over 50% of people in both rural and urban areas didn't know where the nearest Insurance Companies were and for those that did, in rural areas specifically, over 80% said they were over an hour away. Access was also a huge problem.

We then wanted to find an effective delivery method. We found that roughly 80% of people had access to a mobile phone. This data was cross checked with information from ZICTA (ICT regulator) that showed that according to 2016 data, approximately 75% of the population had a mobile phone and 33% were active mobile internet users. We also discovered that 85% were actually open to learning new technologies.

Finally, we created a model using Random Forests. (machine learning algorithm) in order to determine what indicators were most important in determining whether someone would get insurance or not. It had an F1 score of 0.82 (Correct 82% of the time).

Top 5 indicators discovered were:

- They knew how insurance worked.
- They trusted that the insurance companies would pay out if something went wrong.
- They did some sort of saving.
- Formally Employed.
- Their age.

Another interesting thing to note was within the importance scores, the provinces and districts seemed to roughly follow a trend similar to population density. Further investigation showed that insurance companies prefer setting up in densely populated areas to minimize costs. This could indicate ease of access.

**Design**

Given all these findings, we opted for a solution that:

- Was mobile based. For distribution purposes and would support both Smartphones and Feature Phones.
- Provided, in simple terms, all the information a user would need to educate themselves on insurance.
- Gave the user choice. This would be done by having as many insurers as possible participate.
- Had a good onboarding process that, based on who they were, helped them choose plans best suited to them. This would guide them to make their decision.
- Allowed a user to perform most critical insurance related tasks. This was done for accessibility.
- Could be accessed from anywhere in the country. For accessibility.
- Had a good customer service system. To help facilitate trust.

**Commercial Viability**

In order to be self-sustaining, a company that would spin out from the app could act as an insurance broker and make money from any referred customers who signed up, in perpetuity. It could also make money if an insured user, referred by mango or not, uses one of the convenient payment options.

**Tools Used**

Python (Django, pandas, scikit-learn, numpy), Microsoft Excel, Stata, Javascript, HTML, CSS

**Data and Datasets Used**

Fincope 2015, FS_Zambia_2015_v2.csv

ZICTA 2016, www.zicta.zm

**Link to model code:** https://github.com/shimps/datahack4fi-model