**Assurance** is a consumer platform that helps shoppers buy insurance and financial products. Their online experience is centralized around the use of data science to help shoppers find the right product.

**Problem Statement**
Will a shopper be Approved or Declined for a life insurance product?
- Predicting the approval status of a shopper is critical in recommending them the correct insurance policy
- If the wrong policy is recommended and a shopper is declined, their status will carry with them and likely prevent them from being able to get life insurance anywhere they go

**Data**
- **Questionnaire** Dynamic questions asked to the shopper (ex tobacco usage, medical conditions, age)
- **Session Info** Marketing channel, number of visits, etc.
- **Census Info** Avg income, age/gender breakdown, etc.
- **Third Party Data** Financial and phone data

**Modeling**
- We built separate models for each life insurance product to predict probabilities of Instant Approval and Decline
- Logic was built and implemented using the models to:
  1. Skim off Instant Approvals (recommend the product if we think the shopper is likely to be Instantly Approved)
  2. Filter our Instant Declines (do not recommend a product we think the shopper will be Instantly Declined for)

**Model Types**
- XGBoost
- Logistic Regression

**Model Feature Reduction**
- Feature importance from tree-based models and lasso with cross validation

**Model Features**
- Individual Data
  - Questionnaire
  - Census Info
  - Third Party Data
- Engineered Features

**Model Users**
- Life insurance shoppers
- 30k per day From all walks of life

**Life Policy Types**
- **TERM** Only covers a term period
- **Simplified TERM (SITEM)** Only covers a term period (with instant decision, easier to qualify)
- **Whole Life (WL)** Lasts whole life, covers large amounts
- **Simplified Final Expense (SIFE)** Lasts whole life, covers small amount

**Business Impact**
Each of our models is currently making 30k predictions a day and collectively recommending a different product 10% of the time

**Results since July 17th**
- Instant approvals increase 45%
- Instant declines decrease 10%
- Revenue per shopper increase 30%

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**Other initiatives were going on during the time of the logic implementation; we do not take full credit for the performance increase but believe our project contributed to the growing success of Assurance.**