



Data Analysis Market Access

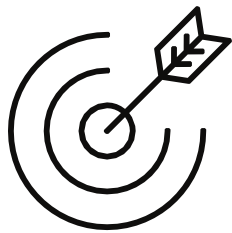


Group K Hackathon Presentation

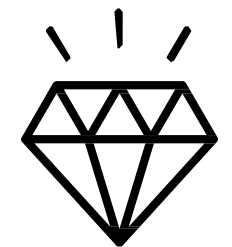
WHO IS BAYER?



Purpose: Science for a Better Life.



Mission: Health for All, Hunger for None.



Core Values (LIFE):
Leadership, Integrity,
Flexibility, Efficiency.



What is our Problem?

What should Bayer prioritize in market access and pricing strategy to maximize market share and annual sales?



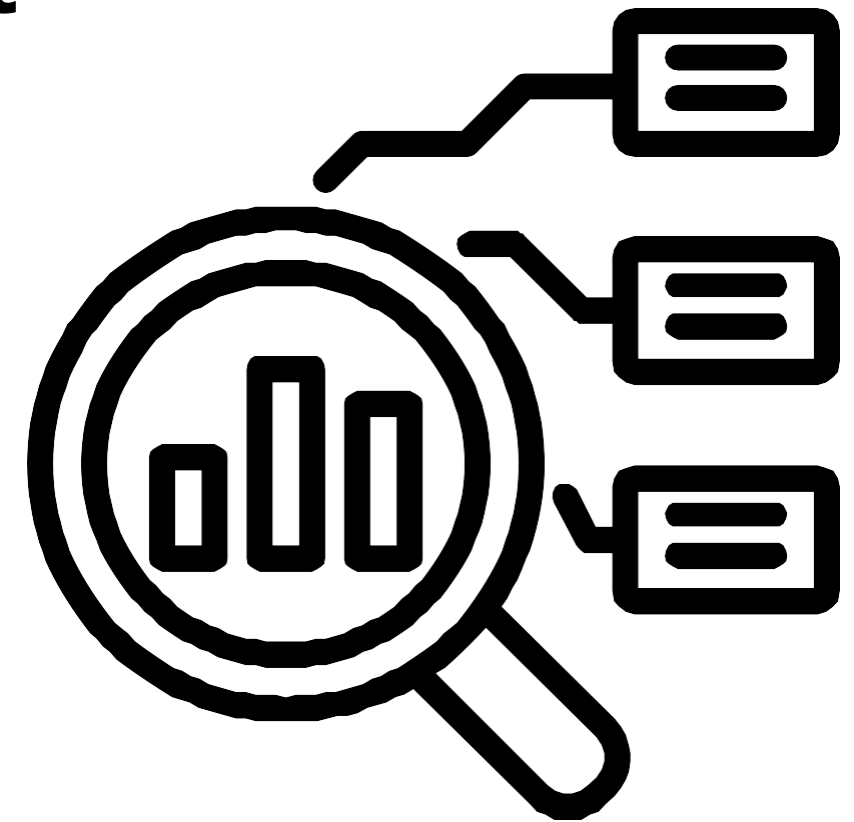
KEY VARIABLES

Context → GDP (gdp_index), policy environment (policy_strictness)

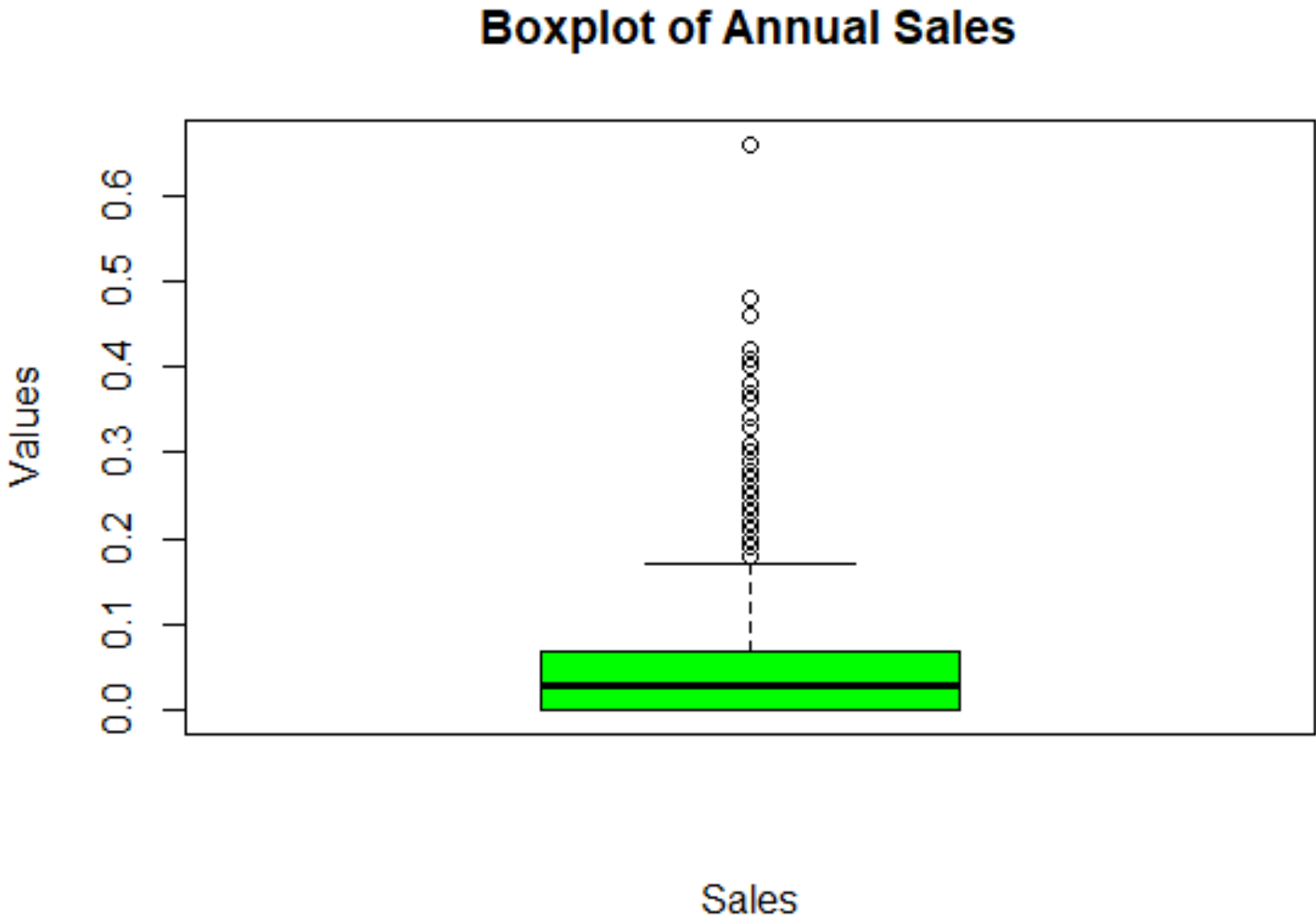
Access → reimbursed (yes/no), reimbursement_delay_months, access_score

Pricing → list_price vs negotiated_price

Performance → market_share, annual_sales_million



Outliers:



Null Values:

| | |
|----------------------------|------|
| | 0 |
| negotiated_price | 790 |
| reimbursed | 0 |
| reimbursement_delay_months | 2891 |
| access_score | 0 |
| market_share | 511 |
| annual_sales_million | 374 |

DECISION TREE CLASSIFICATION

| | precision | recall | f1-score | support |
|---|-----------|--------|----------|---------|
| 0 | 0.00 | 0.00 | 0.00 | 566 |
| 1 | 0.81 | 1.00 | 0.90 | 2434 |

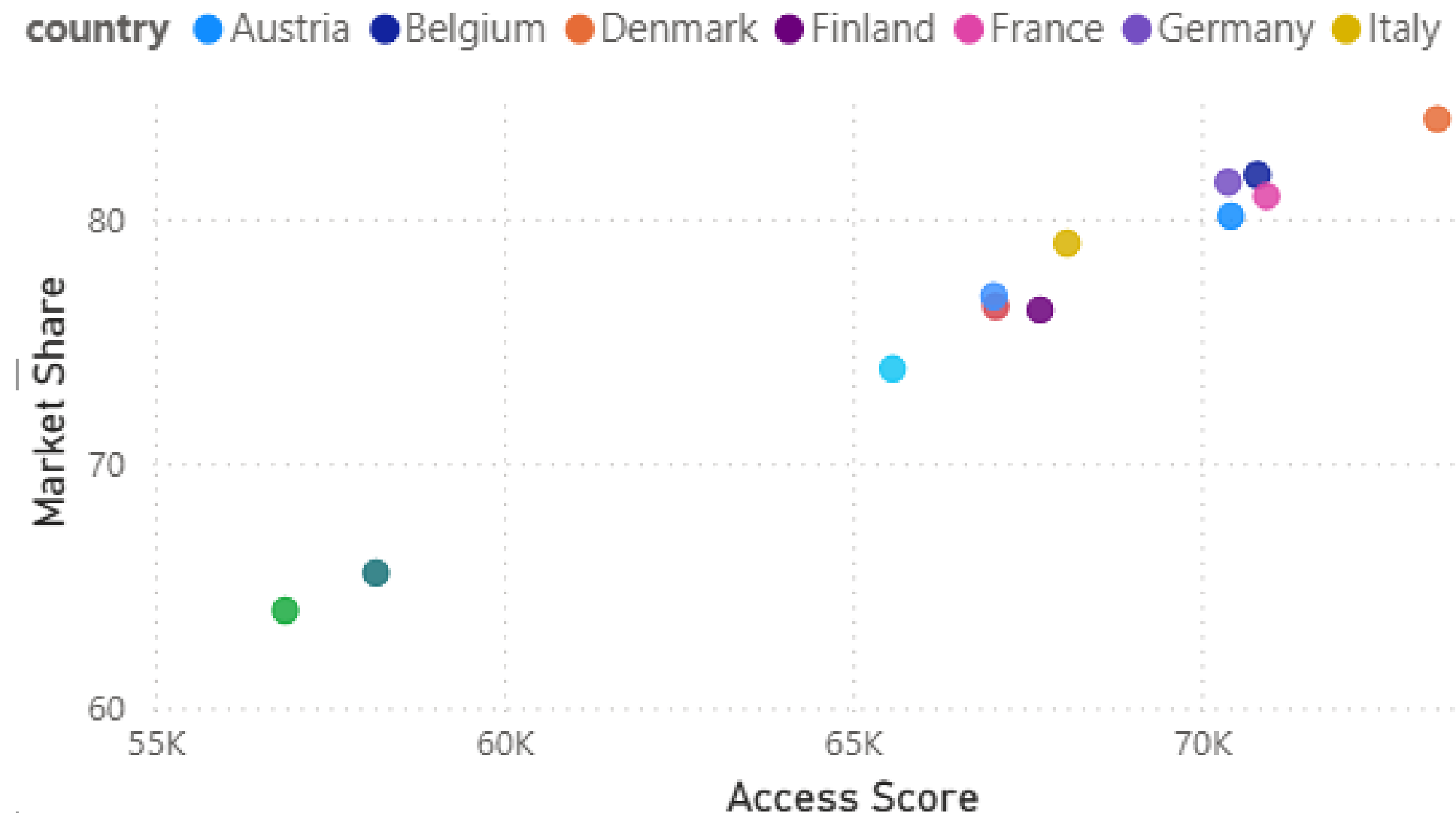
- Reimbursement is common (~81%)
- Policy strictness = dominant driver -> more variation than GDP or price.
- Pricing plays a secondary role.
- Non-reimbursement is hard to predict, decisions depend on more specific or unobserved factors.

***Predictive performance constraint by class imbalance results are explanatory rather than predictive**

- Model explains ~37% of variation
- Access quality= strongest predictor of adoption
- increase in reimbursement delays -> reduced market share
- Pricing & policy strictness don't affect adoption once access secured

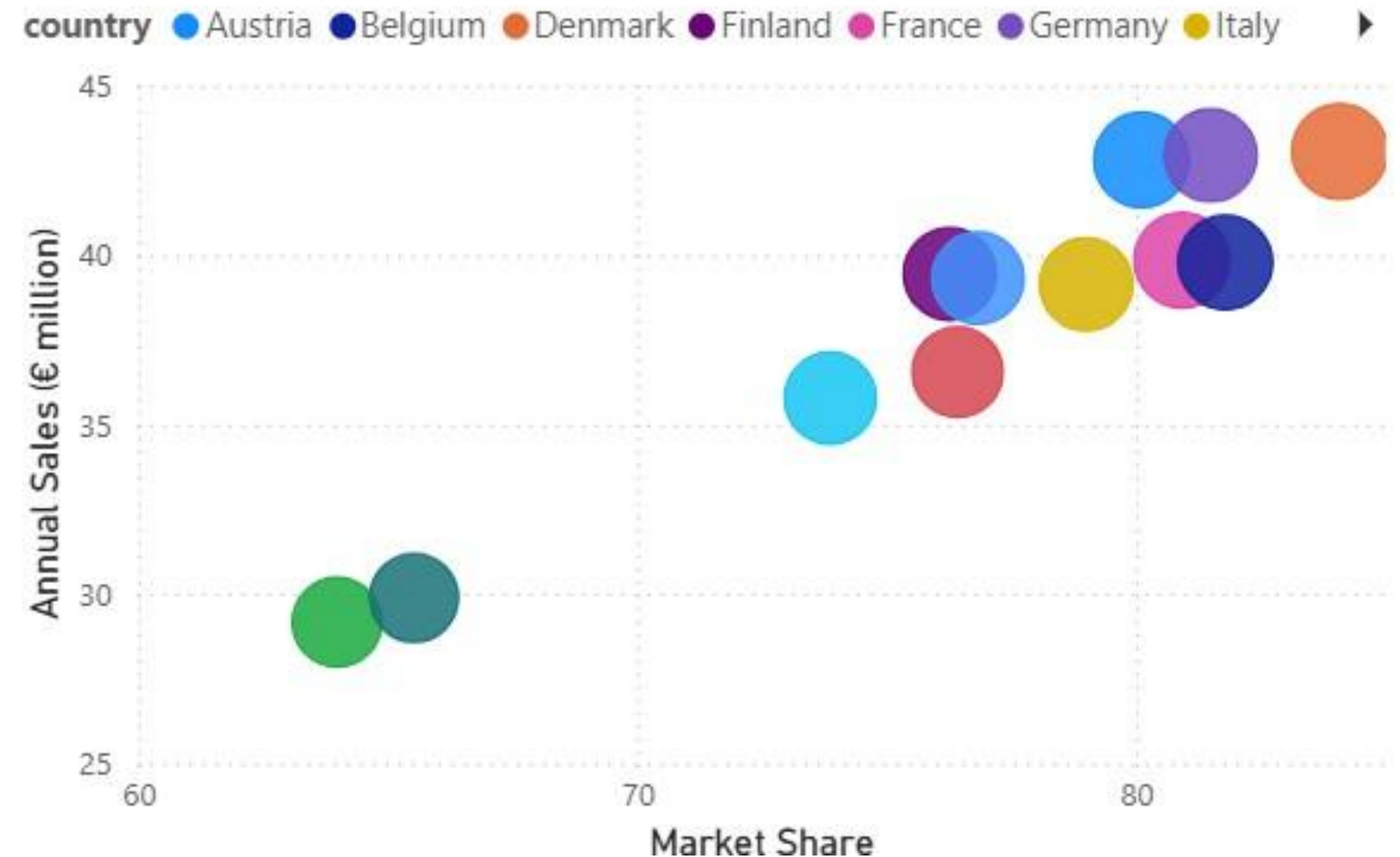
👉 Adoption in Europe is driven by access conditions rather than price.

Market Share vs Access Quality (by Country)



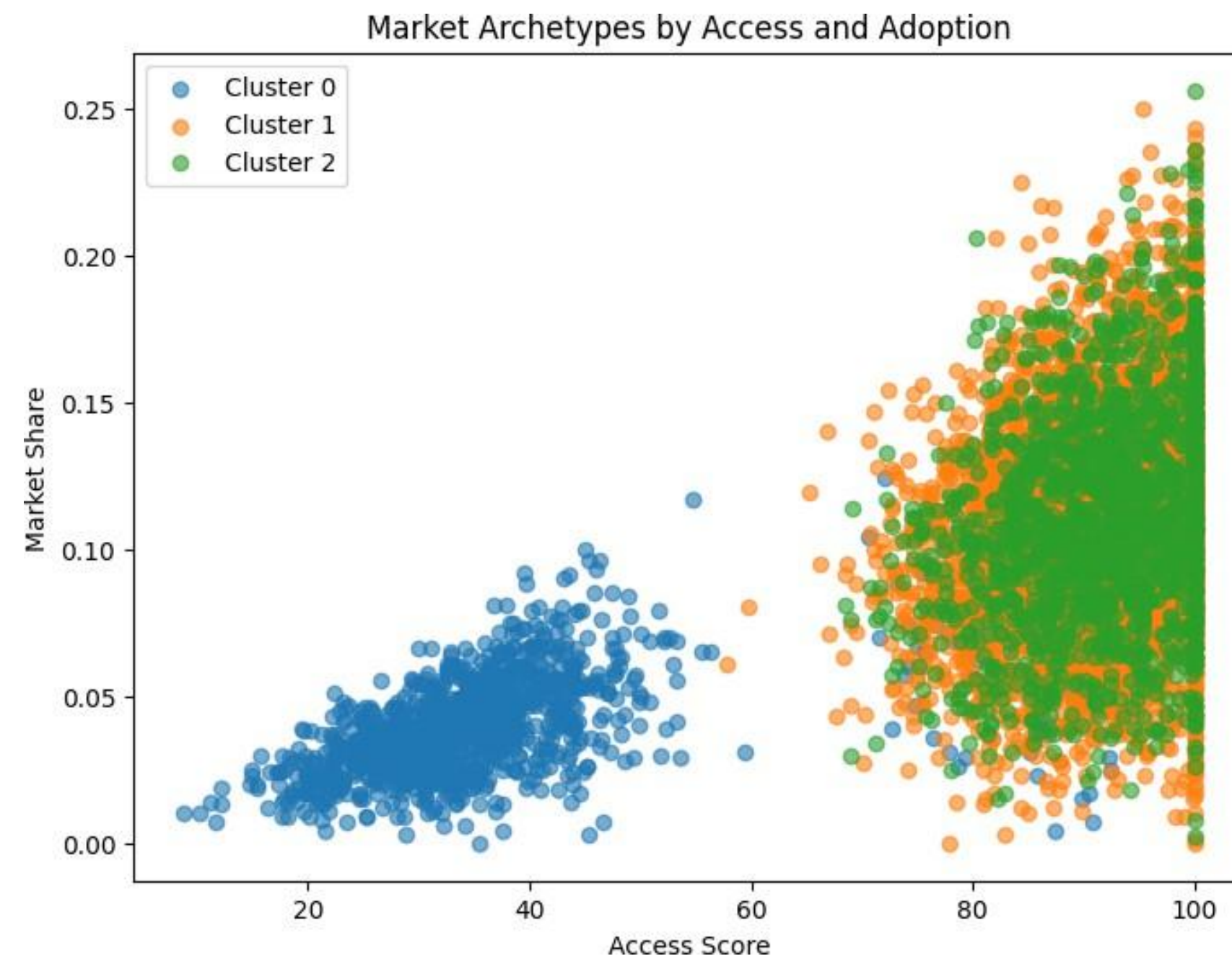
- Model explains **~77% of variation in annual sales**
 - Market share = **dominant driver of revenue**
 - Price directly scales revenue once adoption exists
 - Access variables lose significance once market share is included
- 👉 Access matters because it enables adoption, which then drives revenue.

Annual Sales vs Market Share (Bubble Size = Price)



- **Unsupervised clustering identifies market archetypes:**
(access, adoption, pricing, and market size)
- **Clear divide between access-constrained & access-enabled markets**
- **Access-constrained markets show negligible adoption regardless of price or size**
- **Once access is achieved, markets behave similarly (differences driven by pricing and market size)**

👉 **Clustering reinforces the access
—adoption →revenue mechanism**



INSIGHTS



**Access is the binding
constraint, not price.**



**Access drives market share.
Market share drives sales.**

**Pricing DOES drive revenue
once access is secured.**



**European markets naturally
fall into two strategic realities.**



LIMITATIONS

01

Insufficient & synthtetic Dataset

02

Class imbalance →Phase 1 exploratory analysis

03

Limited depth on payer- and country-level heterogeneity

RECOMMENDATIONS - NEW DRUG LAUNCHES



Access first
(Reimbursement
unlocks adoption)

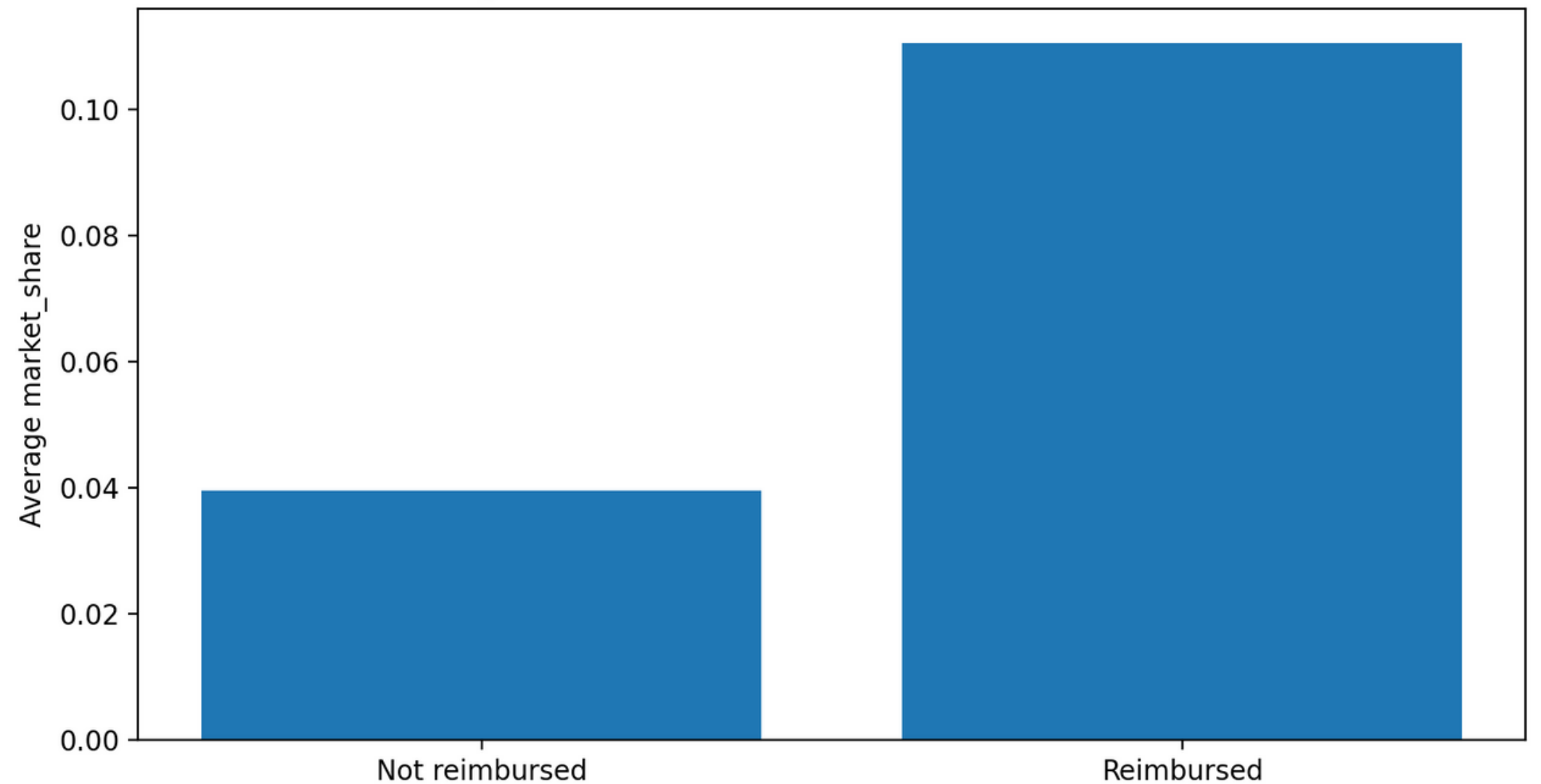


Sequence by Access
× Potential



Price after access
(protect value,
unlock volume)

Average Market Share: Reimbursed vs Not Reimbursed





"Driving change is what matters."