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ĐẠI HỌC BÁCH KHOA HÀ NỘI
HANOI UNIVERSITY OF SCIENCE AND TECHNOLOGY

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Google Play Store App Rating Analysis

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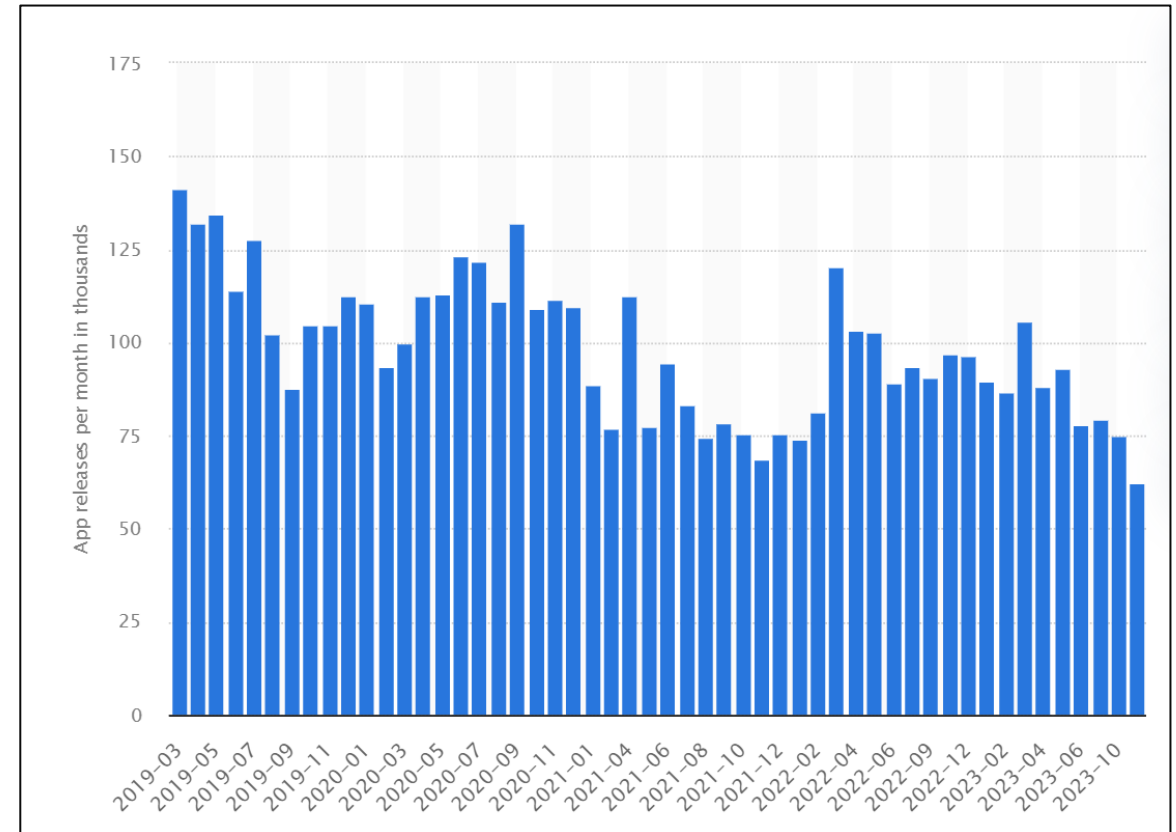
4 Conclusion





Google Play

Average number of new Android app releases via Google Play per month from March 2019 to November 2023



Source: <https://www.statista.com/statistics/1020956/android-app-releases-worldwide/>

Preparing dataset

The data was collected in August 2018, there are approximately 10,000 entries in this dataset.

	A	B	C	D	E	F	G	H	I	J	K	L	M
1	App	Category	Rating	Reviews	Size	Installs	Type	Price	Content Rating	Genres	Last Updated	Current Ver	Android Ver
2	Photo Edit	ART_AND_DESIGN	4.1	159	19M	10,000+	Free	0	Everyone	Art & Design	7-Jan-18	1.0.0	4.0.3 and up
3	Coloring b	ART_AND_DESIGN	3.9	967	14M	500,000+	Free	0	Everyone	Art & Design;Pretend Play	15-Jan-18	2.0.0	4.0.3 and up
4	U Launche	ART_AND_DESIGN	4.7	87510	8.7M	5,000,000+	Free	0	Everyone	Art & Design	1-Aug-18	1.2.4	4.0.3 and up
5	Sketch - D	ART_AND_DESIGN	4.5	215644	25M	50,000,000+	Free	0	Teen	Art & Design	8-Jun-18	Varies with device	4.2 and up
6	Pixel Draw	ART_AND_DESIGN	4.3	967	2.8M	100,000+	Free	0	Everyone	Art & Design;Creativity	20-Jun-18	1.1	4.4 and up
7	Paper flow	ART_AND_DESIGN	4.4	167	5.6M	50,000+	Free	0	Everyone	Art & Design	26-Mar-17	1	2.3 and up
8	Smoke Eff	ART_AND_DESIGN	3.8	178	19M	50,000+	Free	0	Everyone	Art & Design	26-Apr-18	1.1	4.0.3 and up
9	Infinite Pa	ART_AND_DESIGN	4.1	36815	29M	1,000,000+	Free	0	Everyone	Art & Design	14-Jun-18	6.1.61.1	4.2 and up
10	Garden Co	ART_AND_DESIGN	4.4	13791	33M	1,000,000+	Free	0	Everyone	Art & Design	20-Sep-17	2.9.2	3.0 and up
11	Kids Paint	ART_AND_DESIGN	4.7	121	3.1M	10,000+	Free	0	Everyone	Art & Design;Creativity	3-Jul-18	2.8	4.0.3 and up
12	Text on Ph	ART_AND_DESIGN	4.4	13880	28M	1,000,000+	Free	0	Everyone	Art & Design	27-Oct-17	1.0.4	4.1 and up
13	Name Art	ART_AND_DESIGN	4.4	8788	12M	1,000,000+	Free	0	Everyone	Art & Design	31-Jul-18	1.0.15	4.0 and up
14	Tattoo Na	ART_AND_DESIGN	4.2	44829	20M	10,000,000+	Free	0	Teen	Art & Design	2-Apr-18	3.8	4.1 and up
15	Mandala C	ART_AND_DESIGN	4.6	4326	21M	100,000+	Free	0	Everyone	Art & Design	26-Jun-18	1.0.4	4.4 and up
16	3D Color P	ART_AND_DESIGN	4.4	1518	37M	100,000+	Free	0	Everyone	Art & Design	3-Aug-18	1.2.3	2.3 and up
17	Learn To C	ART_AND_DESIGN	3.2	55	2.7M	5,000+	Free	0	Everyone	Art & Design	6-Jun-18	NaN	4.2 and up
18	Photo Des	ART_AND_DESIGN	4.7	3632	5.5M	500,000+	Free	0	Everyone	Art & Design	31-Jul-18	3.1	4.1 and up
19	350 Diy Ro	ART_AND_DESIGN	4.5	27	17M	10,000+	Free	0	Everyone	Art & Design	7-Nov-17	1	2.3 and up
20	FlipaClip -	ART_AND_DESIGN	4.3	194216	39M	5,000,000+	Free	0	Everyone	Art & Design	3-Aug-18	2.2.5	4.0.3 and up
21	ibis Paint X	ART_AND_DESIGN	4.6	224399	31M	10,000,000+	Free	0	Everyone	Art & Design	30-Jul-18	5.5.4	4.1 and up
22	Logo Make	ART_AND_DESIGN	4	450	14M	100,000+	Free	0	Everyone	Art & Design	20-Apr-18	4	4.1 and up

- Number of columns: 13

- Number of rows: 10841

Preparing dataset

Data cleaning and processing:

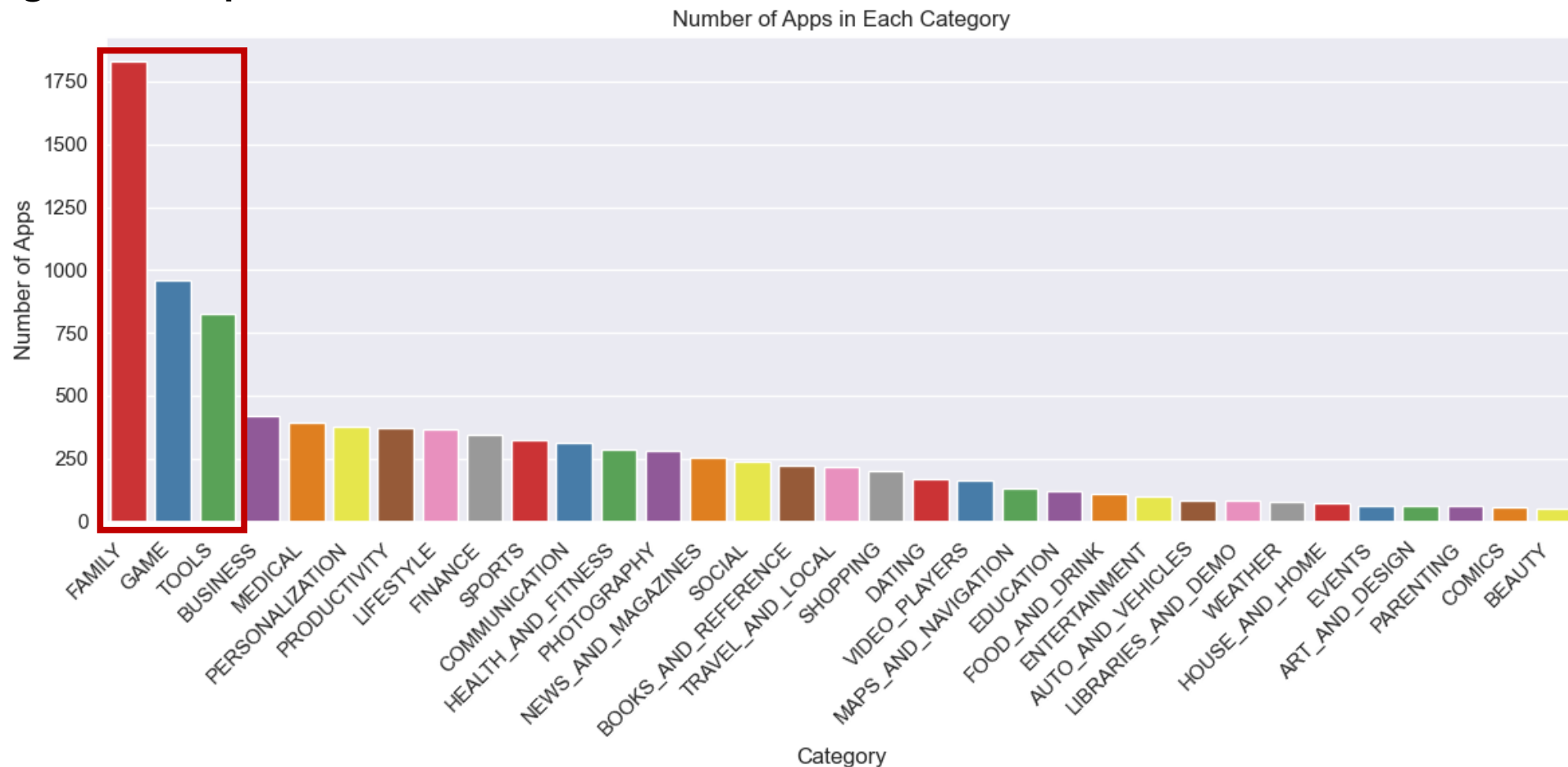
- Remove rows with null values → The number of apps in the dataset: 9659
- Convert all app sizes to MB.
- Remove '+' from 'Number of Installs' to make it numeric.

→ The final dataset after data processing:

	App	Category	Rating	Reviews	Size	Installs	Type	Price	Content Rating	Genres	Last Updated	Current Ver	Android Ver
3440	ADW Launcher 2	PERSONALIZATION	4.3	181399	NaN	10000000.0	Free	0.0	Everyone	Personalization	December 8, 2017	Varies with device	Varies with device
5431	virtual lover 3D	FAMILY	4.6	5195	64.0	100000.0	Free	0.0	Mature 17+	Entertainment	April 18, 2018	1.3	4.1 and up
5339	Koran Read &MP3 30 Juz Offline	BOOKS_AND_REFERENCE	4.8	29551	67.0	1000000.0	Free	0.0	Everyone	Books & Reference	April 6, 2018	1.0.7	4.0.3 and up
6418	あなカレ【BL】無料ゲーム	FAMILY	4.7	6073	8.5	100000.0	Free	0.0	Mature 17+	Simulation	February 25, 2018	4.2.2	2.3 and up
405	mysms SMS Text Messaging Sync	COMMUNICATION	4.3	37320	8.4	1000000.0	Free	0.0	Everyone	Communication	July 30, 2018	6.5.1	4.0.3 and up
5814	Dead Zombie Evil Killer:Axe	GAME	3.9	71	52.0	10000.0	Free	0.0	Teen	Action	December 1, 2016	1.1	2.3 and up
727	Flippy Campus - Buy & sell on campus at a disc...	EDUCATION	4.0	889	7.4	500000.0	Free	0.0	Everyone	Education	March 9, 2018	2.2.4	4.2 and up

Exploratory Data Analysis

Categorical frequencies

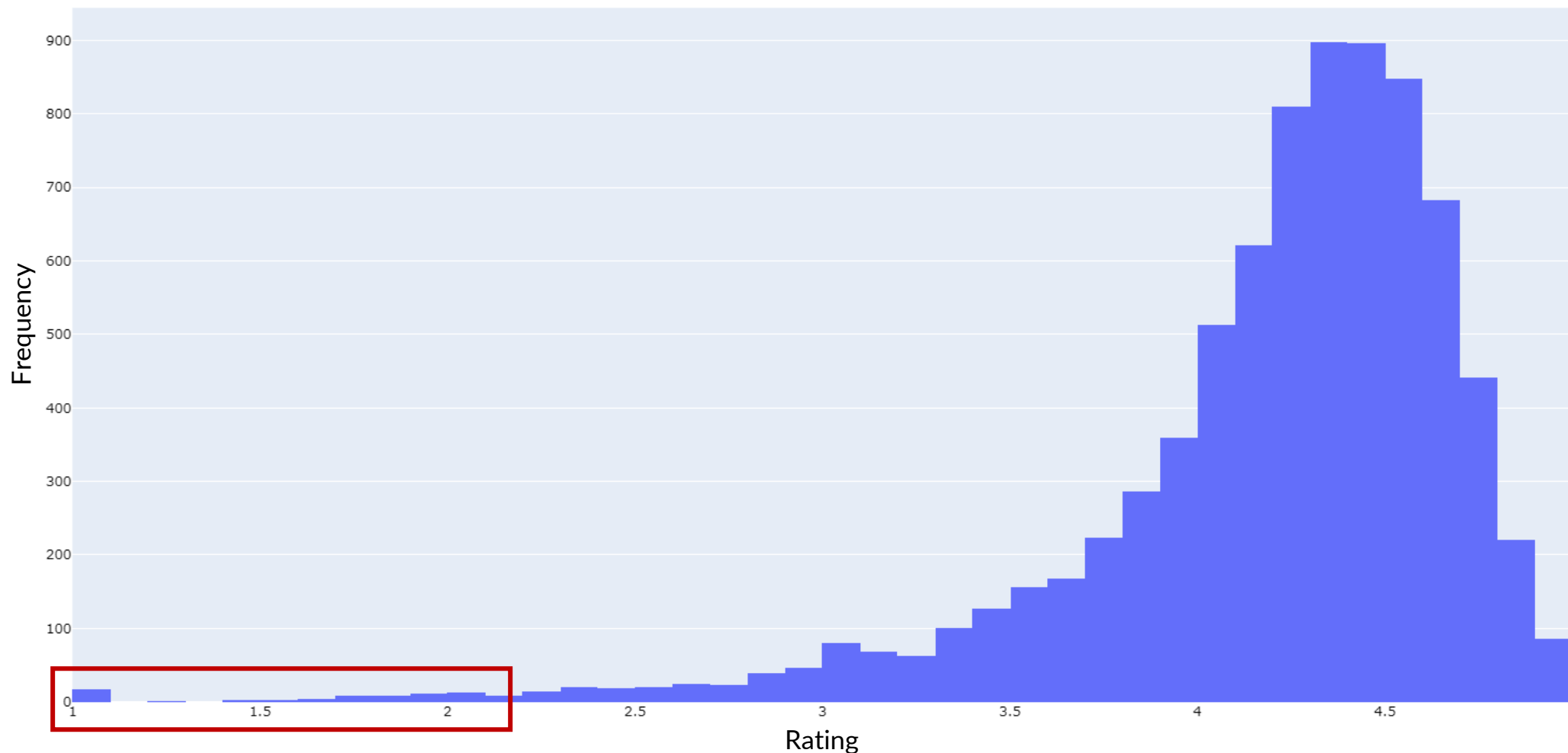


➔ Applications in the 'Family,' 'Game,' or 'Tools' categories are highly competitive in the market.

Exploratory Data Analysis

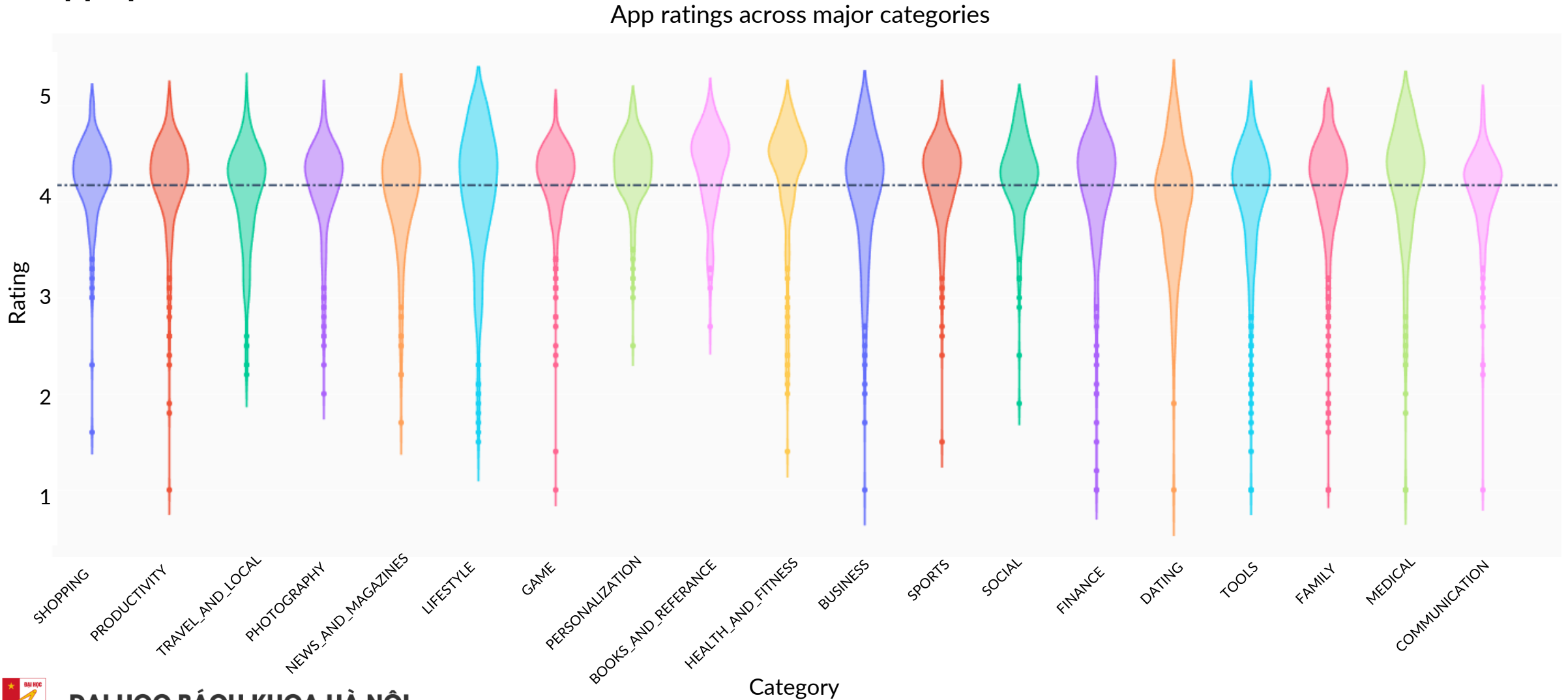
Average rating of apps = 4.17

Overall Rating Distribution



Exploratory Data Analysis

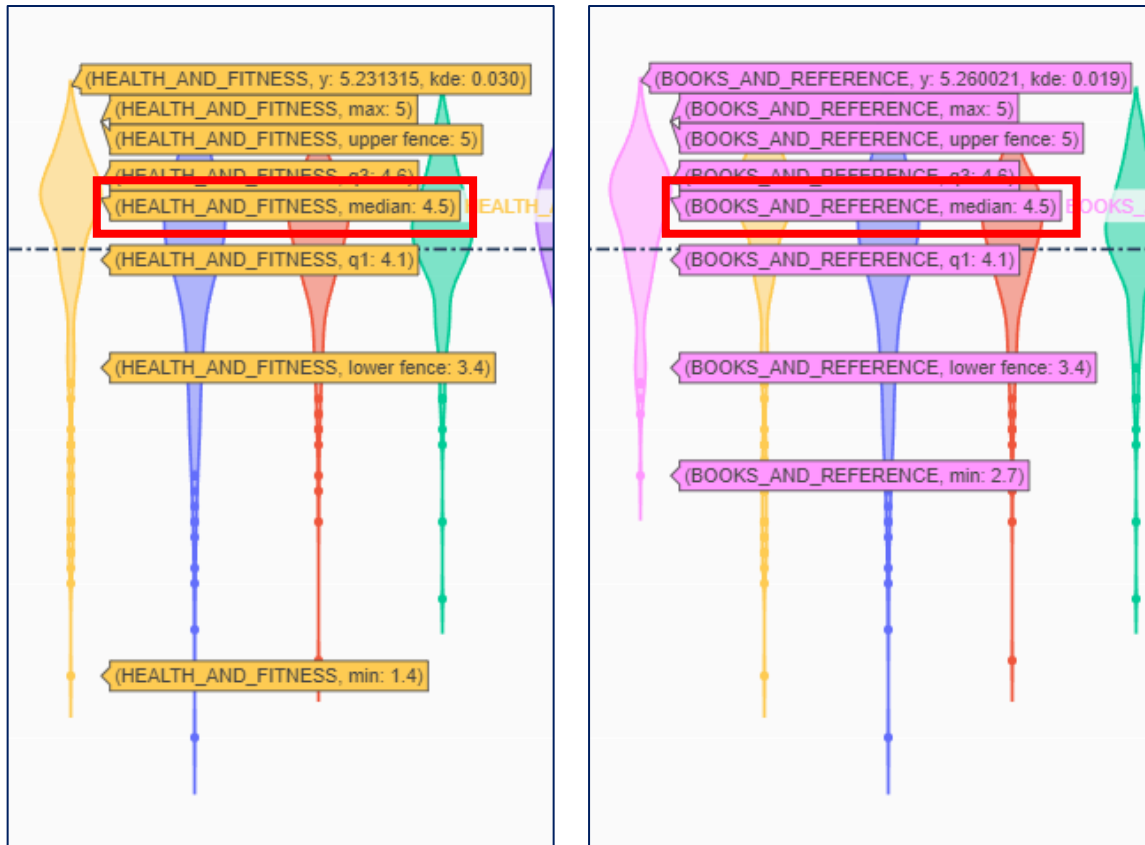
Apps performance



Exploratory Data Analysis

Apps performance

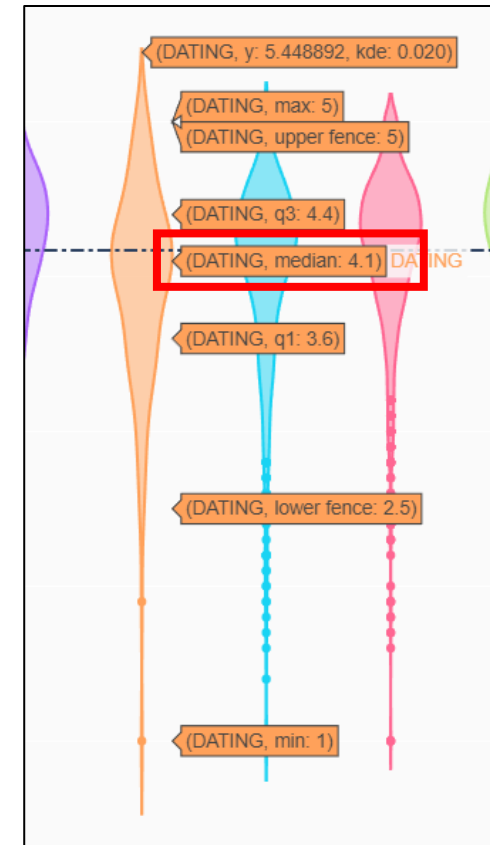
The categories have the highest-quality apps,
50% apps having a rating greater than 4.5



HEALTH_AND_FITNESS

BOOKS_AND_REFERENCE

50% dating category have a rating
lesser than the average rating

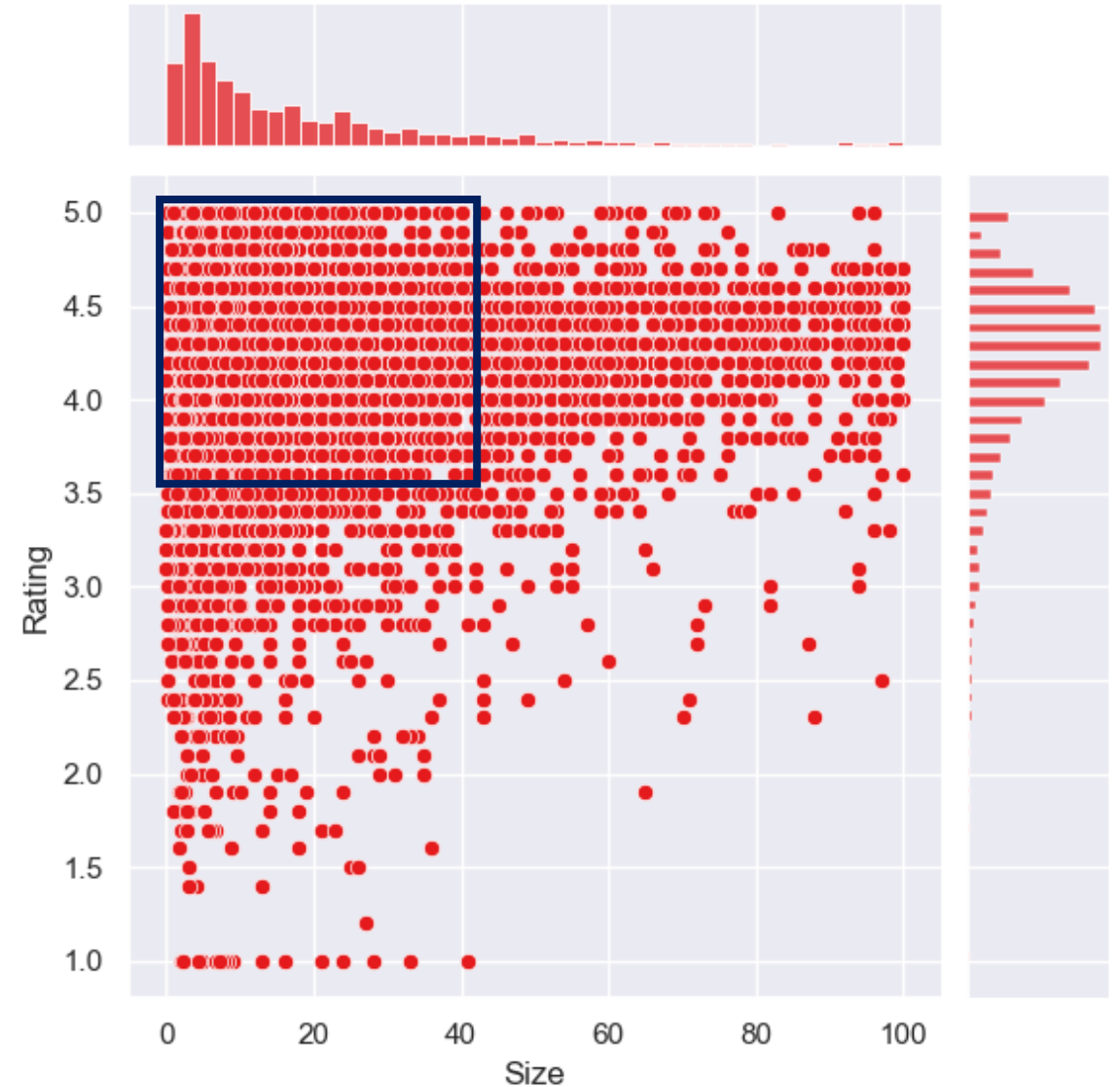


DATING

Exploratory Data Analysis

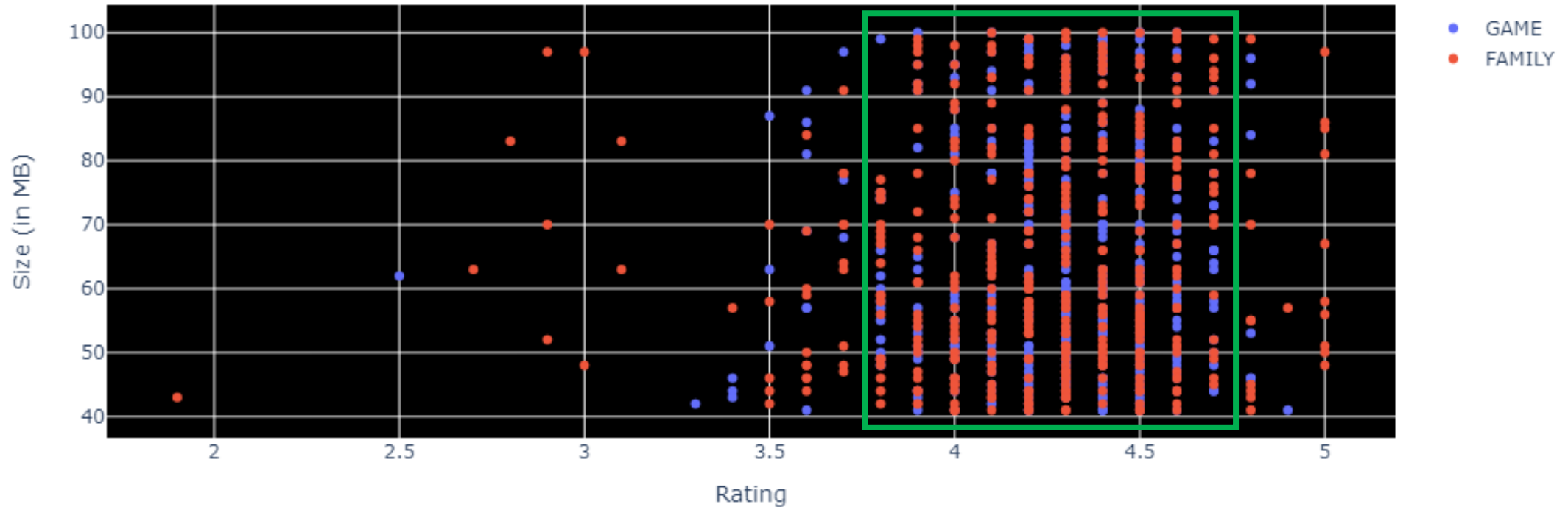
App size VS App rating

→ Top-rated apps typically have ideal sizes ranging from ~2MB to ~40MB.



Exploratory Data Analysis

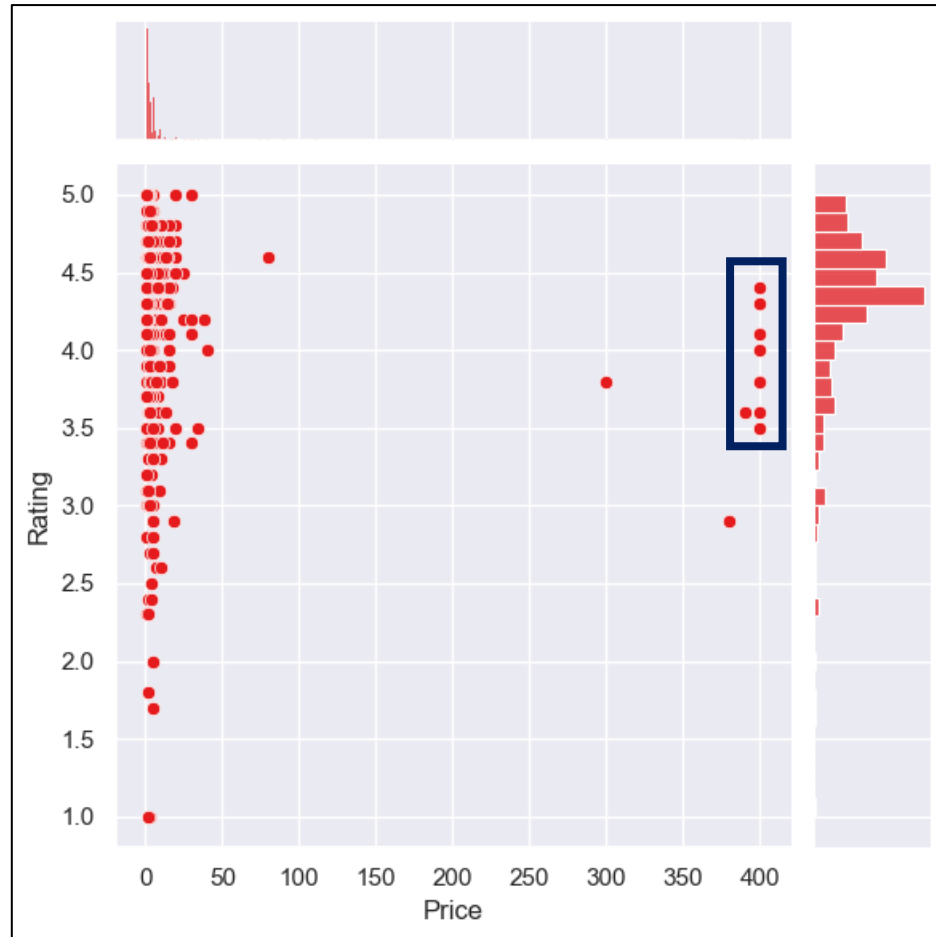
App size VS App rating



➔ Most large-sized apps (>40MB) belong to the Game and Family category with high ratings

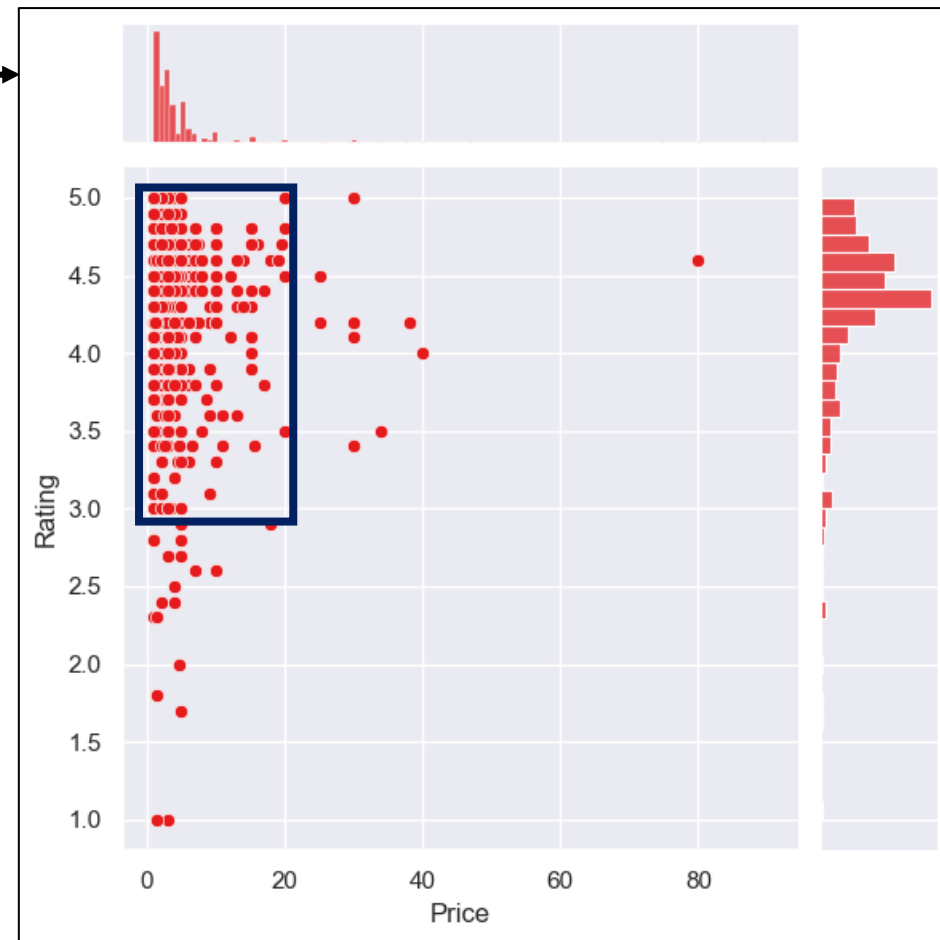
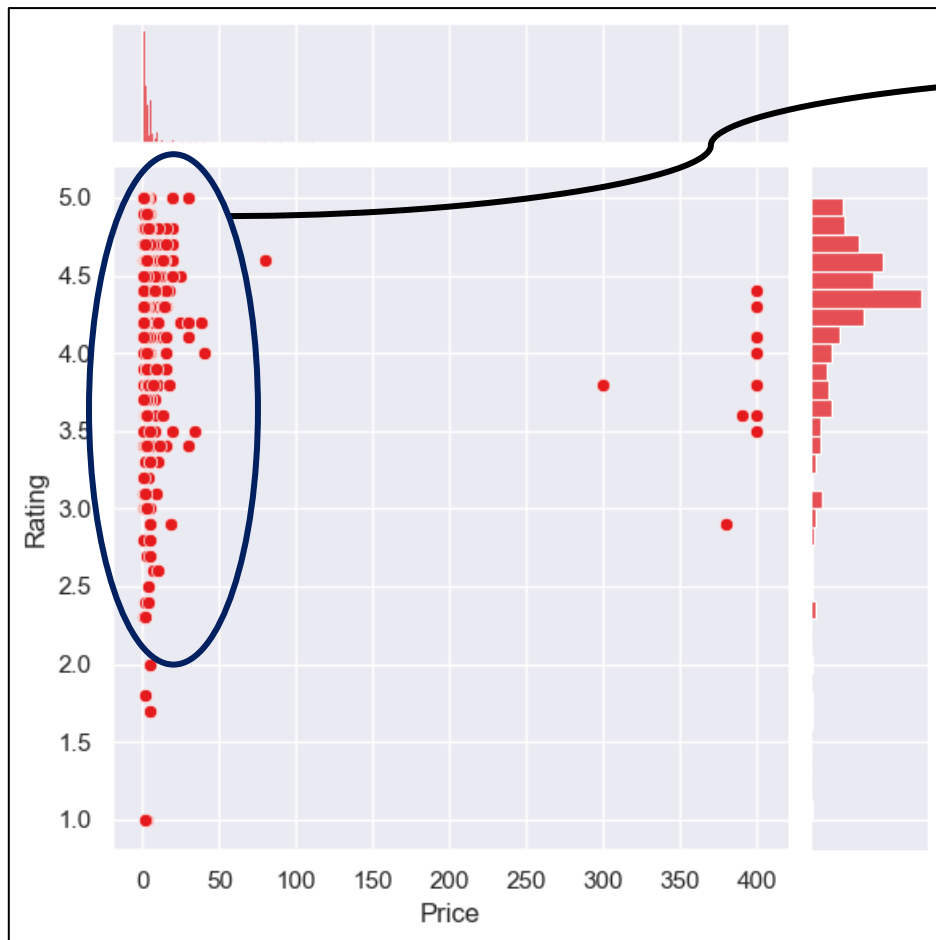
Exploratory Data Analysis

App price VS App rating



Exploratory Data Analysis

App price VS App rating

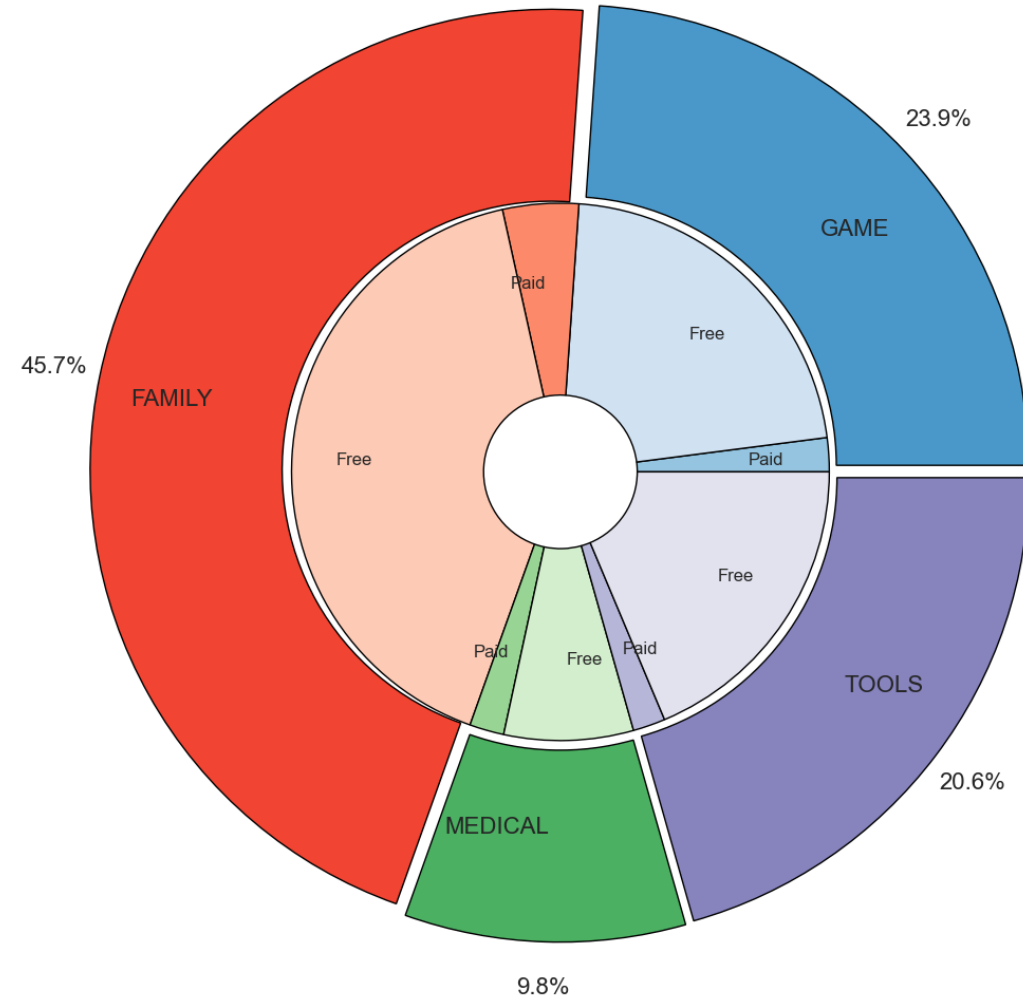


➔ Top-rated apps typically range in price from ~\$1 to ~\$20

The current trend in app pricing

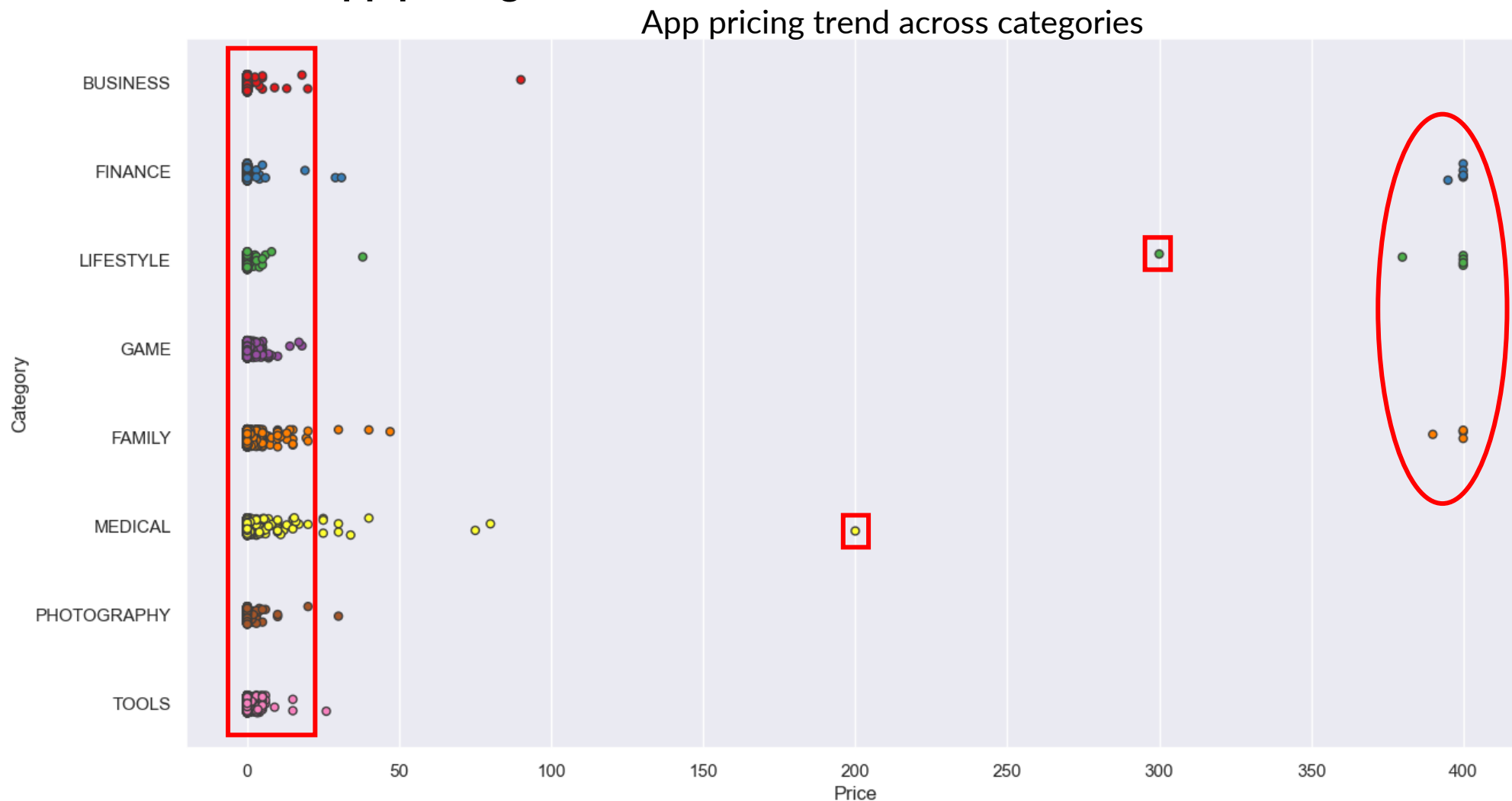
➔ The majority of apps released on the Google Play Store are free, with only a few requiring payment.

Distribution of paid and free apps across categories



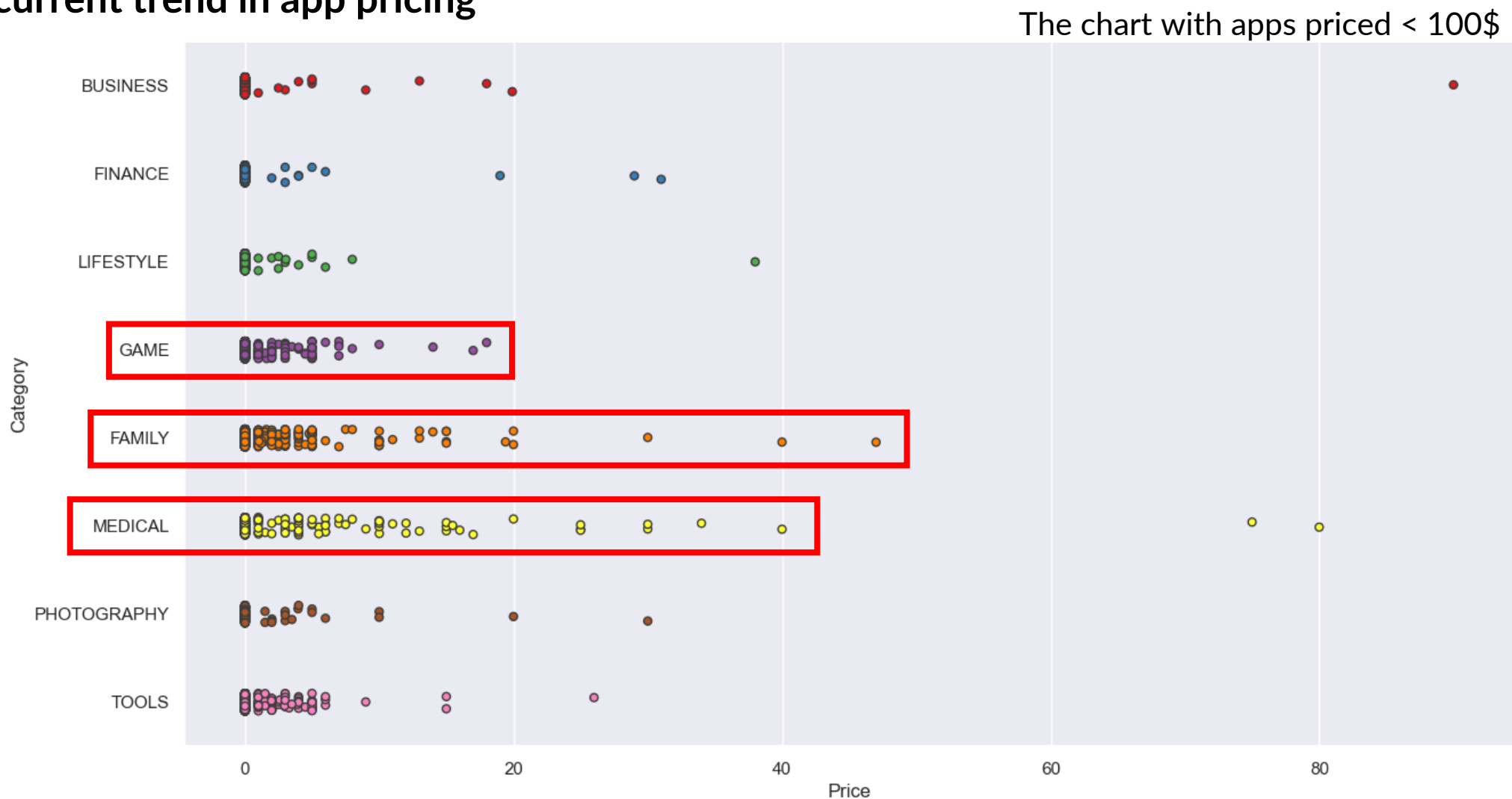
Exploratory Data Analysis

The current trend in app pricing

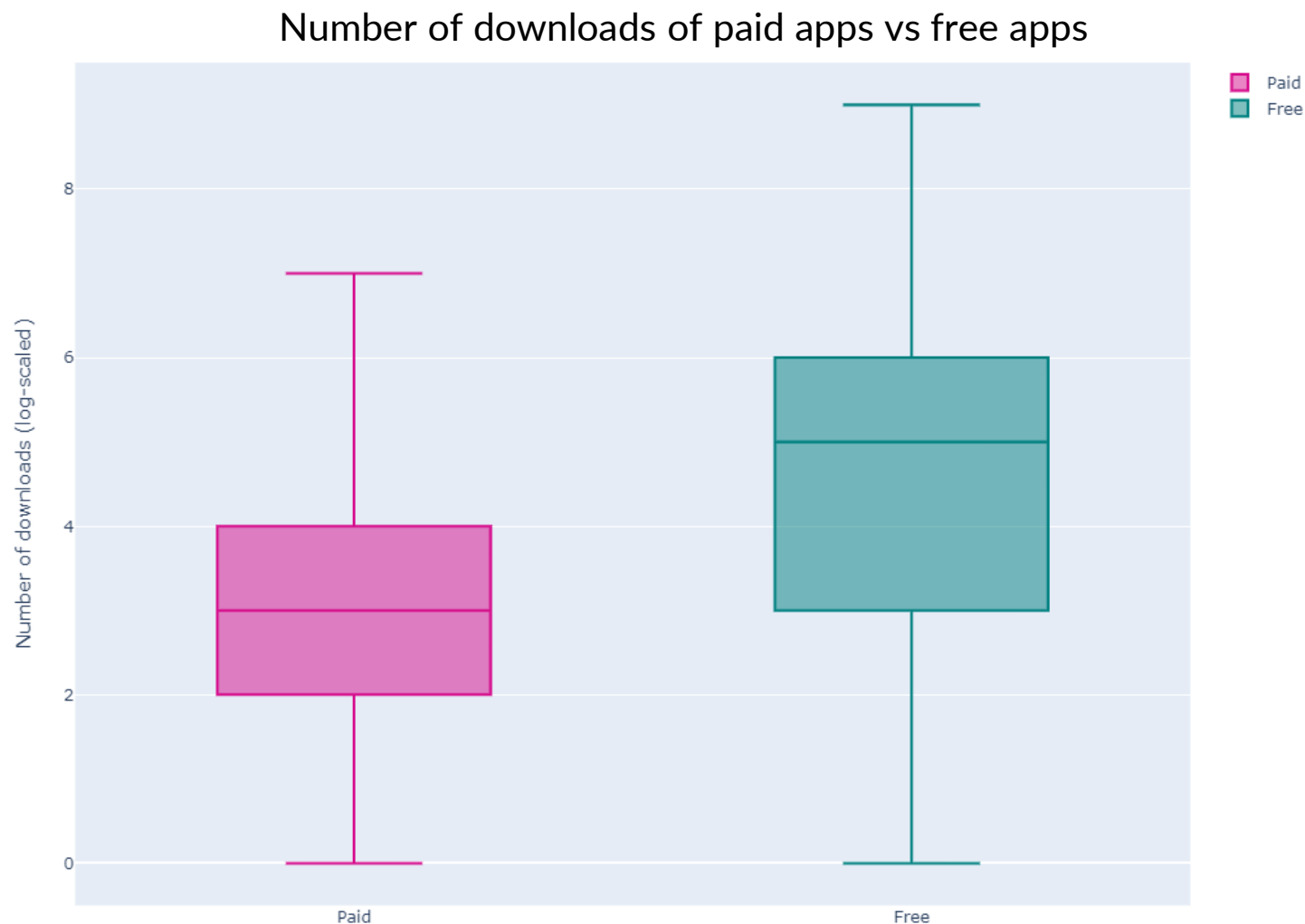


Exploratory Data Analysis

The current trend in app pricing

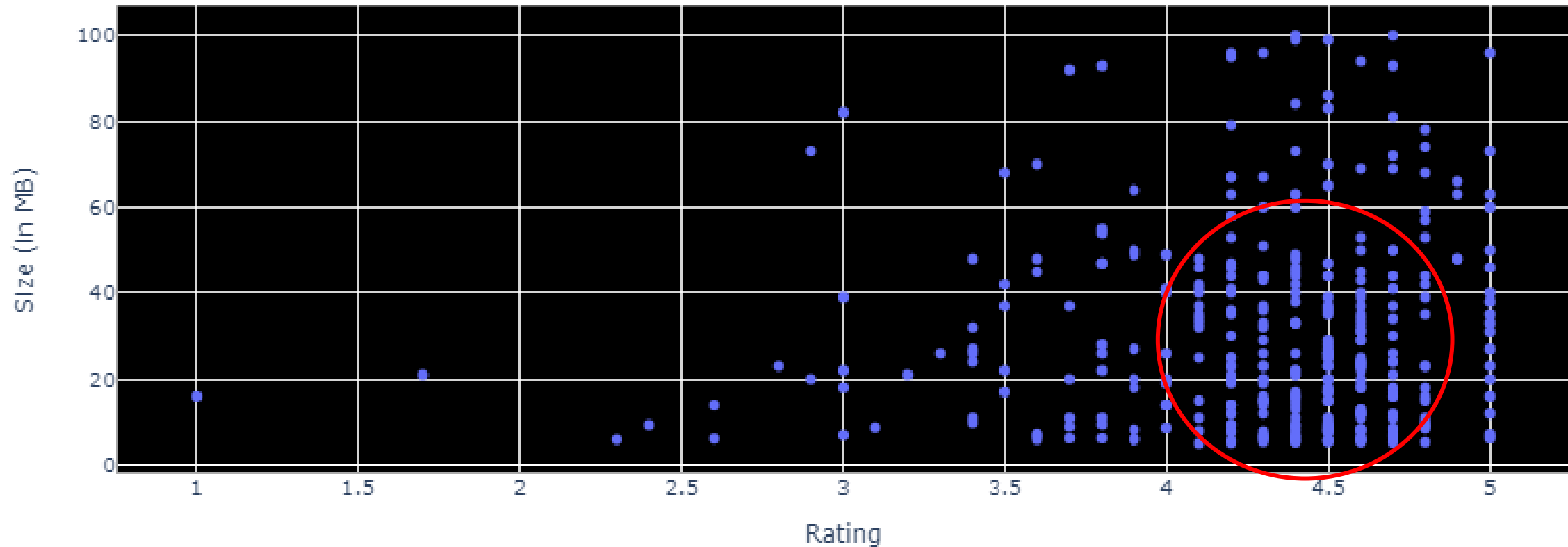


The number of downloads for free apps and paid apps



Exploratory Data Analysis

Paid app size VS Paid app rating

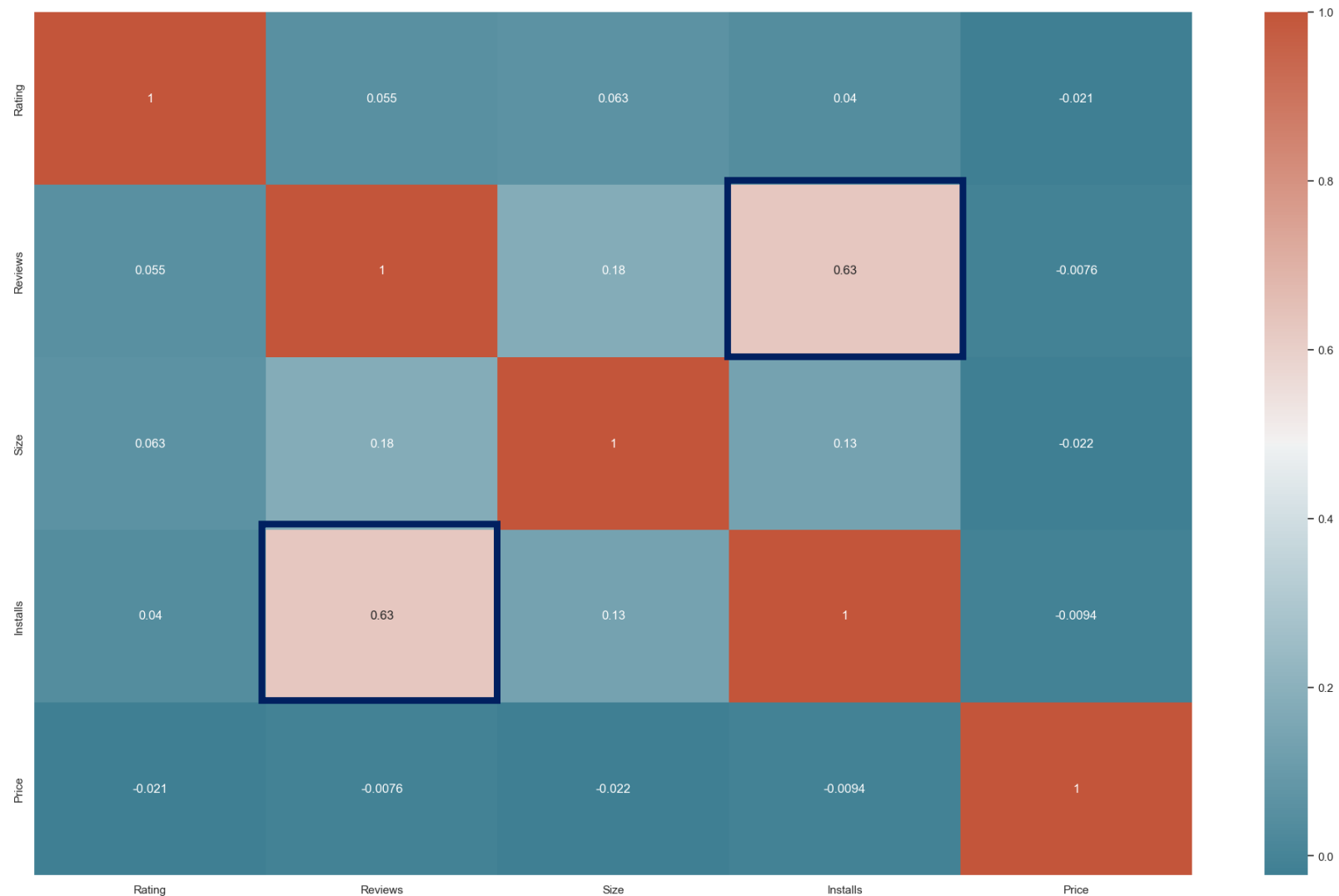
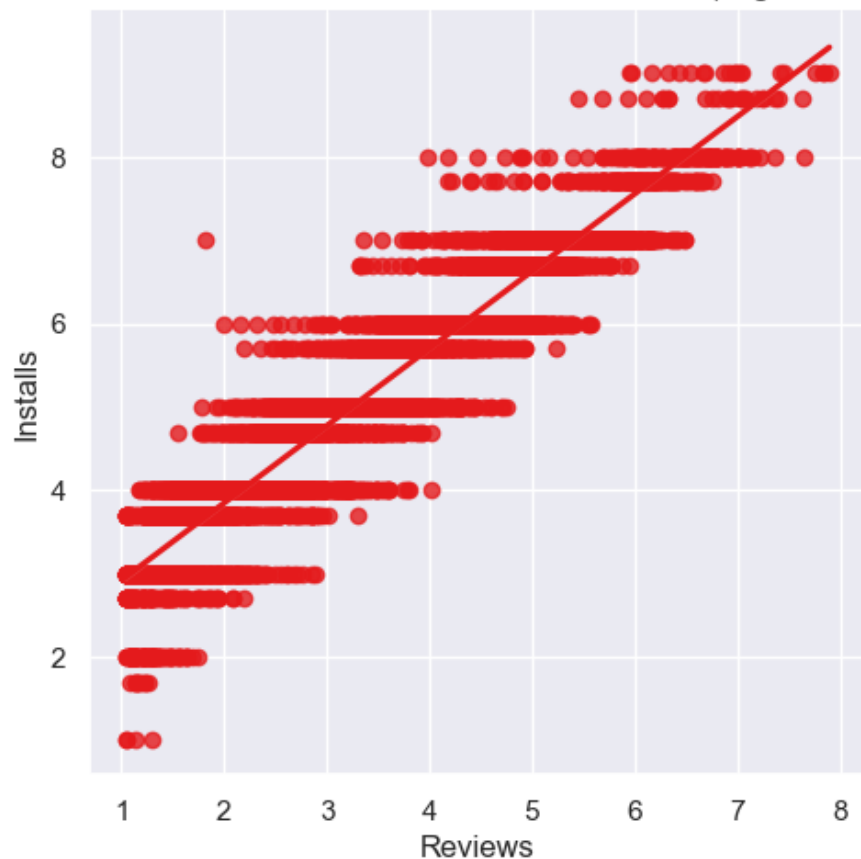


- ➔ Majority of the paid apps that are highly rated have small sizes.
- ➔ Users prefer to pay for apps that are light-weighted.

Exploratory Data Analysis

Exploring Correlations

Number of Reviews Vs Number of Downloads (Log scaled)



Conclusion

Quality and Competition:

- The average rating of (active) apps on the Google Play Store is 4.17.
- Apps in the 'Family,' 'Game,' or 'Tools' categories face high competition in the market.

Weight and Pricing:

- Users prefer paying for lightweight apps.
- Highly rated apps typically have optimal sizes, mostly ranging from ~2MB to ~40MB.

Pricing and Categories:

- Stable pricing for apps is in the range of ~1\$ to ~30\$.
- Categories like Medical and Family often have the highest prices, reaching up to \$80.

Reviews and Downloads:

- Users tend to download apps that have been reviewed by a large number of people.

A large, stylized graphic of the HUST logo, consisting of a circular arrangement of dots in a spiral pattern, centered on the left side of the slide.

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THANK YOU !