

Fast Track to Feasibility: Smarter Resource Estimation Before Details Arrive

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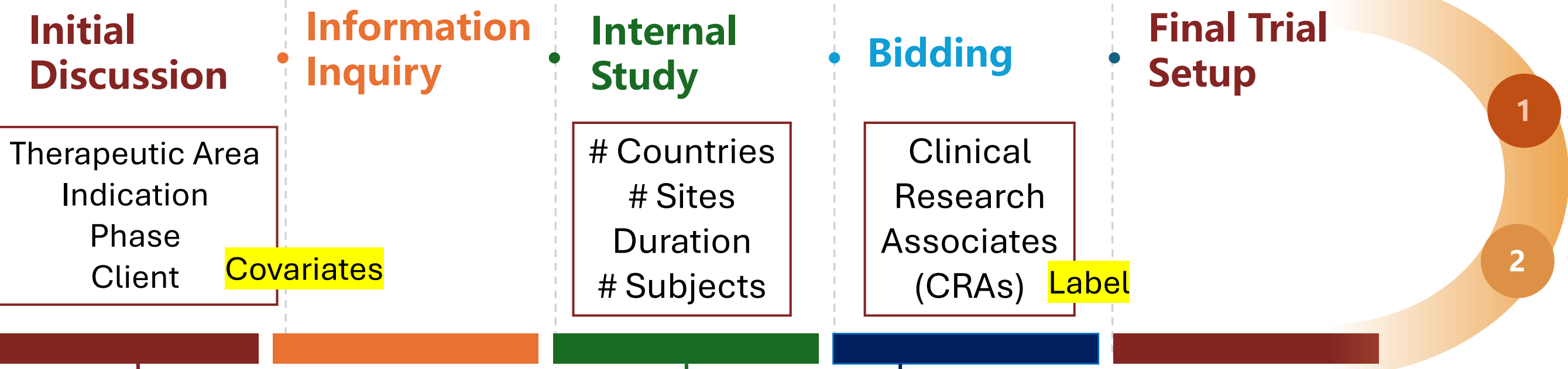
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Sierra
Gong

Ellie
Yang

PROJECT CONTEXT

OPPORTUNITY



Bring Resource Insights upon 1st meeting (skip the ~2 months study process)

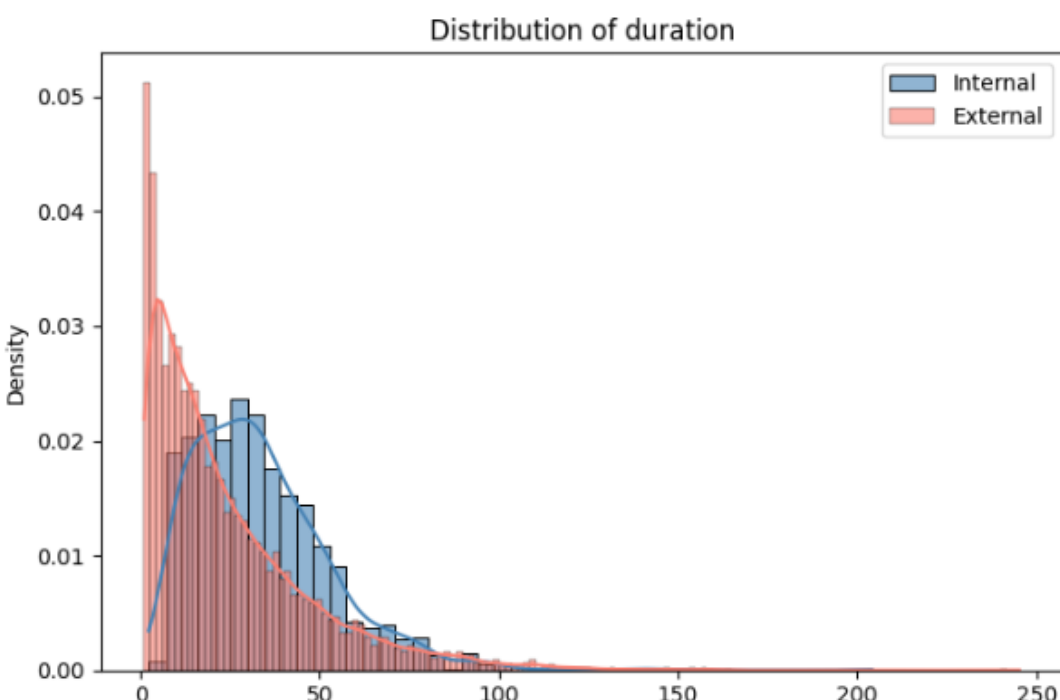
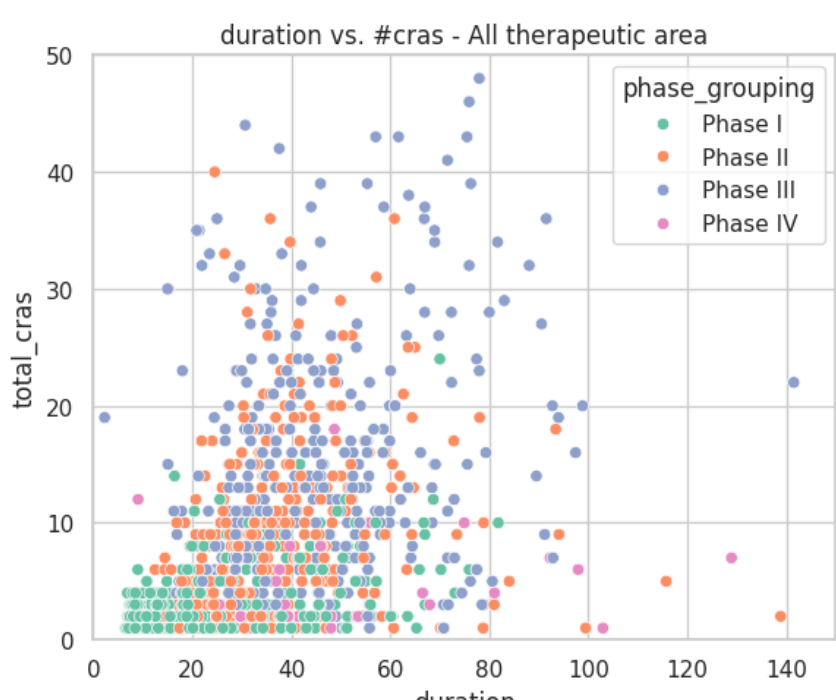
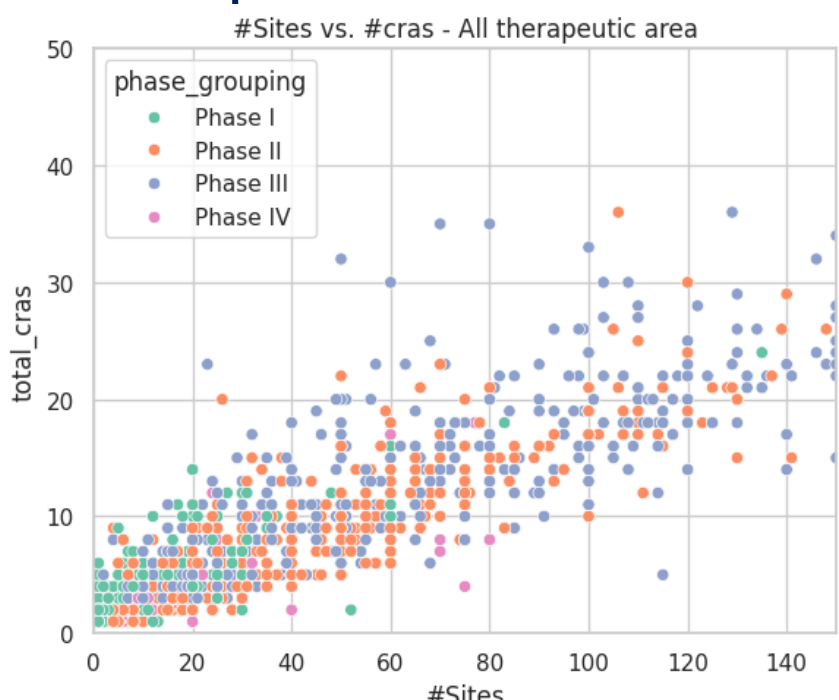
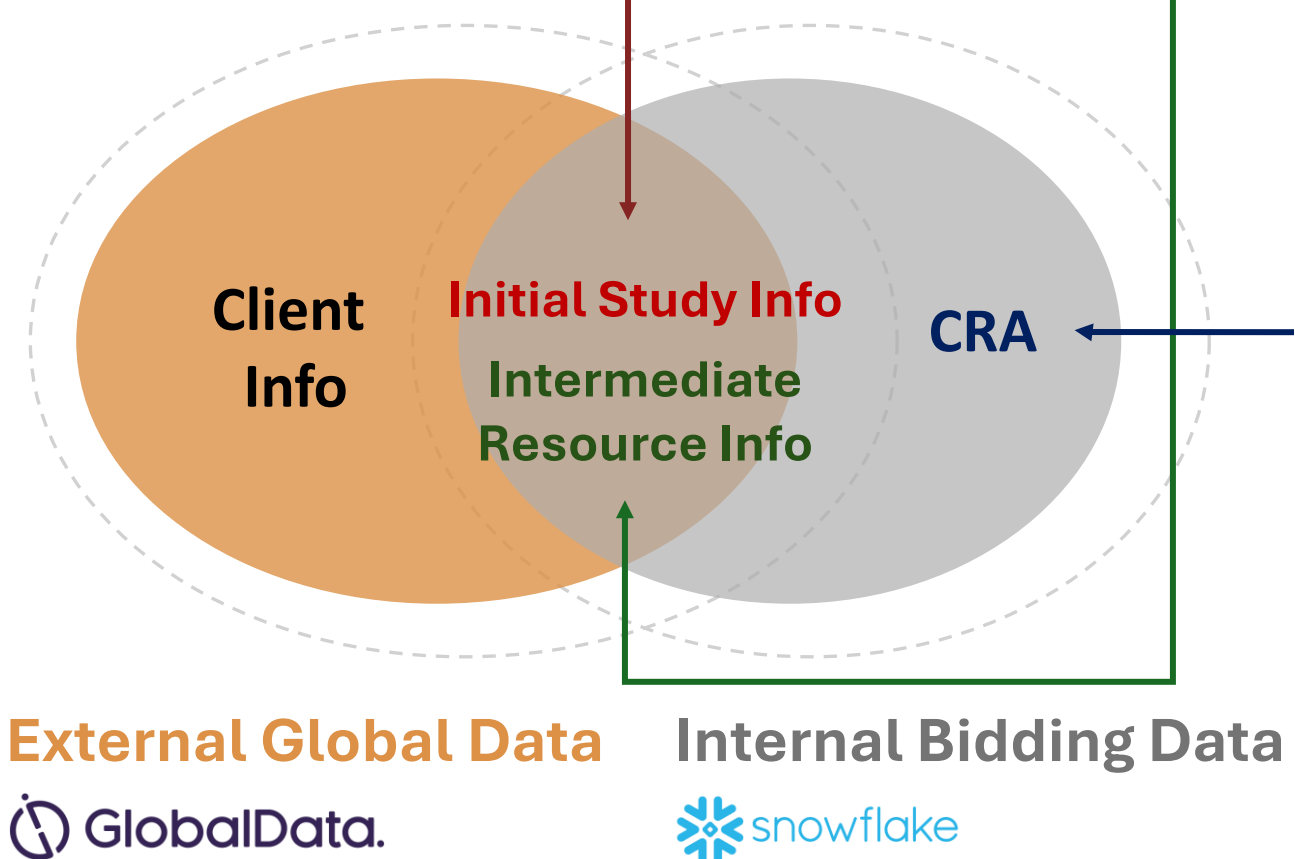
Client

Get early budget estimates even without full trial details

Thermo Fisher Scientific

Evaluate project profitability for revenue planning ahead

EXPLORATORY DATA ANALYSIS



Linear relationships between intermediate resources and # of CRAs

1 Consider using **other available intermediate trial resources** to predict final **CRA** target

Intermediate resource variance differs across trial phases

2 Consider using **features available at first discussion** to predict **intermediate trial resources**

Paradigm shift exists between different datasets

3 Develop **separate models** or **reweight** datasets

METHODOLOGY

Models

1. Baseline

Mean Imputation (Excel Pivot)

2. Direct Prediction

Catboost Model

3. Four-feature Model

Use predicted intermediate trial resource features for prediction

4. Eight-feature Model

Use both initial discussion features and predicted intermediate trial resource features for prediction

From Client

From Prediction

Final Target

Initial Features
(4)

Direct Prediction

of CRAs

First Step Modeling

Initial Features
(4)

2 versions
CatBoost
MultiRMSE

Intermediate Resource
Features (4)

Second Step Modeling

4 features

Ridge

of CRAs

Initial Features
(4)

2 versions
CatBoost
MultiRMSE

Intermediate Resource
Features (4)

8 features

CatBoost

of CRAs

RESULT

IMPACT

Models

Models Trained with Internal Data

RMSE

MAPE (%)

Models Trained with Internal & External Data

RMSE

MAPE (%)

Baseline

33.7

26.1

/

/

Direct Prediction

12.9

87.6

/

/

4-Feature (2 Step)

10.4

79.9

15.6

96.3

8-Feature (2 Step)

12.9

60.6

12.9

58.9

Profitability Assessment without Needing Two Months of Intensive Staff Review (~100 projects/year)

Commercial Advantage: Faster Response to Client Requests

Rapid and Reliable CRA Estimation before Details arrive (~2 months)

Reference Tool for Final Bid Preparation

User-Friendly Interface for Business Users

First Ever Tool

Works with just 1 input
Provide intermediate resources