

# The Value of a Dollar:

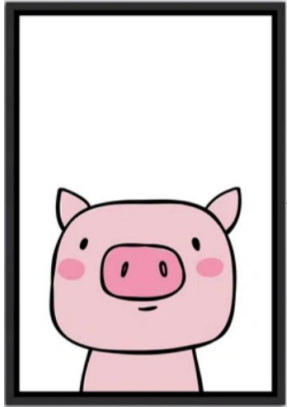
## Optimizing Bidding Strategies for Suppliers



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# How Advertising Works at Wayfair

Want to sell



Bids

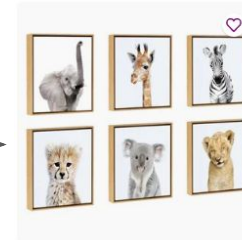
Auction



Placement

Wall Art

Over 50,000 Results



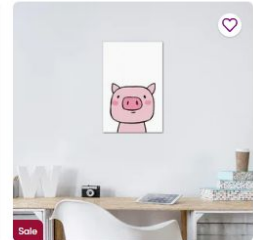
+1 Color

Floater Frame Graphic Art on Canvas  
by Isabelle & Max™

From ~~\$175.99~~ \$152.99

★★★★★ (22)

Free shipping



+13 Colors | 11 Sizes

Pig - Graphic Art  
by East Urban Home

From ~~\$76.00~~ \$39.99

Free shipping

Sponsored

# Inside the Brains of Suppliers

## Wayfair Sponsored Products Suppliers



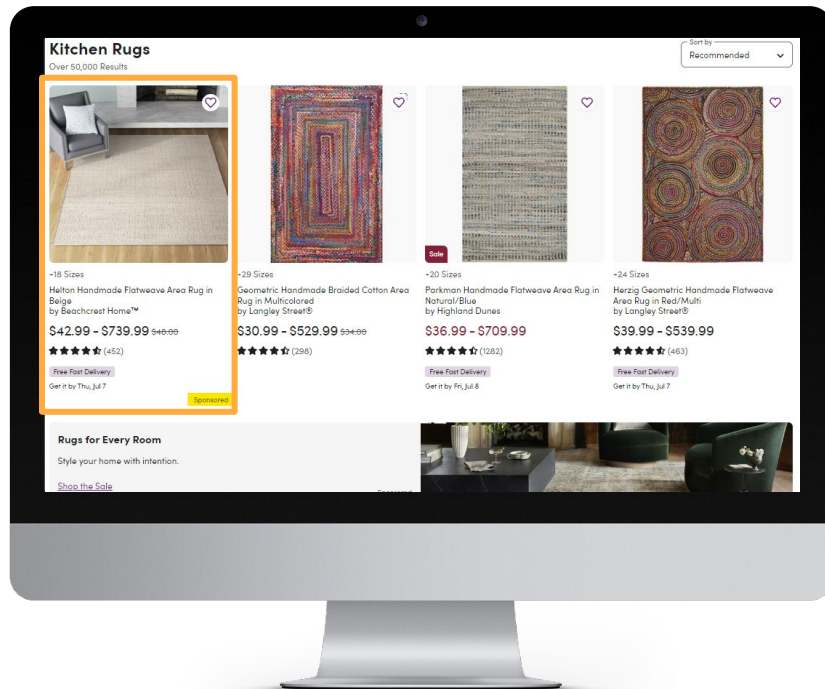
### Supplier A:

*I want to sell as much as I can...*

- How much should I bid?
- What products should I advertise?
- What budget do I need to reach my goal?

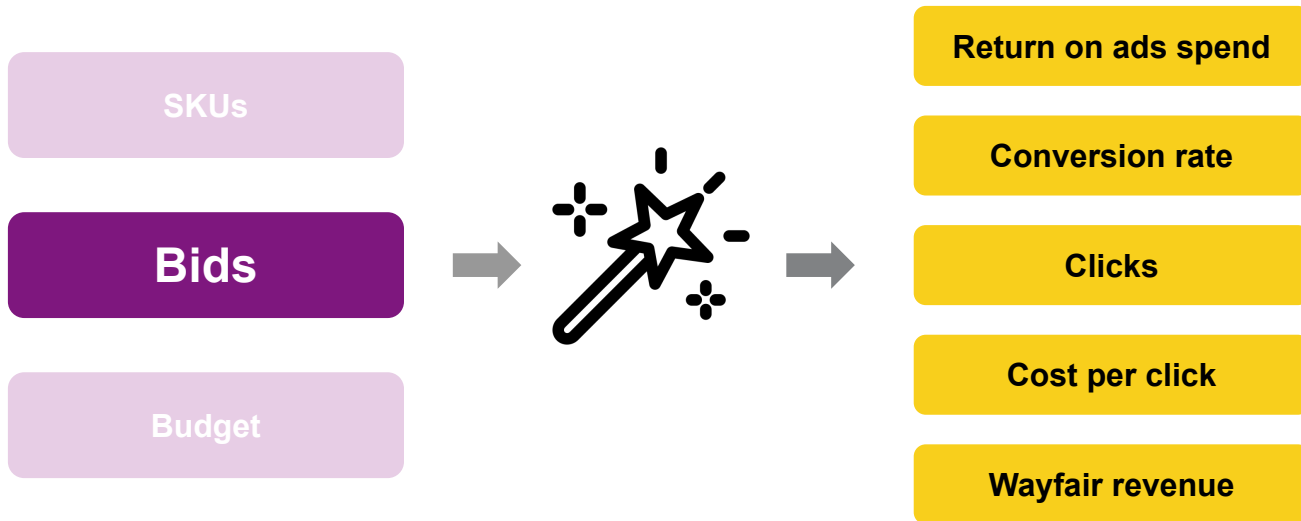
### Supplier B:

*I want to improve our brand awareness...*





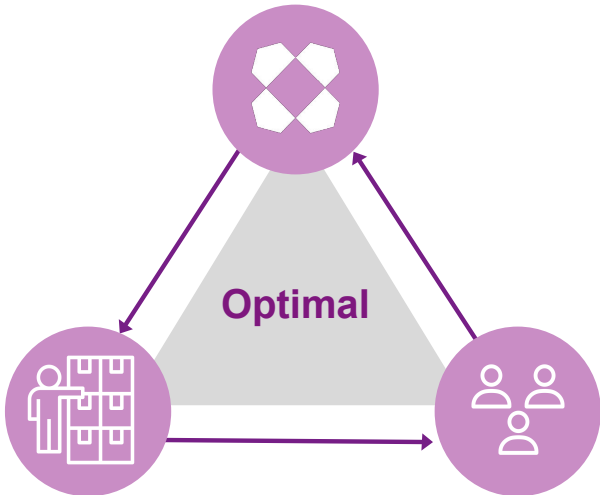
# Problem Overview



*How can we give visibility and insights to Wayfair suppliers to help them launch better advertising campaigns?*

# Our Proposed Approach

Multi-objective mixed-integer optimization model

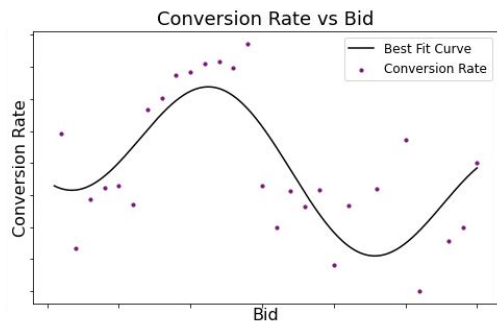


## We need to balance:

- Supplier
- Customer experience
- Wayfair profits

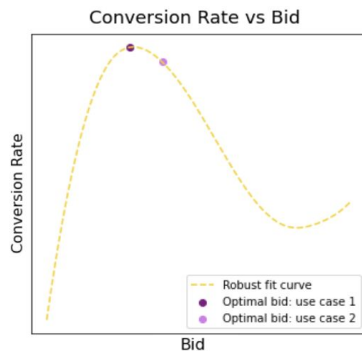
# Methodology

## 1. Prediction



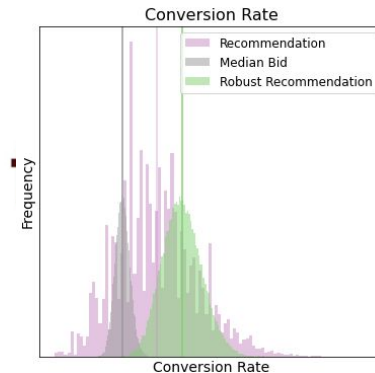
- Fit **curves** to model supplier metrics given bids
- Estimate the **impact** of bid adjustments on supplier KPIs

## 2. Optimization



- Set parameters based on business **constraints** and supplier **objectives**
- Find and justify **recommended** optimal bids

## 3. Validation



- **Evaluate** quality of recommended bids via simulation
- Provide **insights** to Wayfair and suppliers

# Final Deliverables



## Supplier inputs

- Target use case (intended goal)
- List of potential SKUs to advertise

## Wayfair-set parameters

- KPI importance weighing learned from business insights and partners
- Tuned optimization model parameters



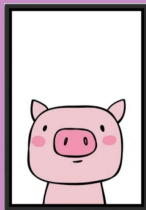
## Model outputs

- Recommended optimal bid both on a class-level and a SKU-level
- Projected KPI outcomes



# Simulated Results

*What would likely happen if you followed our recommendation?*

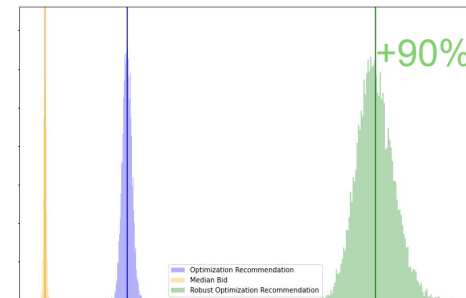


- On average pay **+20%** per click
- Clicks **+90%**
- Conversion rate **+100%**
- Return on Ad Spend **+70%**

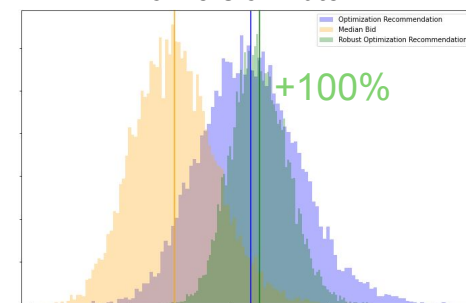


- Revenue from ad clicks **+120%**
- Revenue from sales commission **+250%**

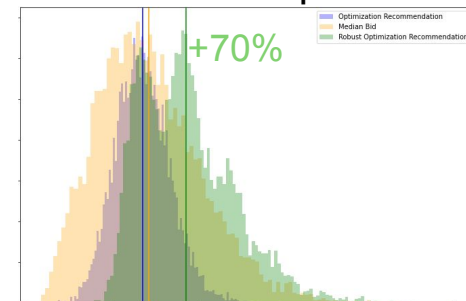
Clicks



Conversion Rate



Return on Ad Spend





# Project Impacts



Improve supplier

## SATISFACTION

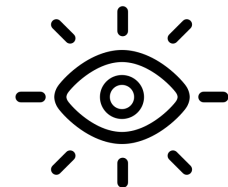
by helping launch better informed and goal-oriented advertising campaigns



Reach a projected Wayfair monthly revenue increase of

## \$350K

in Area Rugs alone by promoting more competitive bids among suppliers and increasing product sales



Provide a generalizable data-driven

## FRAMEWORK

for supplier advertising recommendations

