

What Do You Know About Apps?

So, you want to make it rich building apps?

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Presentation to Syracuse Students
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Problem Statement

Have apps reached their saturation? Could students make money using what they learn here in Syracuse by building apps?



Business Impact

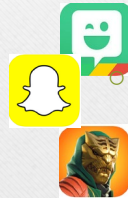
Failure

- In 2013, there were some 800,000 apps in the app store and only 80 of them cracked \$1 million in revenue. Even apps that are almost always going to be actually useful like healthcare fail about half the time. ¹
 - Everpix: By 2012 they had 55,000 users and solid financing, and by 2013 they were broke. ¹
 - Hailo: With \$100 million in funding, it hit NYC in early 2013. By October 2014, it was bailing on North America all together (save Toronto). ¹
 - Google Wave: Pulled six months after launch. ¹



Success

- As of the year 2017, there were over 6 million apps in existence. Users spend about 90% of their phone time on mobile apps compared to browsing websites. ²
 - Snapchat: This one of a kind application has promised to increase its revenue from \$59 million, in 2015, to \$1 Billion in 2017. ³
 - Bitmoji: A social network site agreed to pay more than \$100 million in cash and stock earlier this year to acquire Bitstrips, the maker of Bitmoji. ⁴
 - Fortnite: TechCrunch reports that Fortnite creator Epic Games brought in \$3 billion in profit last year. ⁵



¹ <https://blog.placit.net/apps-fail-teach-us-app-marketing/>

² <https://creative27.com/blog/10-successful-apps/>

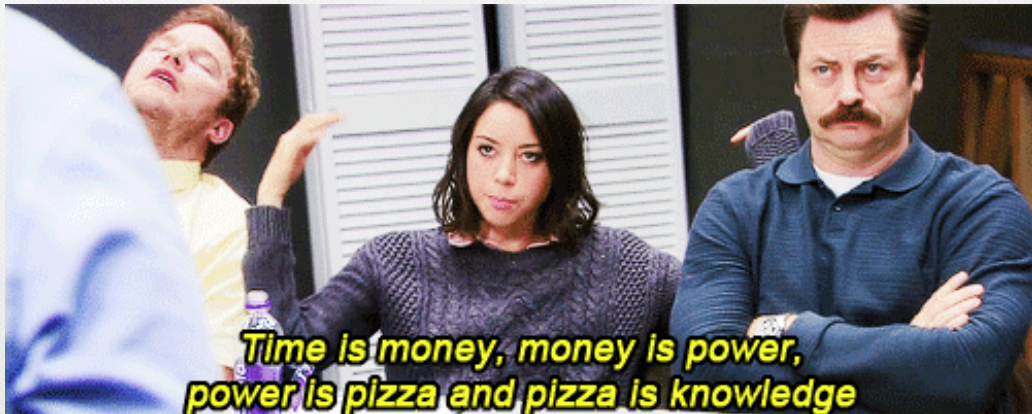
³ <https://www.feedough.com/snapchat-make-money-snapchat-business-model/>

⁴ <https://www.cnn.com/2016/07/20/yes-really-stickers-are-business-why-these-100m-emojis-matter-for-snapchat.html>

⁵ <http://money.com/money/5502637/how-fortnite-makes-money/>

Objective

Prior to spending time and money building and marketing an app, let's look at some data that will help find the right one to build.



Data Source

App	Category	Rating	Reviews	Size	Installs	Type	Price	Content Rating
Photo Editor & Candy Camera & Grid & ScrapBook	ART_AND_DESIGN	4.1	159	19M	10,000+	Free	0	Everyone
Coloring book moana	ART_AND_DESIGN	3.9	967	14M	500,000+	Free	0	Everyone
U Launcher Lite â€” FREE Live Cool Themes, Hide Apps	ART_AND_DESIGN	4.7	87510	8.7M	5,000,000+	Free	0	Everyone
Sketch - Draw & Paint	ART_AND_DESIGN	4.5	215644	25M	50,000,000+	Free	0	Teen
Pixel Draw - Number Art Coloring Book	ART_AND_DESIGN	4.3	967	2.8M	100,000+	Free	0	Everyone

Kaggle Dataset: <https://www.kaggle.com/lava18/google-play-store-apps>

Essential Research Questions



Data Analysis

Pearson's Product-Moment Correlation

	Rating	Reviews	Size	Installs	Price
Rating	1.000000	0.068141	0.045791	0.051355	-0.021903
Reviews	0.068141	1.000000	0.065458	0.643122	-0.009667
Size	0.045791	0.065458	1.000000	-0.003457	-0.013457
Installs	0.051355	0.643122	-0.003457	1.000000	-0.011689
Price	-0.021903	-0.009667	-0.013457	-0.011689	1.000000

Not all the coefficients are significant (e.g., Price, and Reviews) as expected, and the Durbin-Watson test indicates there is some collinearity.

OLS Regression Results						
=====						
Dep. Variable:	Installs	R-squared:	29126079530.247			
Model:	OLS	Adj. R-squared:	29136831128.449			
Method:	Least Squares	F-statistic:	-2709.			
Date:	Thu, 06 Jun 2019	Prob (F-statistic):	1.00			
Time:	16:29:38	Log-Likelihood:	-2.1039e+05			
No. Observations:	10840	AIC:	4.208e+05			
Df Residuals:	10836	BIC:	4.208e+05			
Df Model:	4					
Covariance Type:	nonrobust					
=====						
	coef	std err	t	P> t	[0.025	0.975]

Rating	2.464e+06	1.92e+05	12.819	0.000	2.09e+06	2.84e+06
Size	-0.1762	0.028	-6.248	0.000	-0.232	-0.121
Price	-3.069e+04	3.91e+04	-0.784	0.433	-1.07e+05	4.6e+04
Reviews	18.7385	0.214	87.618	0.000	18.319	19.158
=====						
Omnibus:	16540.734	Durbin-Watson:	1.828			
Prob(Omnibus):	0.000	Jarque-Bera (JB):	8547843.836			
Skew:	9.573	Prob(JB):	0.00			
Kurtosis:	139.230	Cond. No.	8.82e+06			

Better results, but the R^2 indicates this may not be a fit for a linear model.

Dep. Variable:	Installs	R-squared:	49761034756.192			
Model:	OLS	Adj. R-squared:	49774810072.632			
Method:	Least Squares	F-statistic:	-3612.			
Date:	Thu, 06 Jun 2019	Prob (F-statistic):	1.00			
Time:	16:36:23	Log-Likelihood:	-2.1329e+05			
No. Observations:	10840	AIC:	4.266e+05			
Df Residuals:	10837	BIC:	4.266e+05			
Df Model:	3					
Covariance Type:	nonrobust					
=====						
	coef	std err	t	P> t	[0.025	0.975]

Rating	3.894e+06	2.5e+05	15.559	0.000	3.4e+06	4.38e+06
Size	-0.0281	0.037	-0.764	0.445	-0.100	0.044
Price	-6.164e+04	5.12e+04	-1.205	0.228	-1.62e+05	3.86e+04
=====						
Omnibus:	16289.249	Durbin-Watson:	1.612			
Prob(Omnibus):	0.000	Jarque-Bera (JB):	4715000.344			
Skew:	9.577	Prob(JB):	0.00			
Kurtosis:	103.360	Cond. No.	8.79e+06			

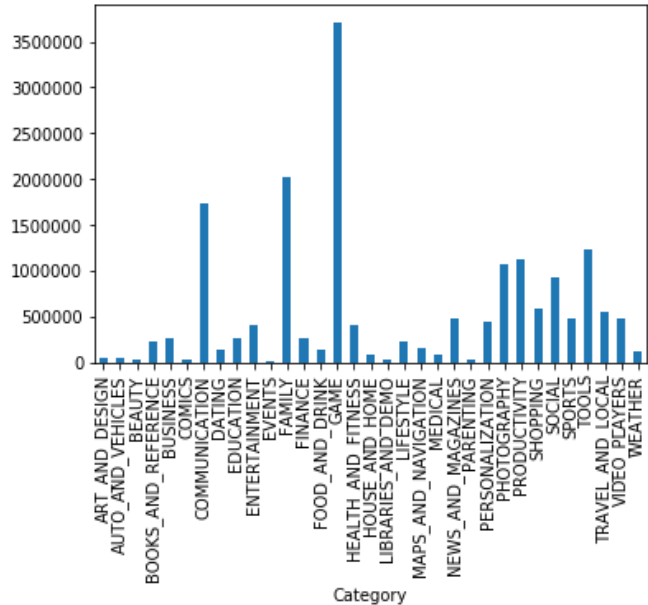
Data Analysis

Much better results with a better R^2 .

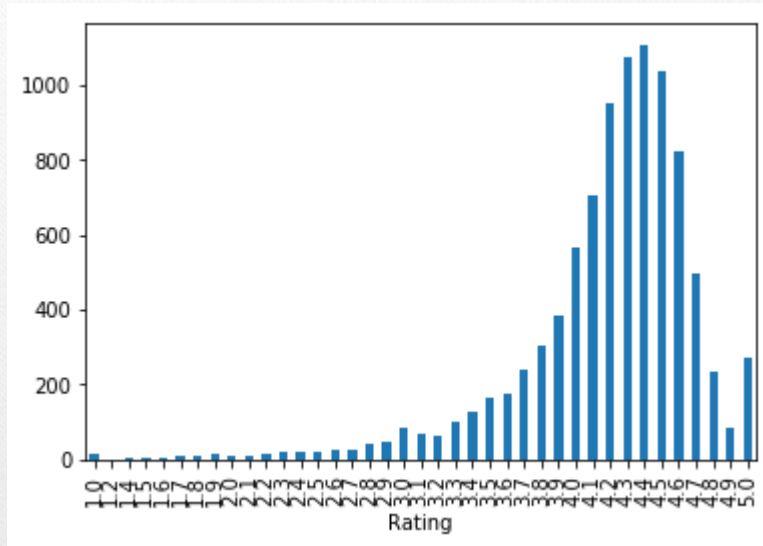
OLS Regression Results						
Dep. Variable:	Installs	R-squared:	0.187			
Model:	OLS	Adj. R-squared:	0.187			
Method:	Least Squares	F-statistic:	833.6			
Date:	Thu, 06 Jun 2019	Prob (F-statistic):	0.00			
Time:	16:37:50	Log-Likelihood:	-1.0398e+05			
No. Observations:	10840	AIC:	2.080e+05			
Df Residuals:	10837	BIC:	2.080e+05			
Df Model:	3					
Covariance Type:	nonrobust					
	coef	std err	t	P> t	[0.025	0.975]
Rating	970.9905	27.944	34.748	0.000	916.215	1025.766
Size	-0.0794	0.013	-5.948	0.000	-0.106	-0.053
Price	-276.4415	34.118	-8.103	0.000	-343.318	-209.565
Omnibus:	10763.800	Durbin-Watson:	1.282			
Prob(Omnibus):	0.000	Jarque-Bera (JB):	516403.156			
Skew:	4.986	Prob(JB):	0.00			
Kurtosis:	35.309	Cond. No.	4.32e+03			

Installs vs. Genres

Communication and Games get the most installs.

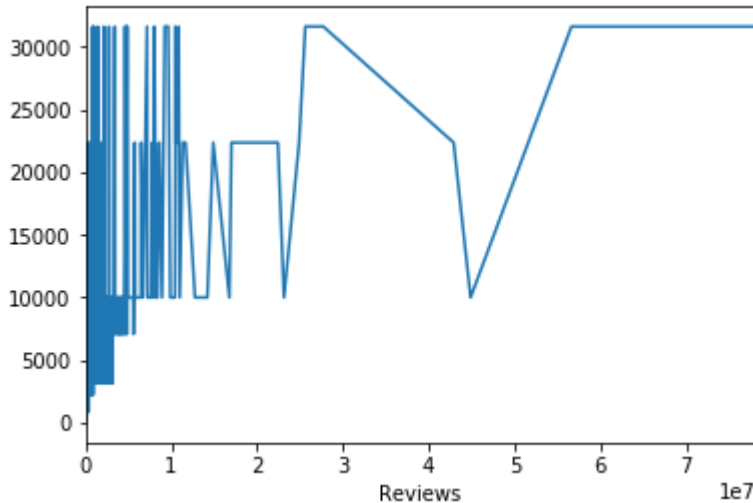


Installs vs. Ratings



Installs increase as ratings increase until ~ 4.2

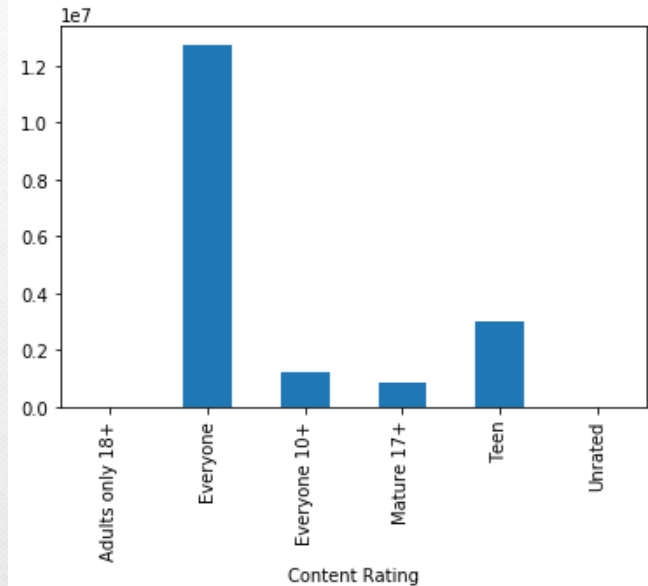
Installs vs. Reviews



Installs don't show a clear pattern until the number of reviews exceeds 5M.

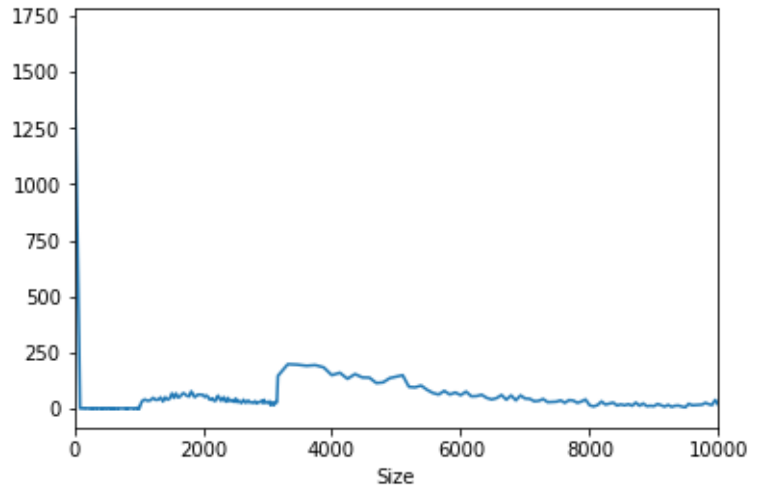
Installs vs. Content Rating

Rated for Everyone has
the most installs.

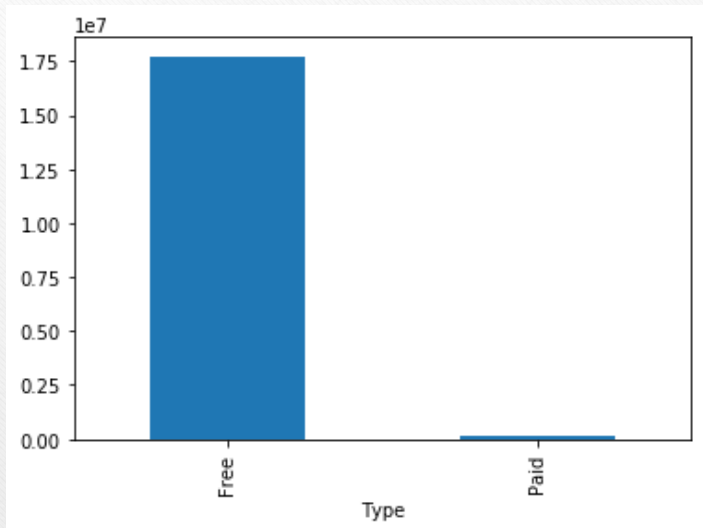


Installs vs. Size

Installs begin to decline as the size of the App gets larger.



Installs vs. Price



Free apps have considerably more installs than paid

Conclusion



- If you want to build an app, focus your efforts on apps that meet the following criteria to improve your chances of success
 - Genre should be games or communication.
 - Invest in a sound marketing strategy to improve ratings.