accenture

sas

Climate Risk Aware Management

The property loan mortgage scenario

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Climate Risk Impact: Current Scenario

Better manage financial exposures by taking into consideration impact of physical risks of climate change

Help finance projects with significantly lesser environmental impact while accounting for transition risks

Physical Risks: Damage because of environmental changes, e.g., flooding, wildfires etc.

- **Bushfires in Australia**

- **Damage due to storm Sandy**

- **Transition Risks:** Risks involved while adapting to lower-carbon economy
- Risks involved while adhering to government policies related to climate change

"Annual adaptation costs towards lower-carbon economy could be upto $500 billion"

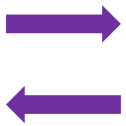
- UN adaptation gap report (2018)

Solution: Objective and Workflow

- To Predict changes in property values by factoring in physical and transition risks
- Calculate expected credit loss based on the predicted property values

Data:
Unify data from different data sources

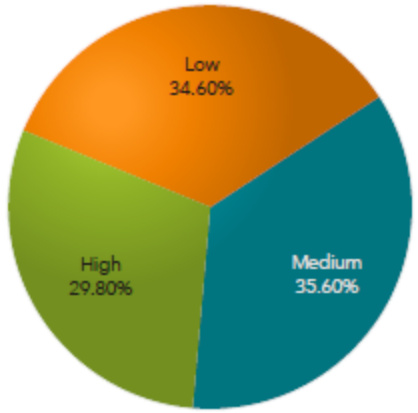
Creation of ABT



Visualization Dashboard using SAS VIYA

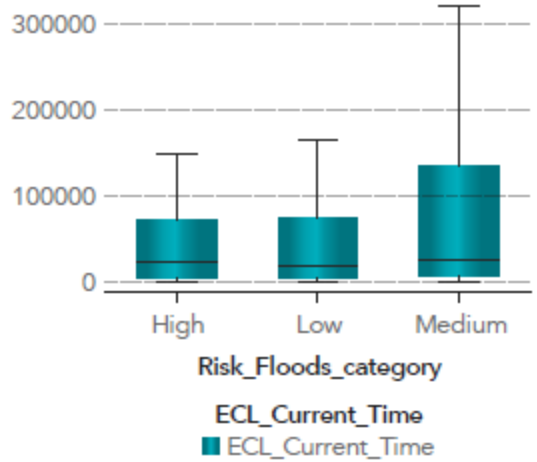
Flood Risk

Properties Under Flood Risk

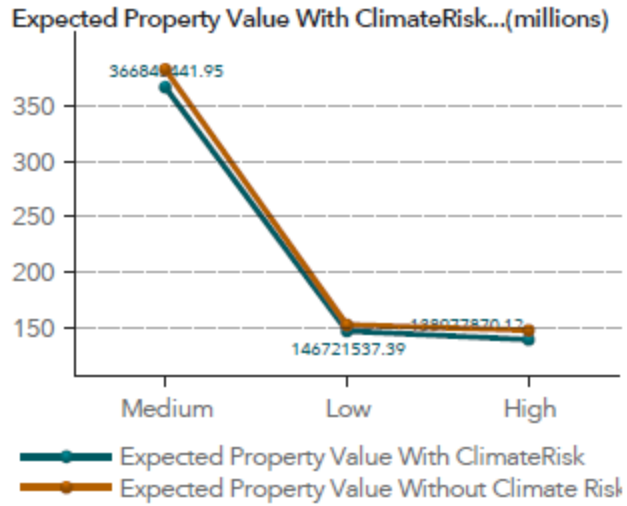


A2.1

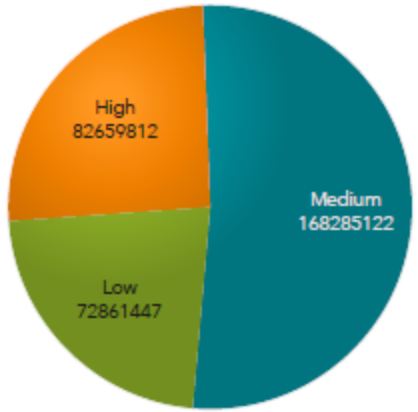
Maximum/Range Financial Impact



Expected Property Value

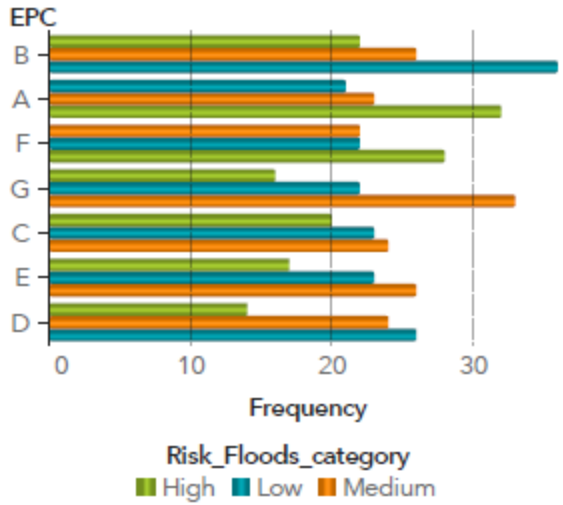


Property Value Under Flood Risk

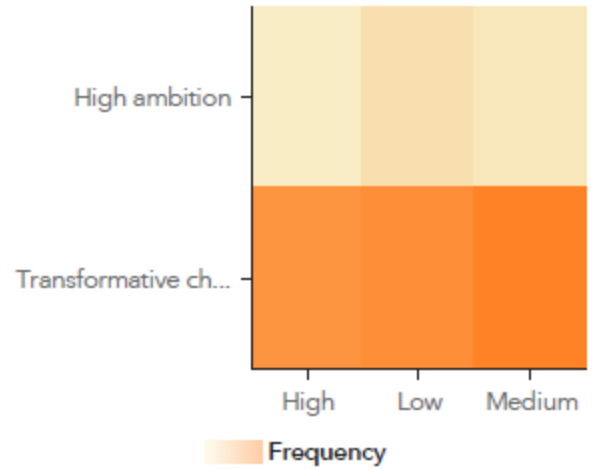


A2.2

EPC Distribution



Risk Rating



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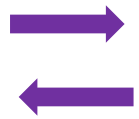
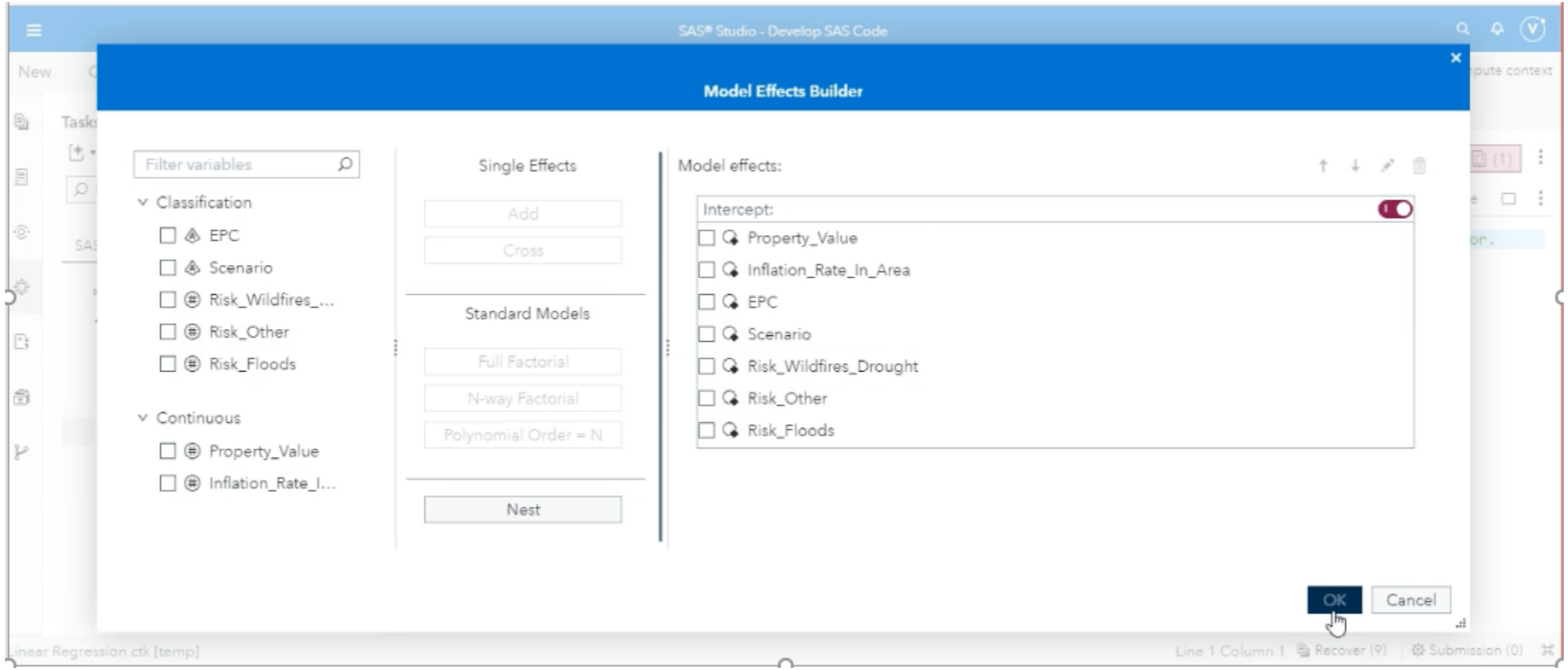


Visualization Dashboard using SAS VIYA

Predictors:

- Current property value
- Borrower's probability of default
- Flood risk
- Wildfire risk
- Cyclone risk
- EPC
- Inflation rate without considering climate risk


SAS® Studio - Develop SAS Code
Model Effects Builder
Filter variables
Classification
EPC
Scenario
Risk_Wildfires_...
Risk_Other
Risk_Floods
Continuous
Property_Value
Inflation_Rate_I...
Single Effects
Add
Cross
Standard Models
Full Factorial
N-way Factorial
Polynomial Order = N
Nest
Model effects:
Intercept:
Property_Value
Inflation_Rate_In_Area
EPC
Scenario
Risk_Wildfires_Drought
Risk_Other
Risk_Floods
OK
Cancel

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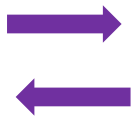

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Linear Regression model to predict future property values in SAS studio

- Predict Updated property values (based on climate risk) using the model
- Use these values to calculate expected credit loss

Benefits of the Model:

- Accurately predict the future property values

- Better prediction of expected credit loss:
  ECL = PD * LGD * Outstanding Exposure

- Structure mortgage payment plans in a better way