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Robert Chen (PM)
September 6, 2018 ·

Market Landscape Review: Teen Opportunity Cost and Lifetime Value

We size the loss in revenue from not having US teens and also the approximate present value of each additional US teen for Facebook. All figures are presented as ballpark approximations since many simplifying assumptions were made.

The major takeaway from this work is that we are in the right range if we spend $100-$200 per teen.

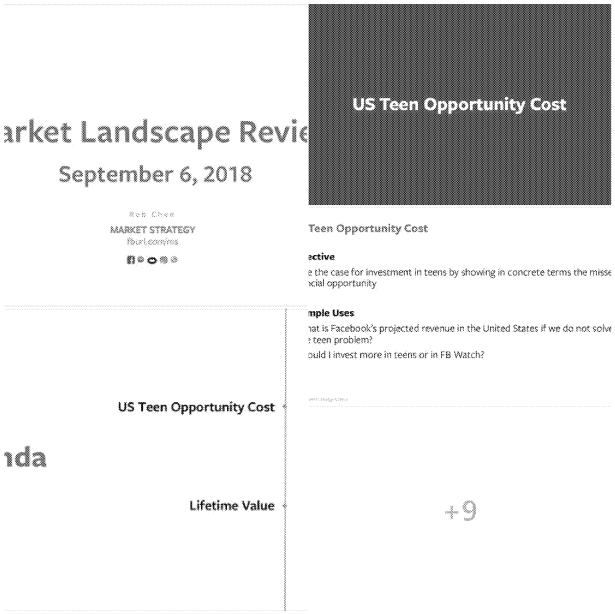
US TEEN OPPORTUNITY COST

- Just in the US, we have an opportunity cost of $150 million in 2019...this rises to $1.8 billion in 2030
- The total present value loss is ~$12 billion
- By 2030, Facebook will have 30 million fewer users than we could have otherwise if we do not solve the teen problem

US TEEN LIFETIME VALUE

- The **lifetime value of a 13 y/o teen is roughly $270 per teen**
- This is driven by the fact that younger users have much higher long term retention than older users
- However, do note that older users have much higher average revenue per users (ARPU) than younger users
  - A case could be made to pursue young adults if we are able to increase their long-term retention
- Special thanks to Santosh Kumar Panda's work on long term retention--LTV would not be possible without that

(This review was formerly the Competitive Landscape Review.)



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Market Landscape Review

September 6, 2018

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Agenda

US Teen Opportunity Cost

Lifetime Value

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US Teen Opportunity Cost

US Teen Opportunity Cost

Objective

Make the case for investment in teens by showing in concrete terms the missed financial opportunity

Example Uses

- What is Facebook's projected revenue in the United States if we do not solve the teen problem?
- Should I invest more in teens or in FB Watch?

Source: Market Strategy Analysis

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Key Variables and Simplifying Assumptions

Variables

- ARPU by age
- US population projections
- FB's maximum population penetration by year of birth
- Economic growth rate, WACC

Assumptions

- ARPU by age does not change over time
- FB's maximum population by year of birth "bottoms out" at 23%

Source: Market Strategy Analysis

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Opportunity Cost Result

	Addressed Pop. Delta		Revenue Delta		Revenue PV
2019	6,142,916	$	142,921,519	$	129,928,653
2020	8,546,980	$	198,854,669	$	184,342,698
2021	10,926,877	$	281,704,062	$	211,648,431
2022	13,271,858	$	405,959,605	$	277,275,873
2023	15,586,310	$	548,359,511	$	340,488,113
2024	17,873,722	$	721,511,293	$	407,274,315
2025	20,136,699	$	893,783,626	$	458,652,324
2026	22,379,628	$	1,064,386,927	$	496,544,357
2027	24,608,675	$	1,232,930,033	$	522,882,691
2028	26,876,745	$	1,416,593,254	$	546,158,023
2029	29,176,633	$	1,623,821,240	$	569,139,438
2030	31,526,020	$	1,841,779,196	$	586,847,611
Total		$	10,372,604,931	$	4,711,182,528
Terminal Value		$	23,482,684,747	$	7,482,307,043
	Total w/ terminal value	$	33,855,289,678	$	12,193,489,571

Source: Market Strategy Analysis

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Discussion

- From an opportunity cost perspective, the loss of teens is material. From around $150 million in 2019 to $1.8 billion (~$600 M in PV) in 2030. And a present value of roughly $12 billion
- By 2030, the number of FB users in the US will be roughly 30 million fewer people, conservatively assuming that what ails teens does not ail the rest of the population
- The findings here are US only—assuming that our teen problem is global, the opportunity cost is likely much greater

Source: Market Strategy Analysis

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US Teen Lifetime Value

US Teen Lifetime Value

Objective

Make more informed financial decisions on how much to spend on acquiring and engaging teens

Example Uses

- How much should I spend on acquiring content (e.g., shows, funny short videos)?
- How much should I pay for a "traction" M&A target on a per DAP basis?
- Generally, how much should I spend on acquiring users for Bell, our high school product?
- What's a reasonable level of funding for a teen ambassador program?

Source: Market Strategy Analysis

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Key Variables and Simplifying Assumptions

Variables

- ARPU by age
- Retention by age joined Facebook
- WACC (cost of capital) = 10%

Assumptions

- Average ARPU by age = Marginal ARPU by age
- Average retention by age you join FB = marginal retention by age you join FB
- Retention by age drops to long term retention in Year 2
- ARPU by age remains the same

Source: Market Strategy Analysis

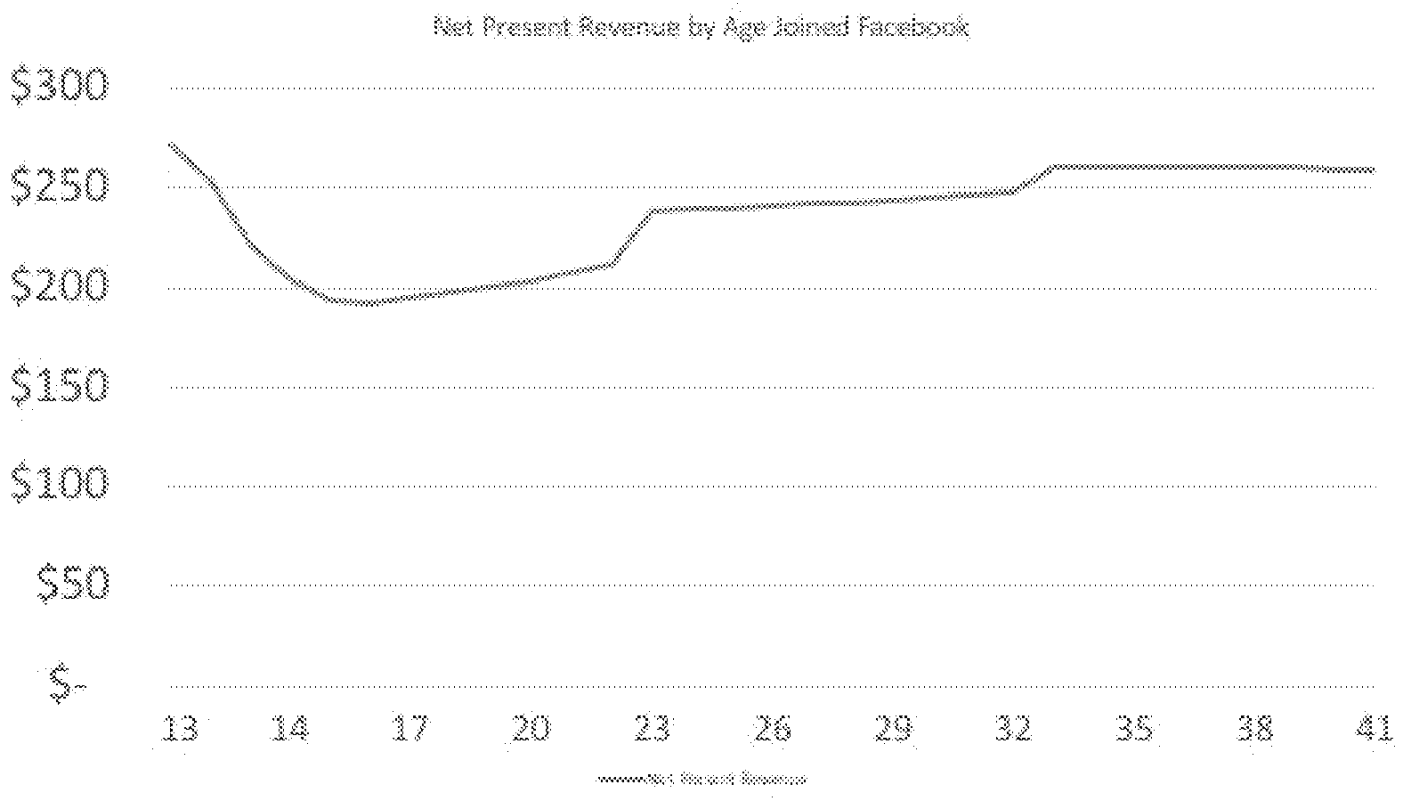
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Lifetime Value Result



Source: Market Strategy Analysis

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Potential Future Explorations

- Compare against Instagram
  - Teen long term retention in the present day may be higher than in the past
  - Teen ARPU on IG may be higher than on FB
- Investigate time spent
  - MAP may underestimate true differences between cohorts (e.g., earlier cohorts may spend more time on FB than later cohorts)

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Recommendations

- Because of the high value of young teens, more product teams, and not just the Youth Team, should care about young teens as those are the users with the potential for highest loyalty and value over time
- If we are looking to spend near or more than the lifetime value ($270) per young teen, then that spending should result in extra scrutiny
- Given the importance of lifetime value, we should find a long term owner for the model—Youth leadership likely needs to make the case to Finance
- Analytics should track long term retention to understand app health and user behavior

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