

Fast Track to Feasibility: Smarter Resource Estimation Before Details Arrive

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PROJECT CONTEXT

- Initial Discussion
- Information Inquiry
- Internal Study
- Bidding
- Final Trial Setup

Therapeutic Area
Indication
Phase
Client

Covariates

Countries
Sites
Duration
Subjects

Bidding

Clinical
Research
Associates
(CRAs) Label

Final Trial
Setup

OPPORTUNITY

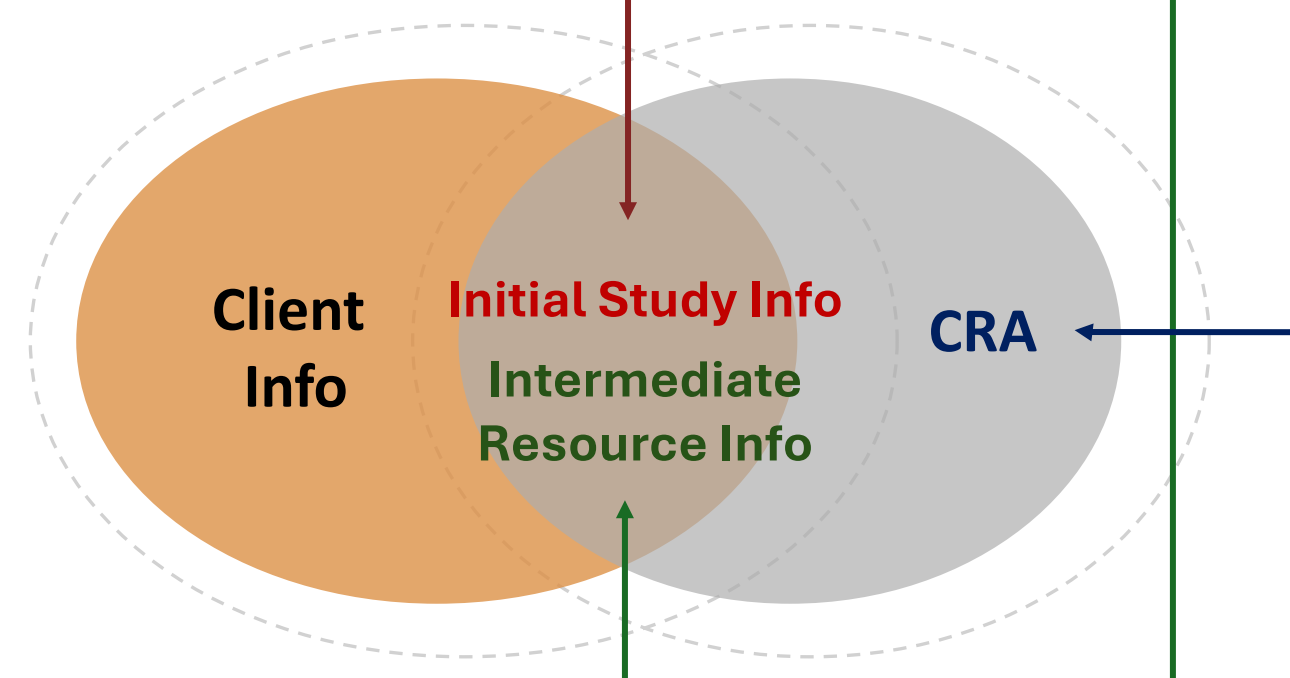
Client

Get early budget estimates even without full trial details

Thermo Fisher Scientific

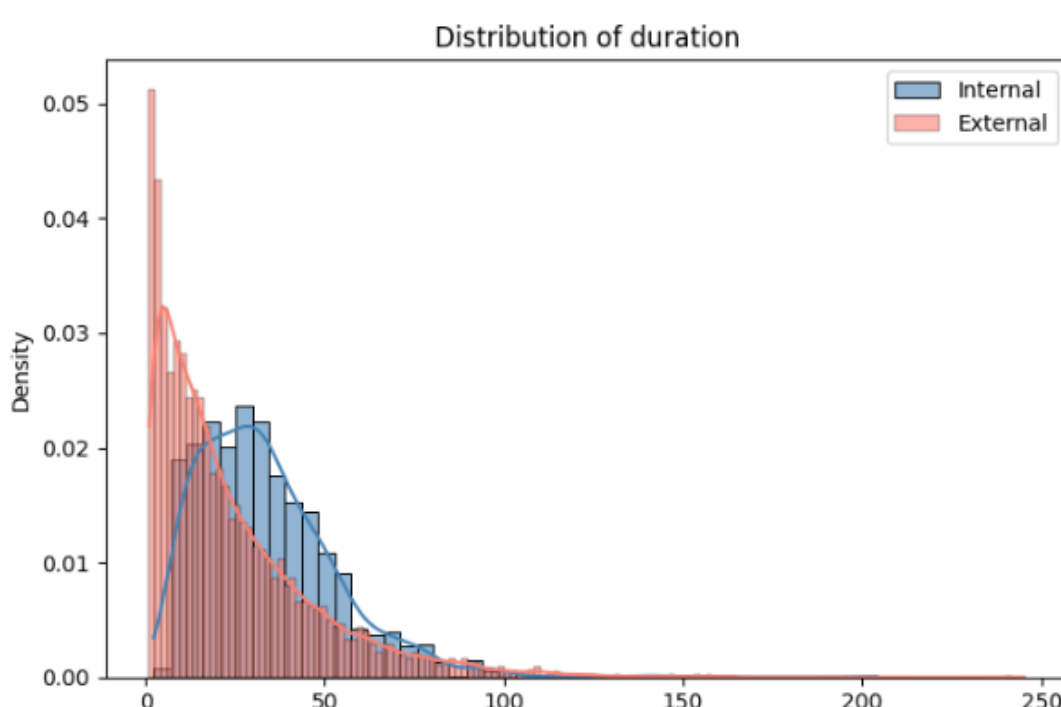
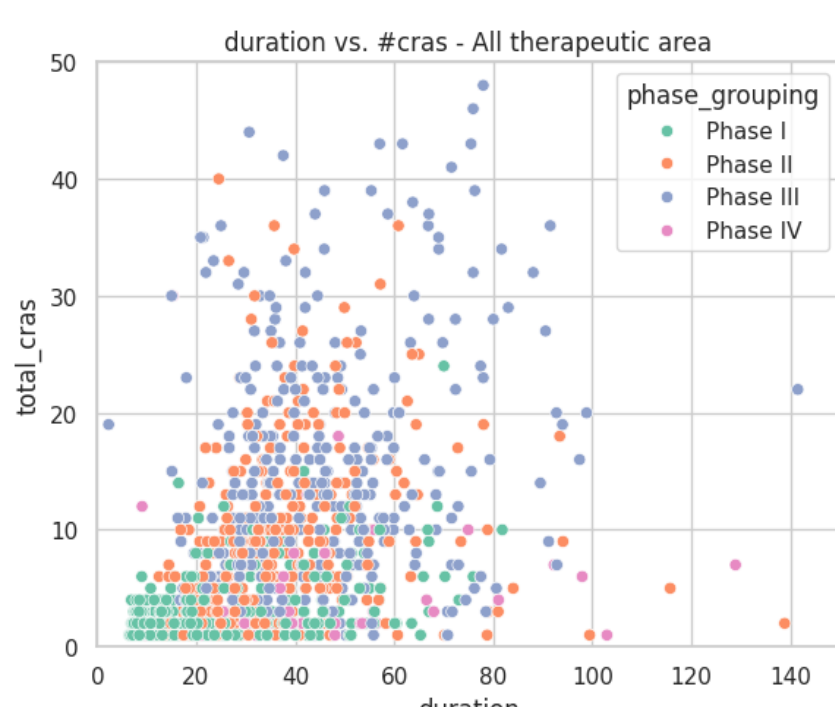
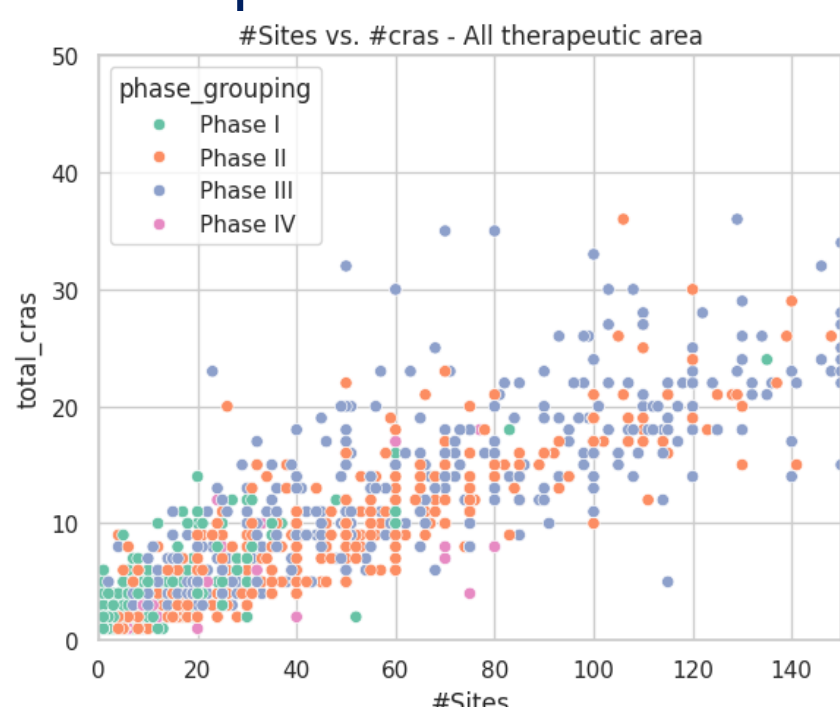
Evaluate project profitability for revenue planning ahead

EXPLORATORY DATA ANALYSIS



External Global Data
GlobalData.

Internal Bidding Data
snowflake



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

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

IMPACT

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