# Responsible AI capabilities in SAS Viya

30.09.2021 – FANS Analytics Network Meeting

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# Why should we care about Responsible AI?

| Financial Resources | Insurance, Retail | Criminal Justice | Health Care | HR |
|---|---|---|---|---|
|  |  |  |  |  |
| **Who gets approved for a loan?** | **Who gets the best prices?** | **Who gets a harsher sentence?** | **Who gets admitted to a care management program?** | **Who gets hired?** |

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# Considerations for Responsible AI

## Privacy

Example:

Manage identification of individuals or information

## Bias

Example:

Manage bias in data, models and decisions

## Explainability

Example:

Explain the reasons behind analytical decisions

## Governance

Example:

Provide oversight for AI & Analytical outcomes

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# Approaches to Responsible AI

People

Process

Technology

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# These approaches span the analytics lifecycle


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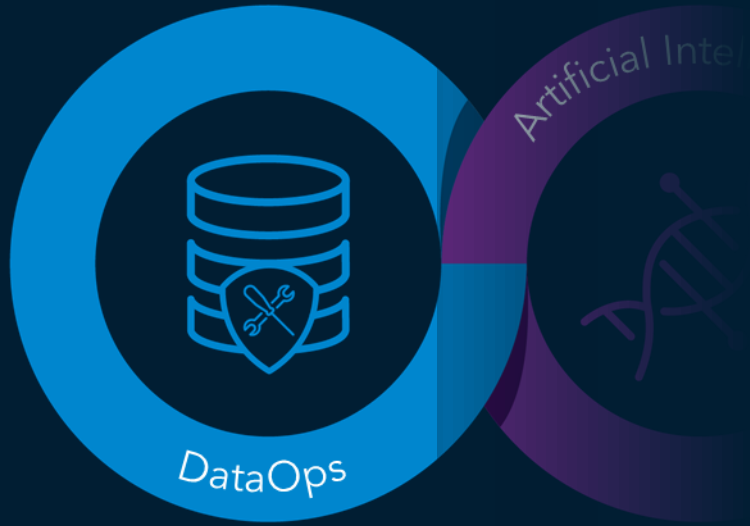
# Responsible AI in DataOps




## Privacy & Quality

Automatically find private and sensitive variables to comply with policy

## Bias Detection

Profile data to evaluate representation from a diverse population

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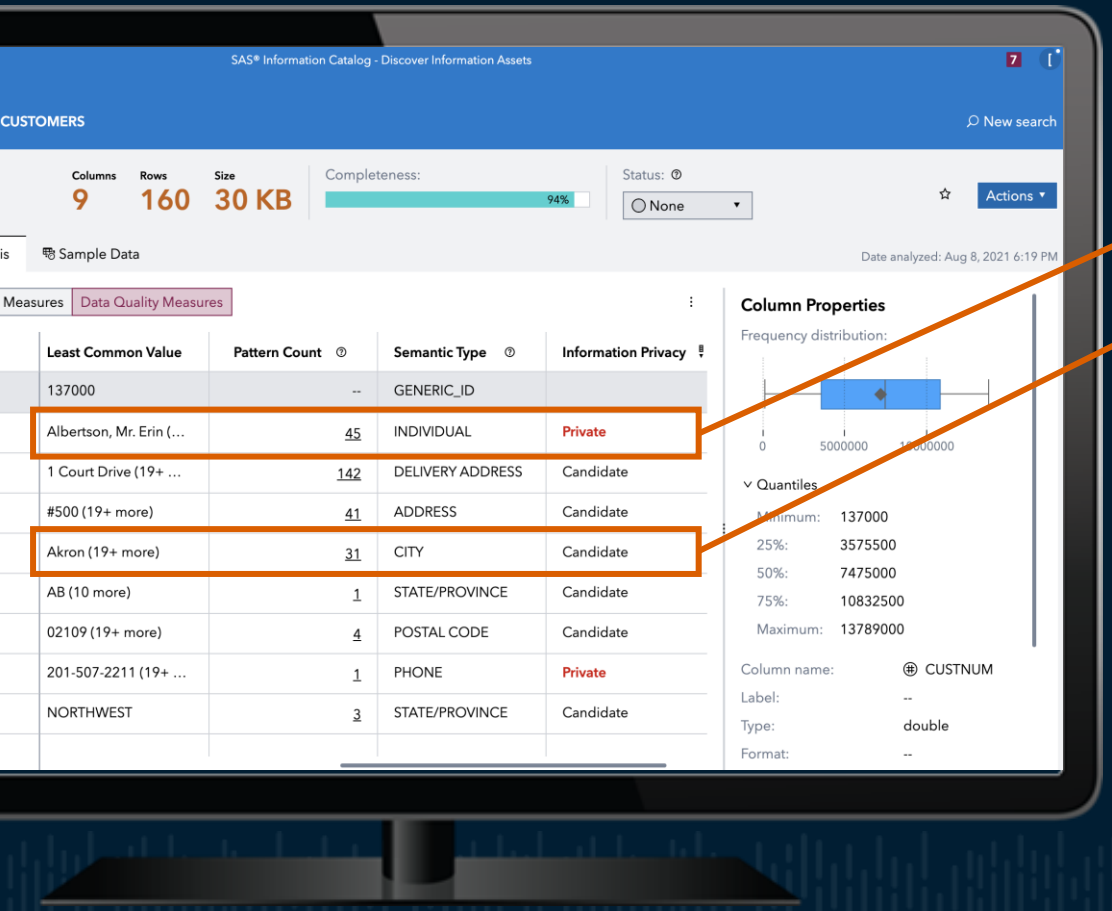
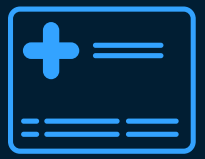
# Privacy & Quality

## With SAS Viya

- Centralized data management
- Automatically identify privacy fields
- Automatically identify sensitive fields (age, gender, location, other)
- Apply a consistent privacy policy



**Example:** Data on disease trends should not include info that identifies individual patients.

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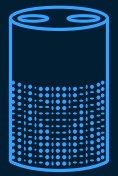
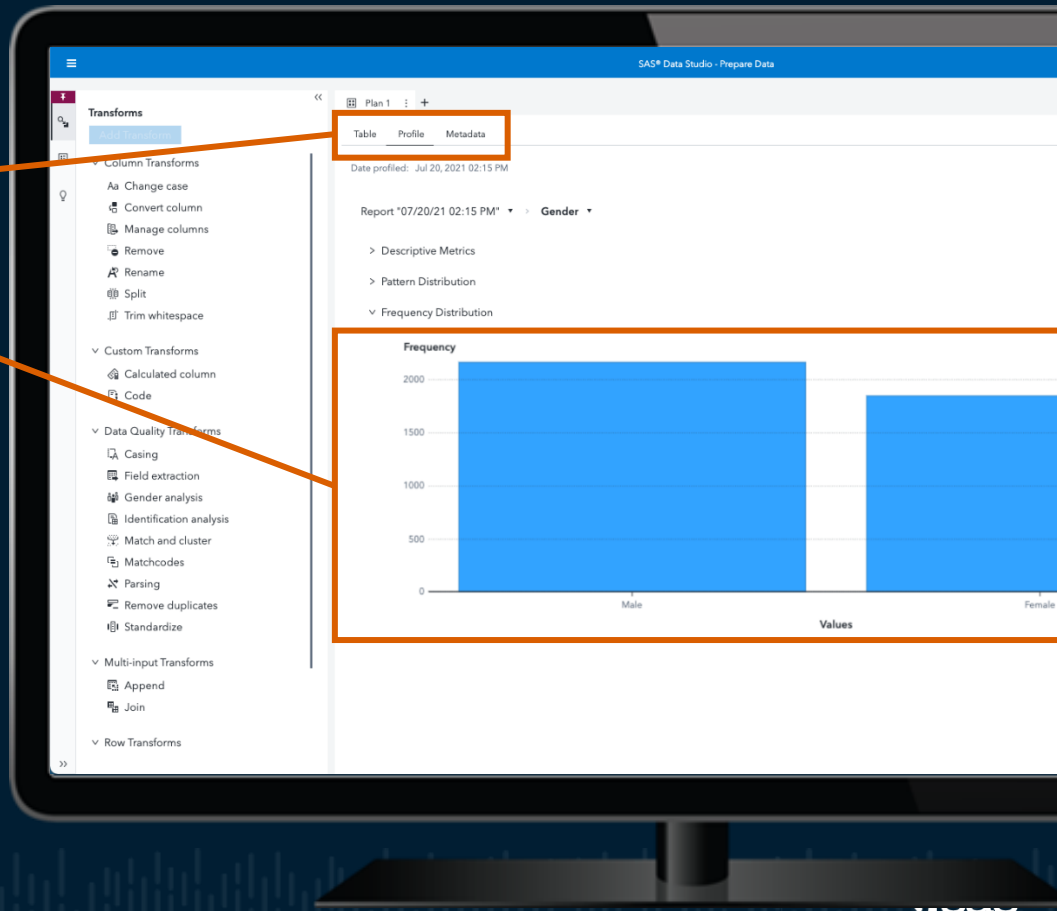
# Bias Detection

## With SAS Viya

- Out-of-the-box Profile capability
- Helps evaluate representation from diverse groups, for example gender, age groups, ethnicity, etc.



**Example:** Chatbots that are trained to understand a diverse set of languages and accents.

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# Responsible AI in Artificial Intelligence


## Explainability in plain language

Explain the outcomes of a model or decision to auditors or customers

## Fairness Assessment

Ensure models provide accurate and positive outcomes fairly across groups for sensitive attributes

## Model Lineage & Accountability

Document changes and keep the human element in the loop by creating streamlined processes

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# Explainability

## With SAS Viya

- Every model provided with explainability
- Explain how a variable impacts model prediction
- Explain why a specific prediction was made

**Example:** Understanding why a customer was approved or denied a loan.


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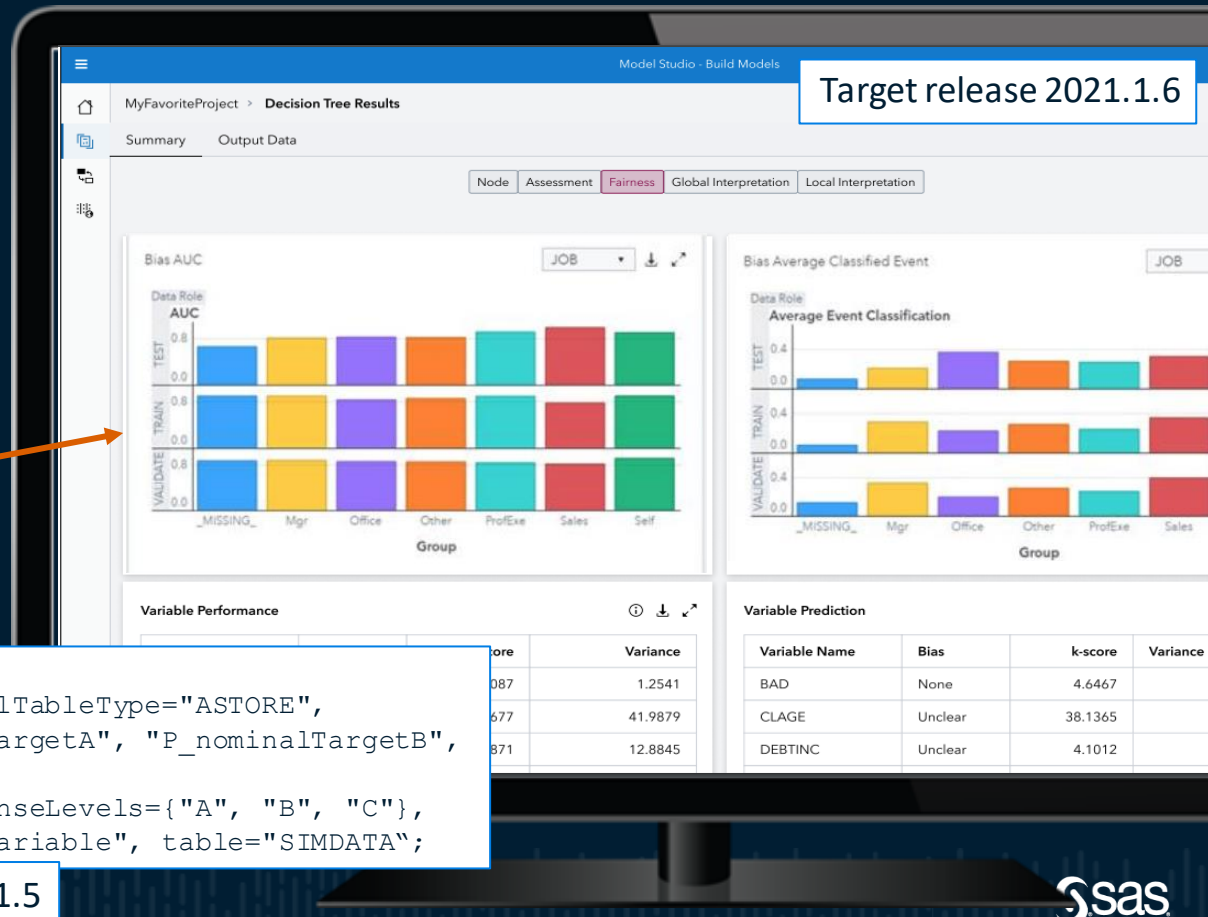
# Fairness

## WITH SAS Viya

- Assess whether models favor one group over another
- Programmatic action provided for assessing bias
- Dedicated “Fairness” assessment in Model Studio




Target release 2021.1.6

```
fairAITools.assessBias event="C",
    modelTable="FOREST_ASTORE",modelTableType="ASTORE",
    predictedVariables={"P_nominalTargetA", "P_nominalTargetB",
    "P_nominalTargetC"},
    response="nominalTarget", responseLevels={"A", "B", "C"},
    sensitiveVariable="mySensitiveVariable", table="SIMDATA";
```

Target release 2021.1.5

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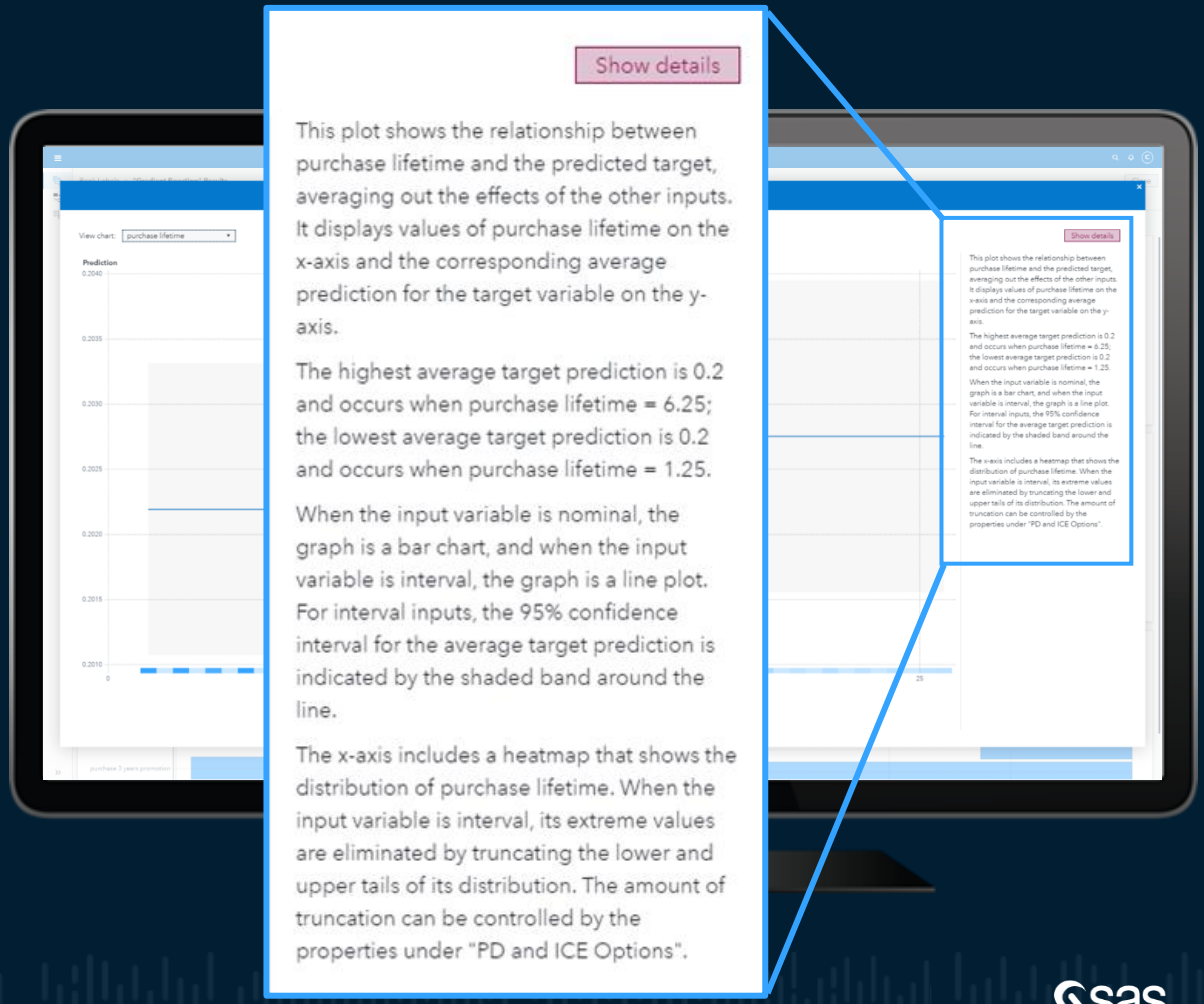
# Explainability & Fairness in Plain Language

## With SAS Viya

- Explainability for data scientists and citizen data scientists
- Inclusive so all can understand impact of decisions

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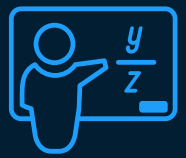
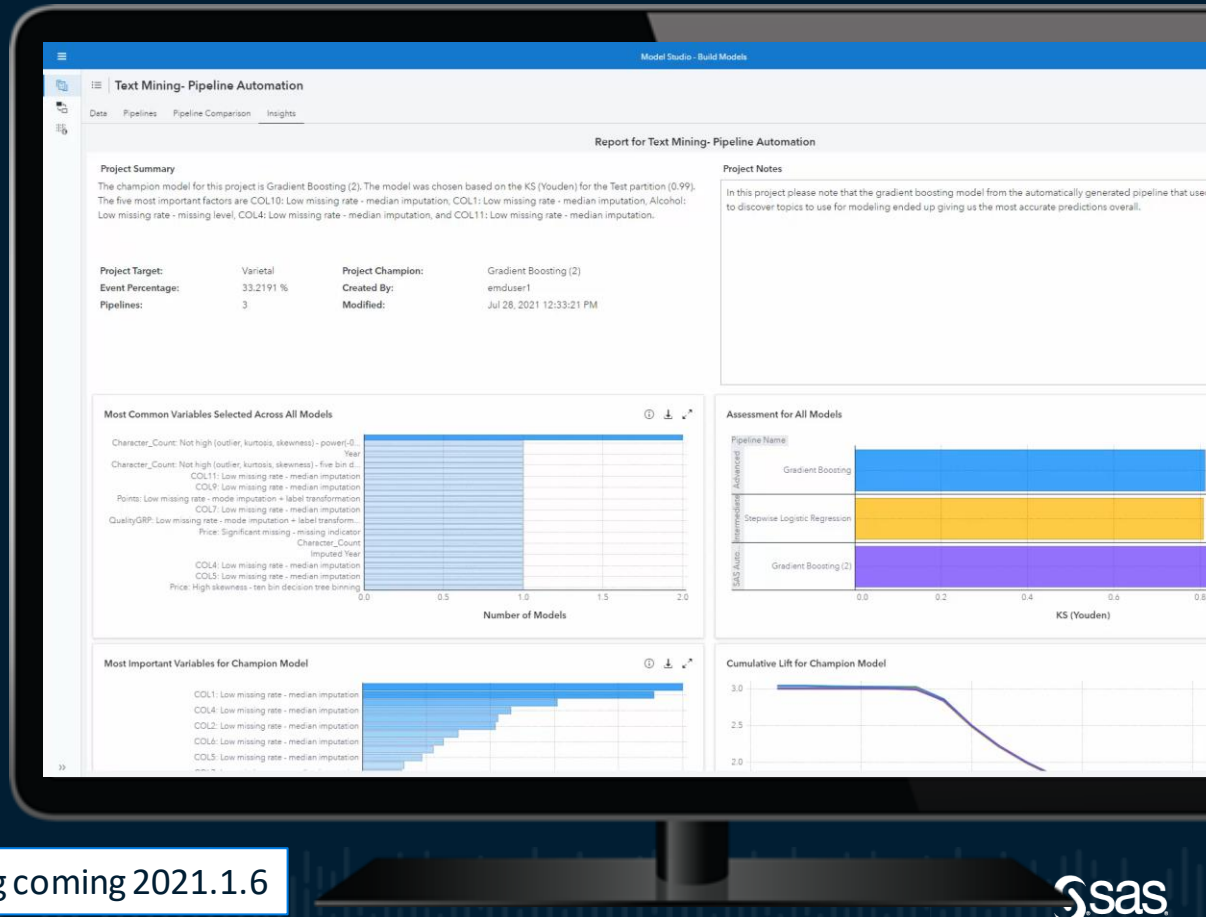
# Model Development Report

## With SAS Viya

- Detailed and easily shared outside of data science team



**Example:** Explain how a model was developed and what its relevant characteristics are




Node-level reporting coming 2021.1.6

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# Demonstration

## Model Studio

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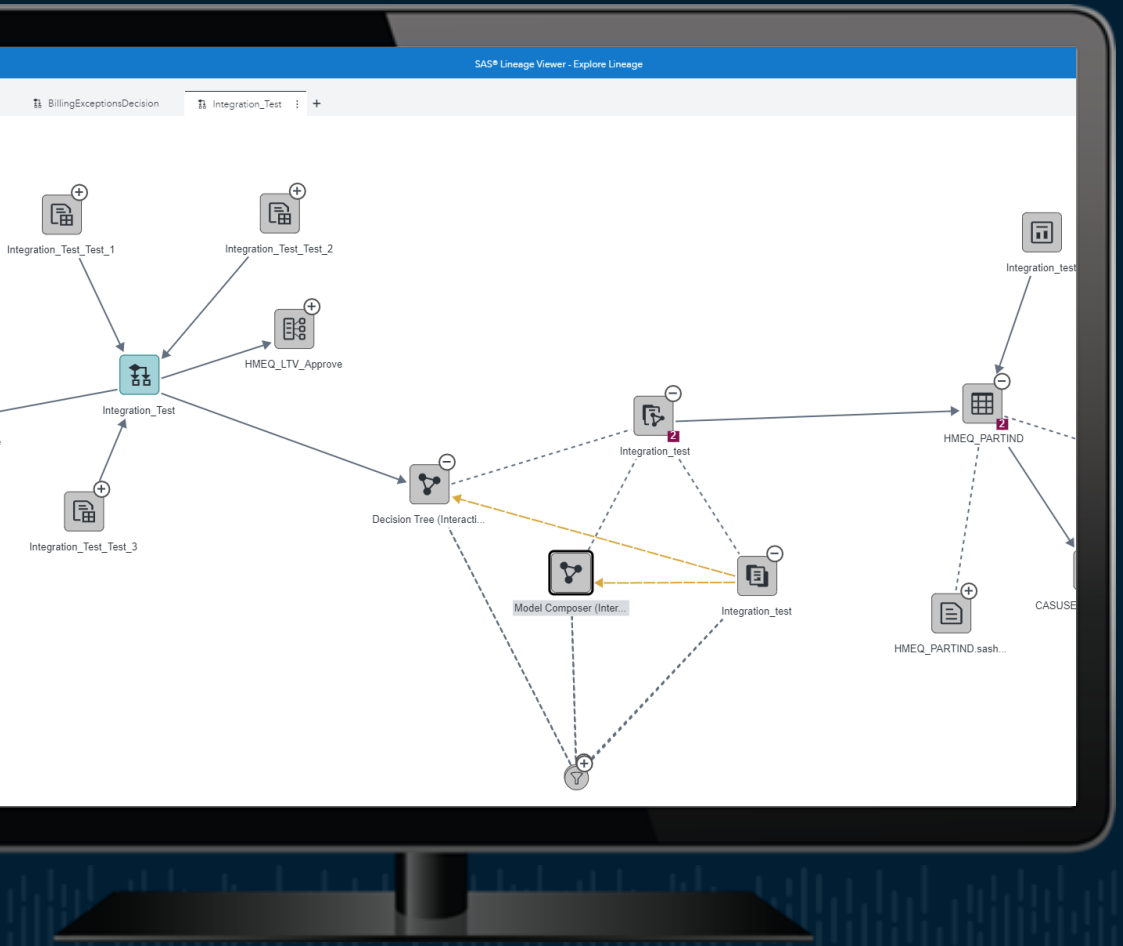


# Lineage

## With SAS Viya

- Document for auditability the lineage of data ingestion and preparation, modeling, reports, and decisions
- Document and understand relationships between involved steps and impact of changes

**Example:** Banks must show automatic lineage data to comply with regulations such as BCBS-239*

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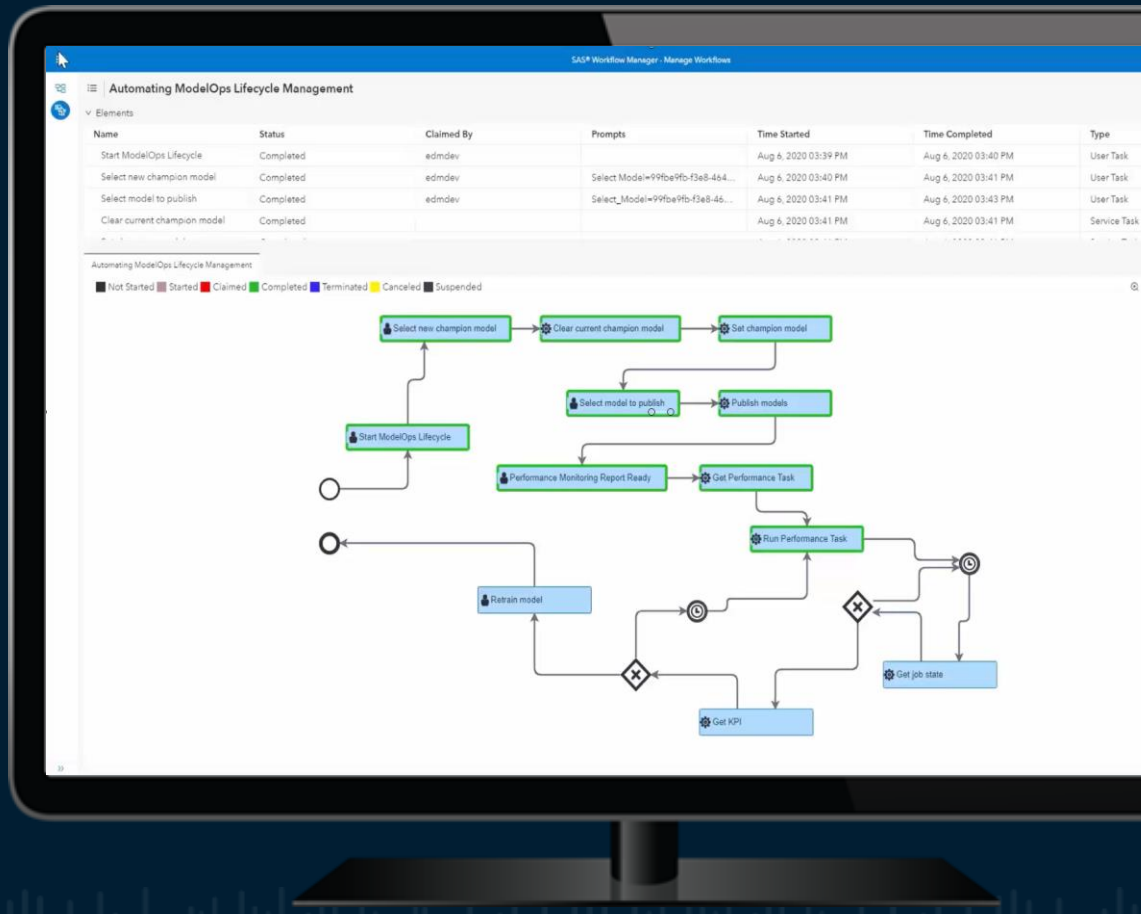
# Model Accountability

## With SAS Viya

- Implement workflows for clearly defined AI process steps
- Accountable process steps owners
- Maintain audit trail for use with compliance and audit teams

Example: Automation of Business Process Management for the Model Life Cycle

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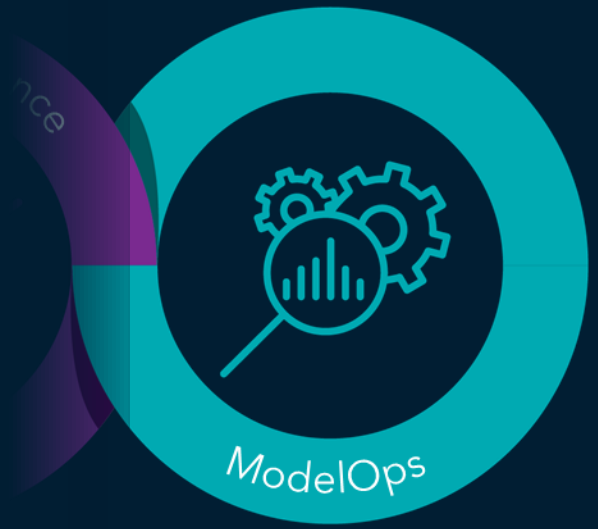
# Responsible AI in ModelOps




## Model Monitoring

Actively monitor models for change over time in variable relationships

## Model Governance

Provide oversight over a population of models and decisions being made

## Decision Auditability

Profile decisions to better enable compliance and responsibility

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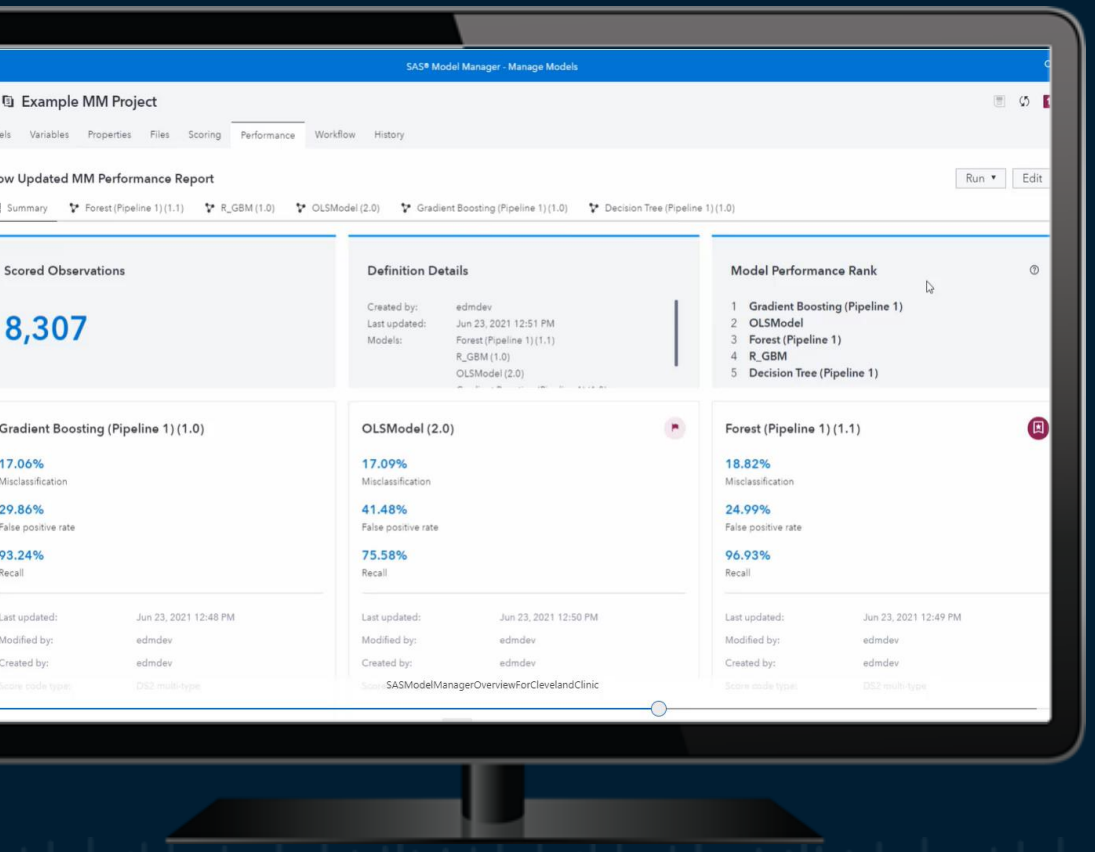


# Model Monitoring

## With SAS Viya

- Evaluates how input variables affect predictive score over time
- Out of the Box Performance Reports
- Alert when prediction exceed acceptable tolerance
  - Today with Workflow Manager
  - Future with Custom KPIs for tolerance

Feature Contribution Index

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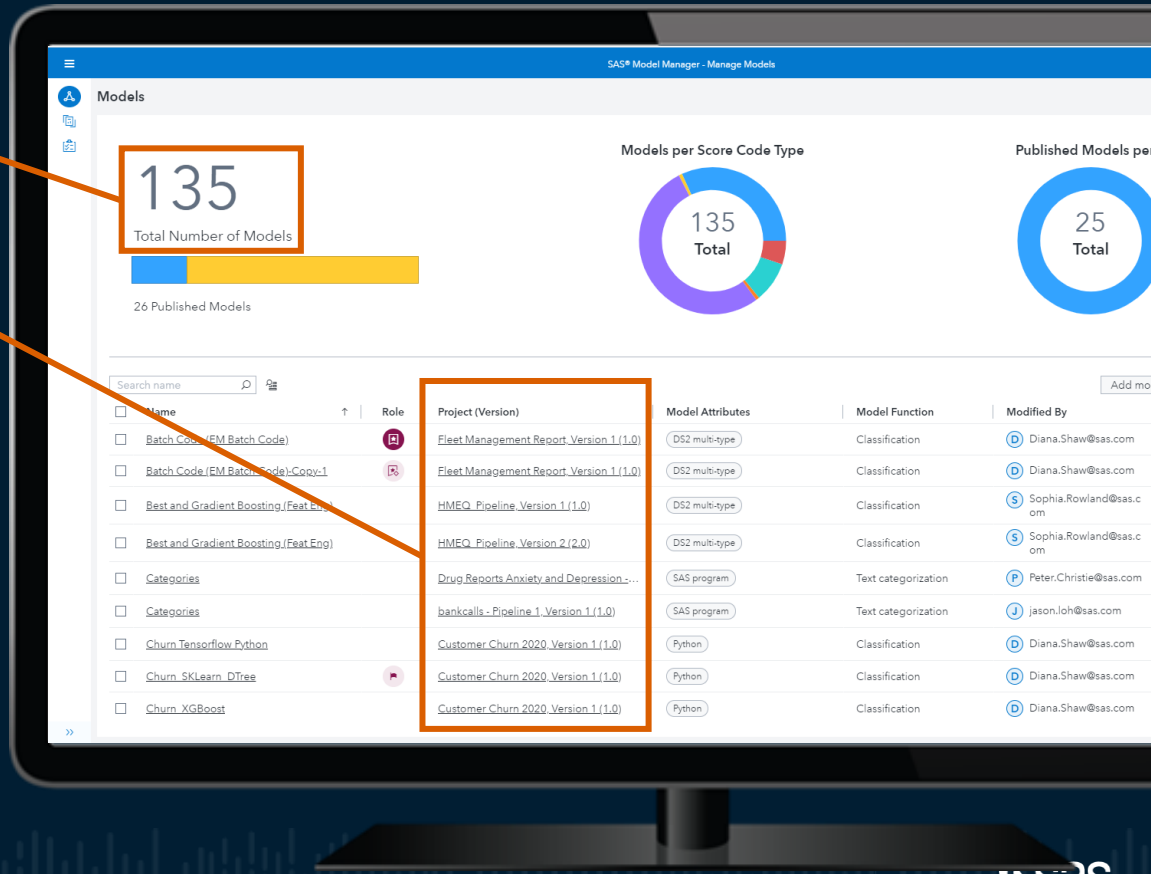
# Model Governance

- Have visibility to all models and decisions you are making
- Simplify model management with life cycle templates and version control

Example: Regulated industries

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# Demonstration

## Model Manager

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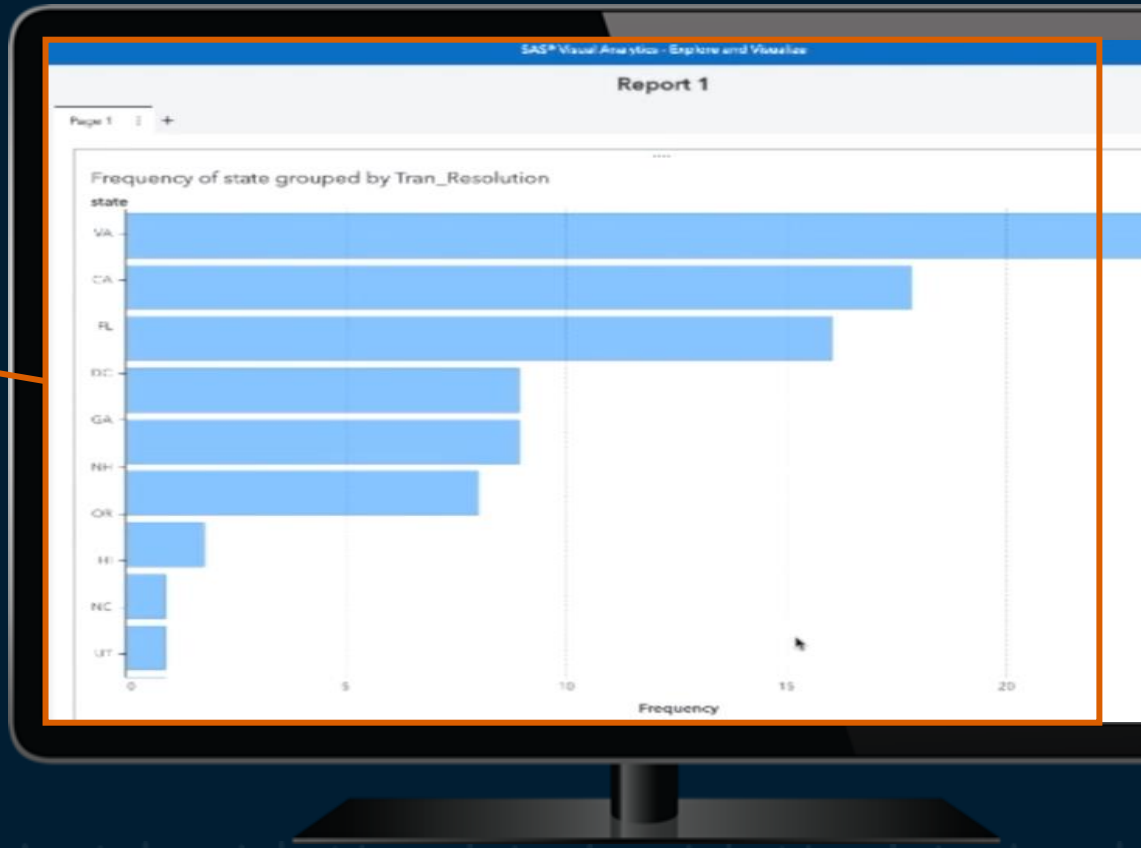
# Decision Auditability

With SAS Viya

- Investigate how decisions impact different groups such as gender, age, location

Example: How are transaction decisions handled by State?

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# These considerations span the analytics lifecycle


## DataOps

Privacy & Quality

Bias detection

## Artificial Intelligence

Explainability

Fairness

Model Lineage & Accountability

## ModelOps

Model Monitoring

Model Governance

Decision Auditability

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sas
AI Game
START
How far have you come with AI within your organization?
What potential do you see for AI within your organization?
Square 1
Do you think there is a risk that AI will make people passive and incompetent?
Reactionist. Return to square 1.
When do you think your organization can start making money from AI?
Stand up and switch seat with a team member.
Do you see any ethical challenges related to AI development?
How do you increase competence to benefit from new technology?
Move forward to any discussion topic or your choice.
Take a well-deserved pause and refill your energy depots.
Do you think AI can replace your job? Do you feel threatened? Why/why not?
How do you talk about AI at your workplace?
Roll the dice again.
ACTIONS
Game development – gamelearn.se
sas

# Thanks!


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