Predictive Modeling for Automotive Retail
Fine-grained Return on Investment (ROI) prediction for automotive sales incentives

1. A centralized data lake account can be used to accelerate development of new use cases.
2. Personally identifiable information is stripped. Aggregation obfuscates dealer specifics to prevent bias for or against OEM dealers.
3. AWS Data Migration Service replicates on-premises databases that aren't available through a data lake account.
4. Data is preprocessed by AWS Glue PySpark Transforms, output into master table for model training.
5. Training input master table pushed from data ingestion pipeline at regular intervals and stored in Amazon Simple Storage Service (Amazon S3).
6. Model source commits trigger container build and is stored in Amazon Elastic Container Service.
7. Input Master Table changes trigger model training pipeline—hyperparameter tuning, validation, and fit—controlled by AWS Step Functions utilizing AWS Deep Learning Containers.
8. Model source commits trigger container build and is stored in Amazon Elastic Container Service.
9. Versioned model outputs stored in Amazon S3, including training report and evaluation.
10. Administrator notified by Amazon Simple Notification Service (Amazon SNS) for review before triggering deployment with AWS Step Functions.
11. Inference requests served through Amazon API Gateway, AWS Lambda, and Amazon SageMaker endpoint using trained model container.

Inference dashboard built using AWS Amplify, static content hosted on Amazon S3, and served through Amazon CloudFront.

AWS Reference Architecture