



P R E S E N T E D B Y -
D A R S H M A L I K
S I D : 2 5 4 0 3 5 4 6
G R O U P 2 5

PREDICTING USED SMARTPHONE PRICES

E M P O W E R I N G C O N S U M E R S ,
B U S I N E S S E S &
S U S T A I N A B I L I T Y



P R E S E N T E D B Y -
D A R S H M A L I K
G R O U P 2 5

WHY PREDICTING USED PHONE PRICES IS IMPORTANT

Imagine buying a used phone but not knowing if the price is fair. Our model solves this by offering accurate price predictions.

- 62 million tons of global e-waste was generated in 2022
- Smartphones contribute nearly 20% of this waste
- Inconsistent resale pricing discourages second-hand trade

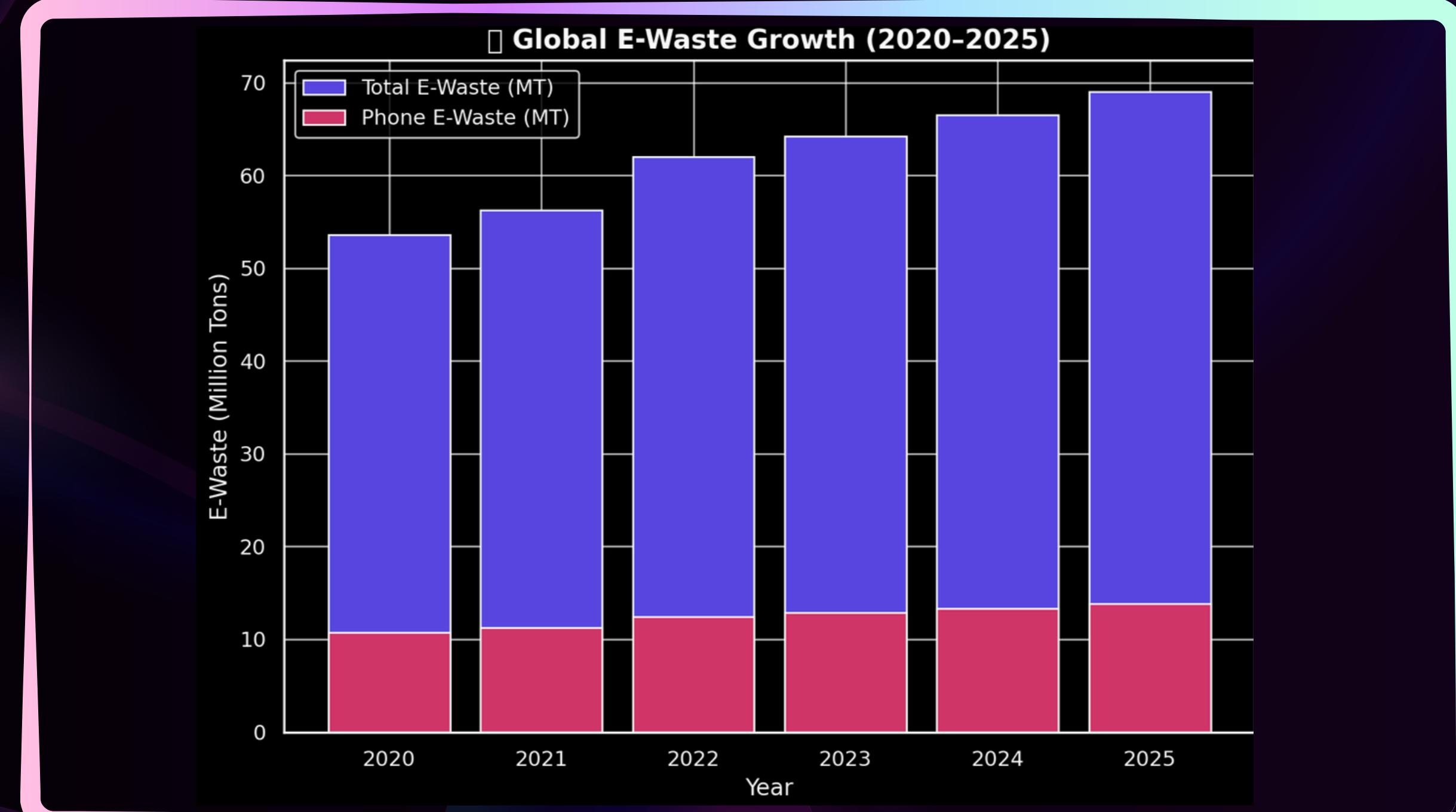
A reliable model can:

- Enable fairer pricing for buyers and sellers
- Build trust in resale markets
- Reduce e-waste by helping devices stay in use longer



P R E S E N T E D B Y -
D A R S H M A L I K
G R O U P 2 5

GLOBAL E-WASTE IS SURGING





WHAT WE SET OUT TO SOLVE

We aim to help buyers and sellers make smarter decisions by predicting the value of a used phone based on its condition and features.

- Identify key phone features that influence second-hand value.
- Develop a data-driven system that predicts fair resale prices.
- Support buyers, sellers, and businesses in making informed decisions.
- Promote a more sustainable tech ecosystem through improved reuse.



P R E S E N T E D B Y -
D A R S H M A L I K
G R O U P 2 5

THE DATASET



Characteristic

Real-world dataset with device characteristics and resale values.

Target Variable

Normalized resale price (0-1 scale)

13 features per device

- Brand, screen size, RAM, storage, battery
- 4G/5G support, camera specs, days used, release year
- New device price (for normalization)



WHAT'S IN OUR DATASET?

Our dataset includes detailed information about each phone's specs, performance, and usage history.

These features help us understand what makes a used phone more valuable in the second-hand market.

Key Dataset Features

Device Specs

- device_brand
- os
- screen_size

Performance

- internal_memory
- ram
- battery

Cameras

- front_camera_mp
- back_camera_mp

Connectivity

- 4g
- 5g

Usage / Age

- release_year
- days_used

Pricing

- normalized_new_price
- normalized_used_price (target)



P R E S E N T E D B Y -
D A R S H M A L I K
G R O U P 2 5

KEY INSIGHTS FROM DATA EXPLORATION



Price Trend

Resale price declines as days used increase. The more a phone is used, the less it's worth. Resale price declines significantly with usage days.

Observations

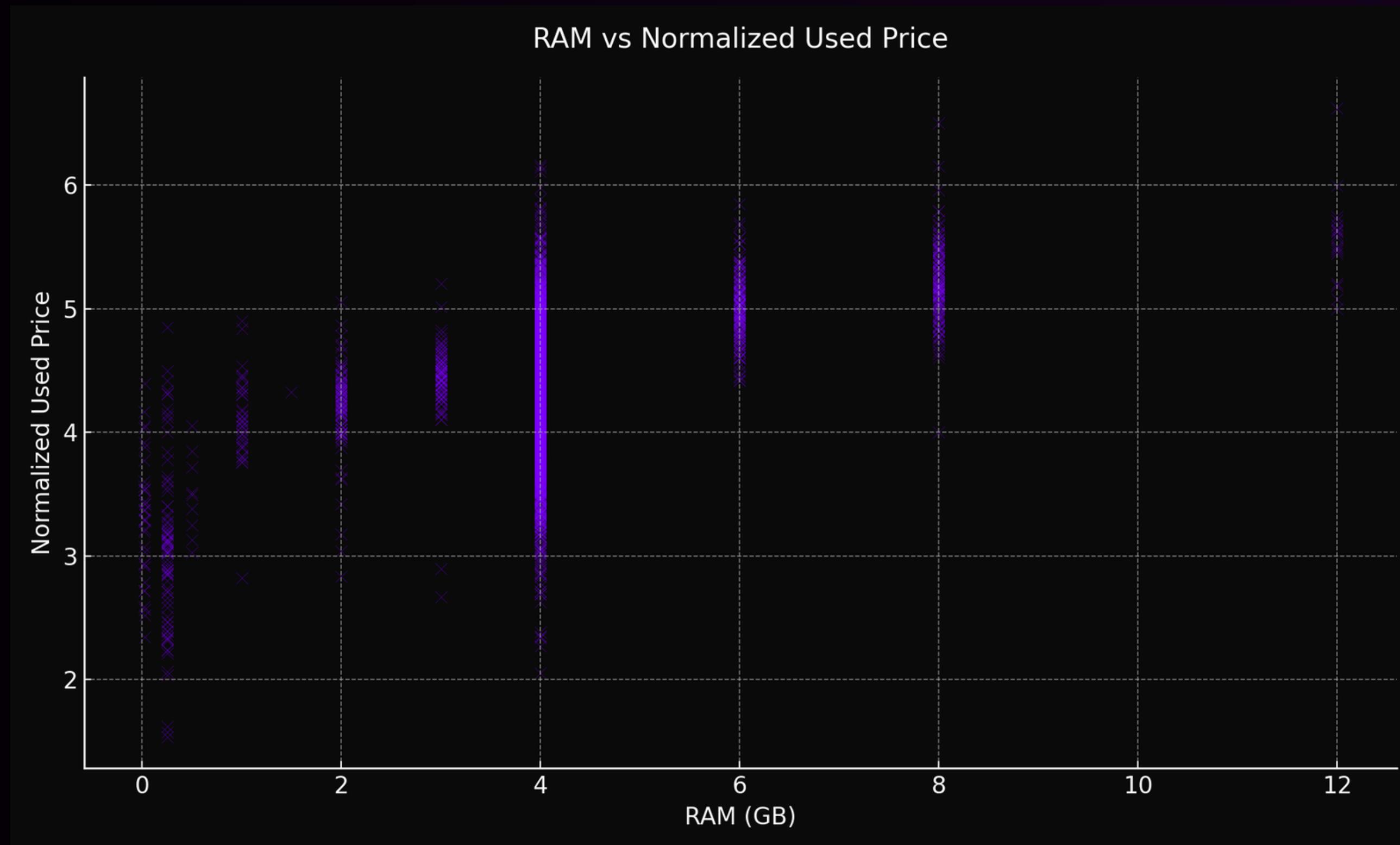
Devices with higher specs (RAM, battery, etc.) and newer models retain more value.

Branding

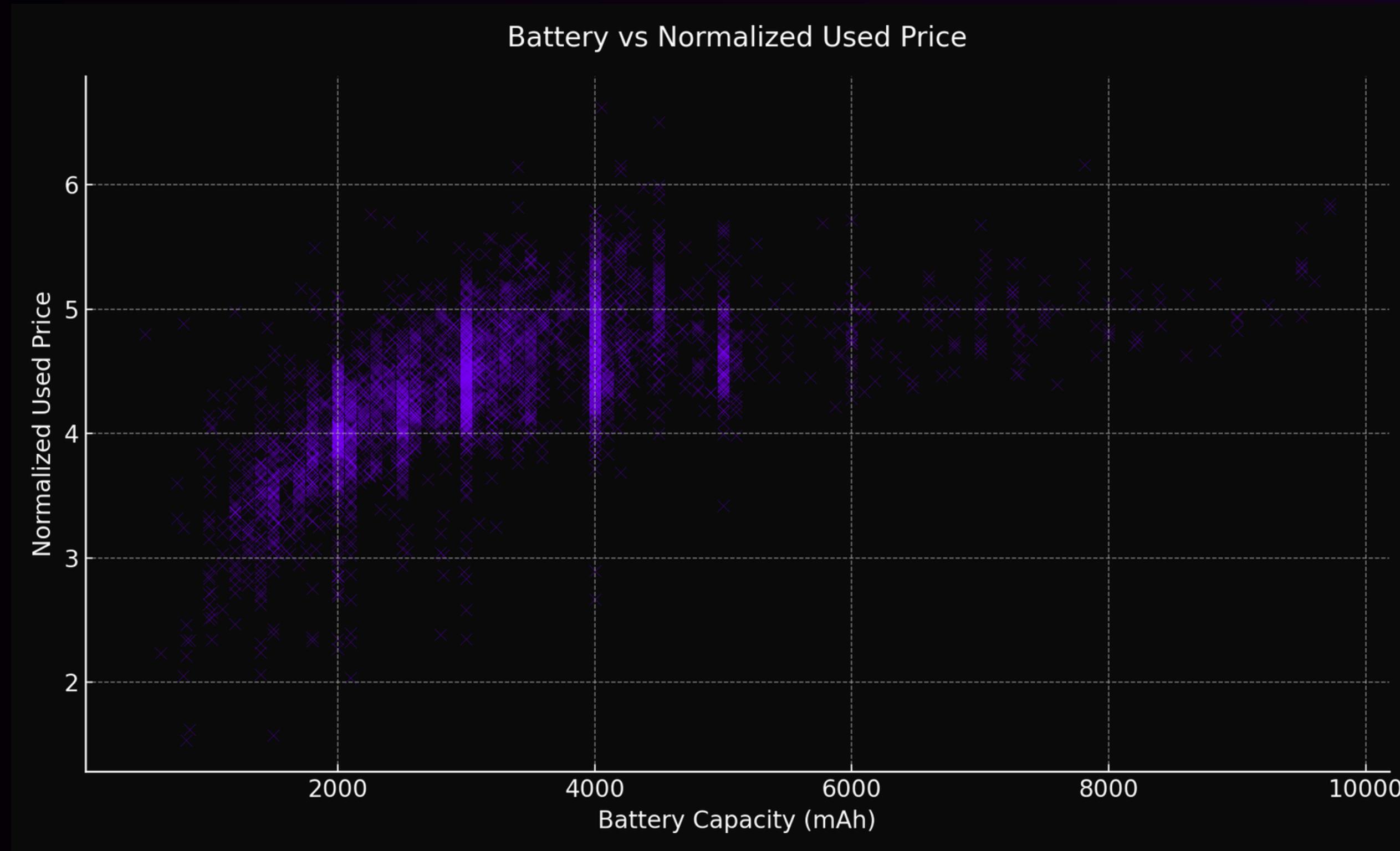
Apple and other premium brands show slower depreciation.

“Would you pay the same price for a phone used for 2 months vs 2 years?”

RAM & Price: Value Retention



Battery Health and Resale Trends



Buyers perceive higher battery capacity as a sign of better device health and longevity.



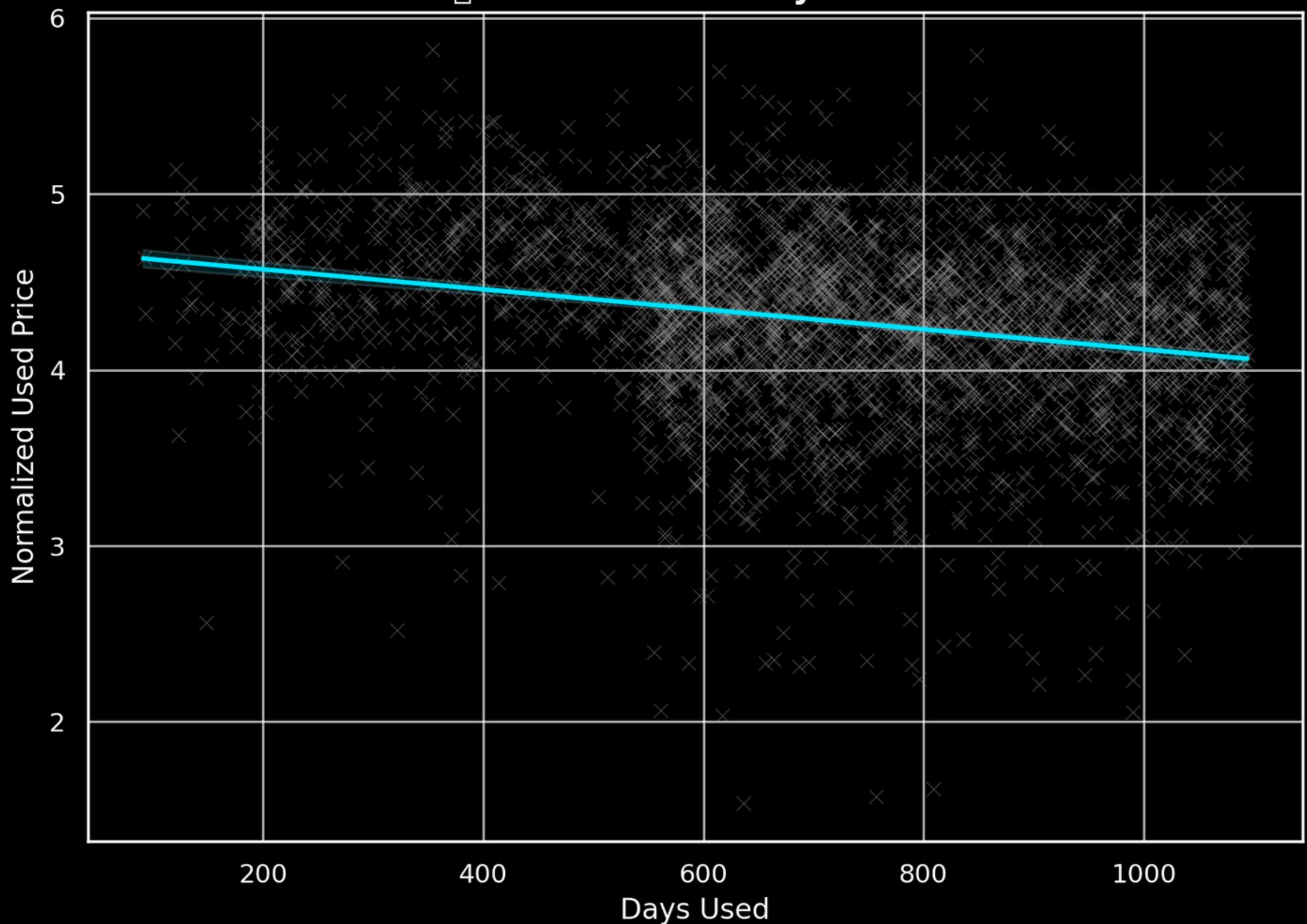
P R E S E N T E D B Y -
D A R S H M A L I K
G R O U P 2 5

USAGE DURATION VS PRICE

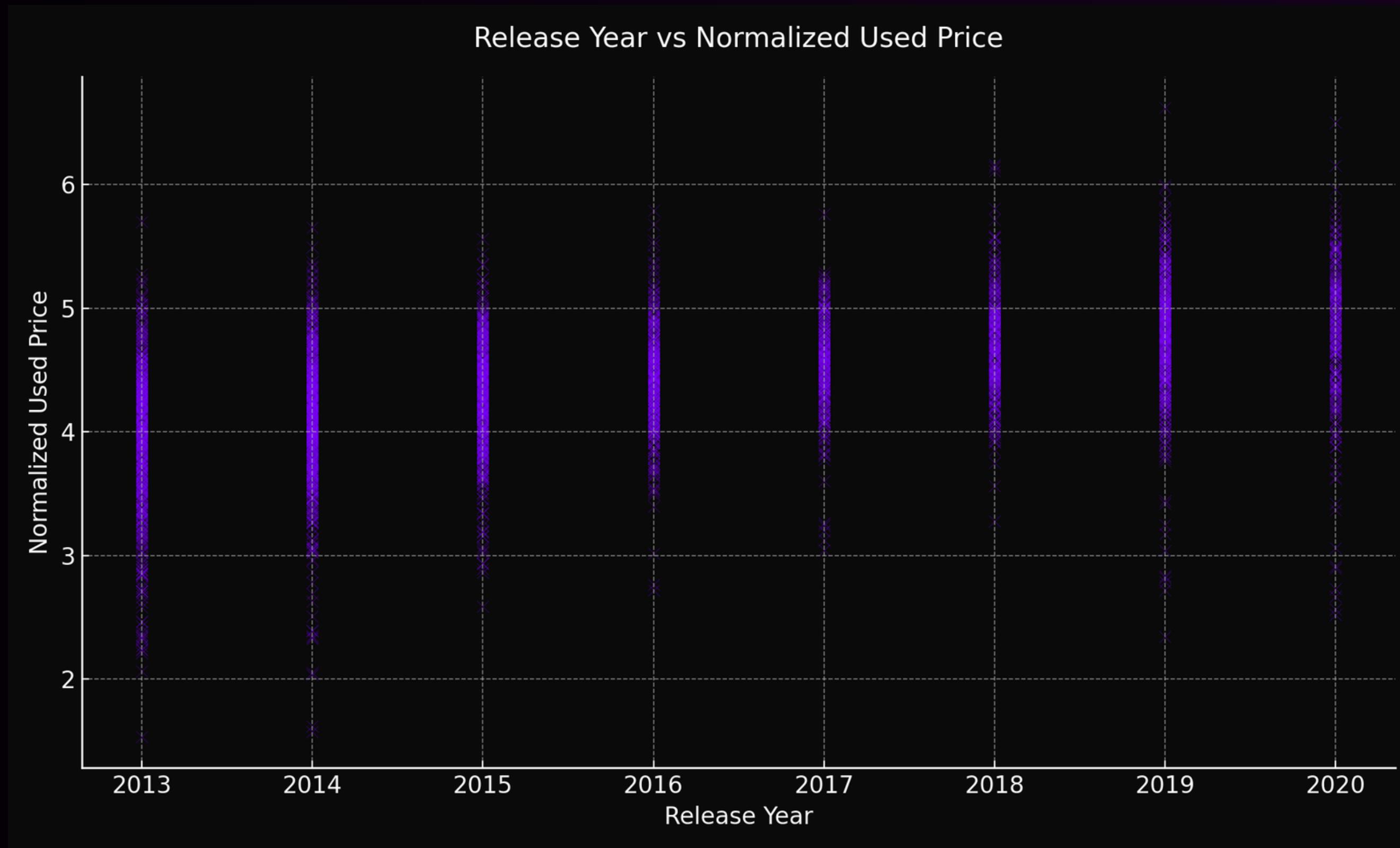
The longer a phone has been used, the lower its resale value.

Most price drops happen within the first few hundred days, showing that time heavily affects second-hand pricing.

Used Price vs Days Used



Release Year vs Resale Value



Newer phones command higher prices, confirming the time-value decay in the resale market.



KEY FEATURES

Top predictors

Release year and days used are the top predictors

Performance

Battery capacity and RAM show strong influence

Impacting factors

- Brand plays a noticeable role in depreciation rate
- Front and back camera specs have weaker or mixed impact



CHALLENGES & DATA LIMITATIONS



Some records had missing or inconsistent values

Outliers in features like days used and camera megapixels

Brand/model bias risk: could cause overfitting in modeling

Feature gaps: no data on software support or repair history, which affect real-world value



P R E S E N T E D B Y -
D A R S H M A L I K
G R O U P 2 5



REAL-WORLD APPLICATIONS

- Trade-in value estimators (used by Apple, Samsung, etc.)
- Price comparison tools for platforms like eBay and Back Market
- Support smarter pricing in refurbished phone markets
- Helps reduce waste and promote reuse in a sustainable tech economy

For Example: Apple's Trade-In program uses pricing models to encourage customers to return old phones for reuse or recycling



REAL-WORLD APPLICATIONS

Our model can power trade-in tools, marketplace pricing, and reseller platforms, helping users get fair prices while supporting a more sustainable tech ecosystem.

Real-World Applications

□ Consumer Price Check

Instant fair pricing for users selling phones

□ Retail Trade-In Tool

Support automated trade-in estimators

□ Market Analytics

Guide resellers on competitive pricing

□ Sustainability Impact

Reduce e-waste by encouraging reuse



P R E S E N T E D B Y -
D A R S H M A L I K
G R O U P 2 5

SUMMARY & TAKEAWAYS

- Our model makes it easy to estimate how much your used phone is worth
- Age, usage, battery, and RAM are the biggest price drivers
- Helps people make fairer, smarter decisions when buying or selling
- Supports recycling and reuse — reducing tech waste and promoting sustainability





P R E S E N T E D B Y -
D A R S H M A L I K
S I D : 2 5 4 0 3 5 4 6
G R O U P 2 5

THANK YOU!