

ARTILLRY INTELLIGENCE BRIEFING

VR USAGE & CONSUMER ATTITUDES

JULY 2018

PRODUCED IN PARTNERSHIP WITH





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Executive Summary

How do consumers feel about VR? Who's using it? What devices and apps do they prefer? And what do they want to see next? Perhaps more importantly, what are non-users' reasons for disinterest? And how can VR software developers and hardware players optimize product strategies accordingly?

These are key questions at VR's early stages that we set out to answer. Working closely with [Thrive Analytics](#), *ARtillry Intelligence* wrote questions to be presented to more than 1,900 U.S. adults in Thrive's established consumer survey engine. And we've analyzed the results in a narrative report.

This follows last August's ARtillry Intelligence Briefing, which examined the same survey questions. Wave II of the research now emboldens our understanding and brings new insights and trend data to light. There are also notable parallels in these results to our sister report on AR, published in April.

So what did we find out? At a high level, eleven percent of consumers surveyed have bought or used a VR headset, up from eight percent in 2017. More importantly, VR users indicate high levels of satisfaction with the experience: 65 percent of respondents report moderate or extreme satisfaction.

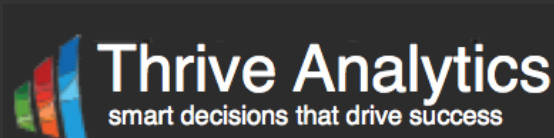
However, it's not all good news: Non-VR users report relatively low likelihood of VR adoption – 31 percent, down from 41 percent in 2017 – and explicit lack of interest. This downward trend in interest is concerning for VR but isn't surprising given the dip in excitement we've anecdotally observed.

Moreover, the disparity between current-user satisfaction and non-user disinterest underscores a key challenge for VR: you have to "see it to believe it." In order to reach high satisfaction levels, VR has to first be tried. This presents marketing and logistical challenges for the industry to push that first taste.

Put another way, VR's highly visual and immersive format is a double-edged sword. It can create strong affinities and high engagement levels. But the visceral nature of its experience can't be communicated to prospective users with traditional marketing such as ad copy or even video.

The same challenge was evident in our corresponding AR report, but mobile AR's barriers to adoption are lower. This is nonetheless a common challenge for immersive technologies. It will take time, acclimation and price reductions before they reach a more meaningful share of the consumer public.

Meanwhile, there are strategies to accelerate that process, and to market VR more effectively. We'll examine those strategies in the coming pages, through the lens of consumers' explicit sentiments, actions and desires. This is meant to empower readers with a greater knowledge position.












Introduction: A Snapshot

In VR's early stages it's important to understand consumer behavior and desires in order to optimize product strategies. We kicked off this process last Summer with a first wave of VR survey research. Now, a second wave of data buttresses our knowledge position, and brings new trend data to light.

Working closely with our data partner [Thrive Analytics](#), ARtillery Intelligence wrote questions to present to a sample of more than 1,900 U.S. adult consumers. This represents the second wave of Thrive's [Virtual Reality Monitor](#).ⁱ Now that the results are in, we'll dive into the implications and takeaways.

These survey results are a telling snapshot of VR adoption, which we'll detail in the coming pages. That will include charts and a narrative story arc that unpacks strategic takeaways, and our outlook for consumer VR. But before we take that deeper dive, here's a highlight reel of survey findings.

-  11% of respondents own or have tried VR, up from 8% last year.
-  49% of users own or use Samsung Gear VR, followed by PSVR (36%) and Oculus Rift (30%).
-  35% of users are extremely satisfied, 30% are moderately satisfied.
-  3% of users are extremely dissatisfied, 4% are moderately dissatisfied.
-  82% of Vive users show strong satisfaction, 82% for Rift and 79% for PSVR.
-  56% of users want more content, 50% want better content and 44% want better functionality.
-  31% of non-VR users are interested in owning VR, down from 41% last year.
-  57% of disinterested non-VR users cited "just not interested" as the reason.
-  64% of all respondents wouldn't pay more than \$200 for a VR headset.





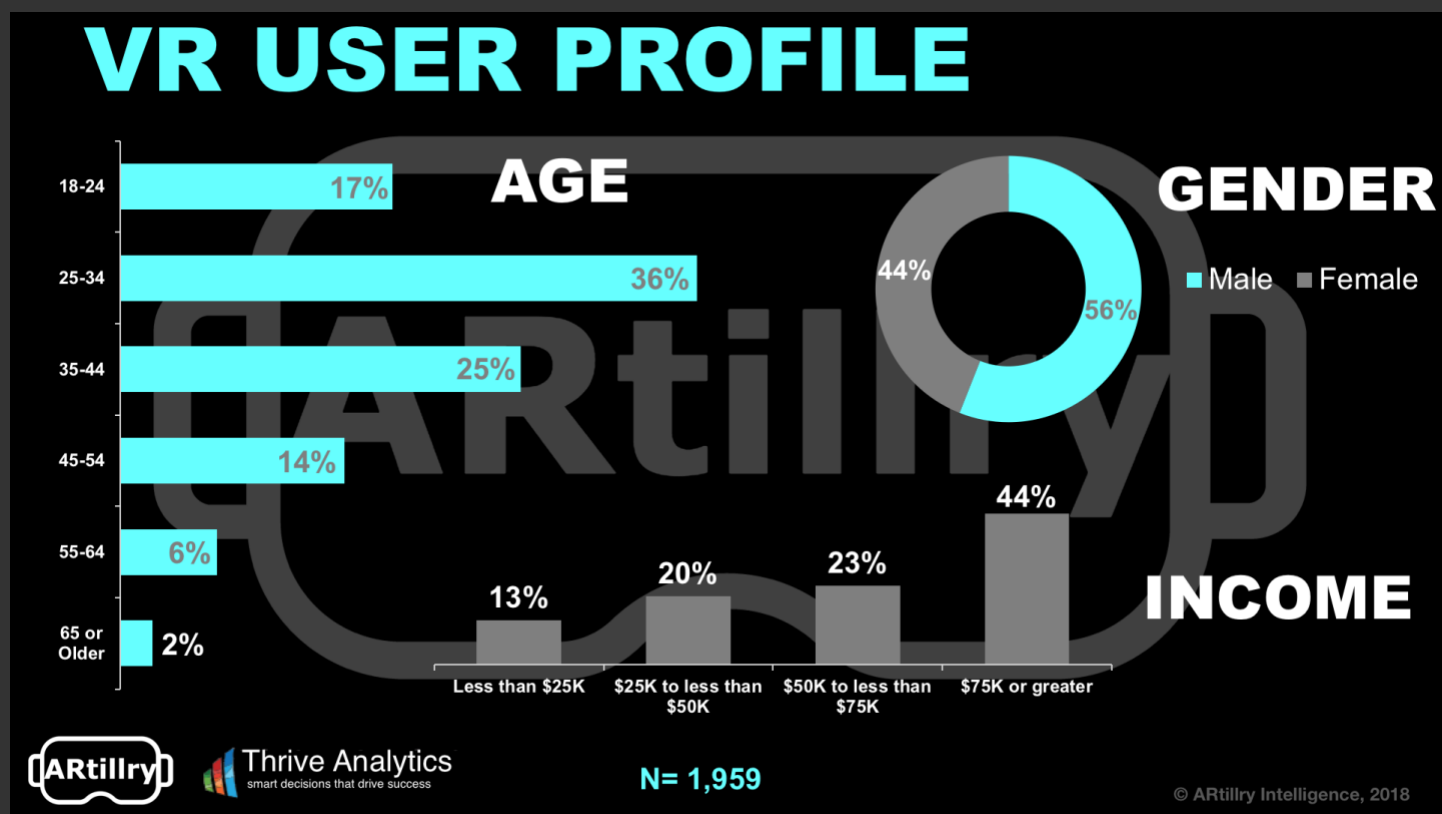
Survey Audience: The “Who?”

To first add context to survey findings throughout this report, who’s answering the questions? It includes more than 1,900 U.S. adults. Going deeper into demographics and psychographics, the respondents break down as shown below. More detail and segmentation are available on request.ⁱⁱ

As the data show, the survey sample spans a wide range of U.S. adult consumers. Gender breaks down fairly evenly, while age and income levels skew towards more attractive demographic groups. That includes active and buying-empowered age groups (25-34), and high-income homes (\$75K+).

This is all a function of Thrive Analytics’ longstanding position and strategy development in consumer surveys. Its time-tested methodology and survey network comply with industry standards and best practices. ARtillery will continue working with Thrive for annual AR and VR consumer surveys.

“AR and VR are in the initial stages of adoption,” said Thrive Analytics managing partner Jason Peaslee. “There are still many technology challenges, but we think AR & VR have the ability to significantly change the way people work, connect, and learn. We are excited about the prospects.”



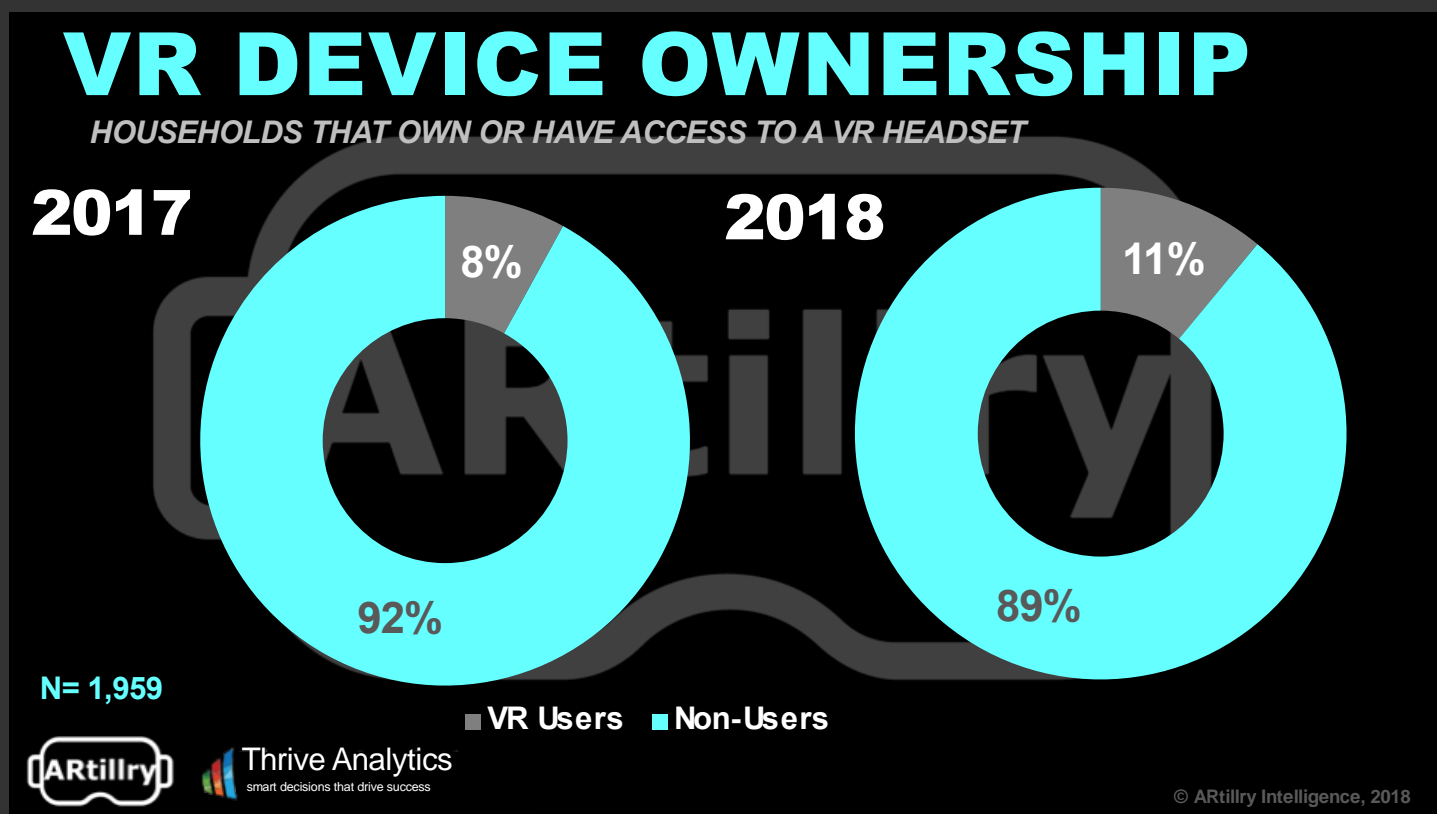
Part I: VR User Sentiments

To organize strategic takeaways in this report, we've delineated the sentiments of *current users* and *non-users*. Both can provide telling signals for VR product development and strategy refinement. Starting with current users, what are they saying and thinking? The following sections dive in.

VR Users: The “How Many?”

Starting our analysis at the very top, what's the overall penetration and adoption of VR among consumers? [Survey results indicate that it currently stands at about one in ten \(11 percent\)](#). This aligns with headset penetration figures reported in our Global XR Forecastⁱⁱⁱ last month.

Thought adoption is up slightly from 2017, the three-point increase is just outside the +/- 2.25 percent margin of error and 95 percent confidence interval. Therefore, year-over-year adoption should be viewed as essentially flat. The good news is that there is still ample head room for VR to grow.



Headsets: The “What?”

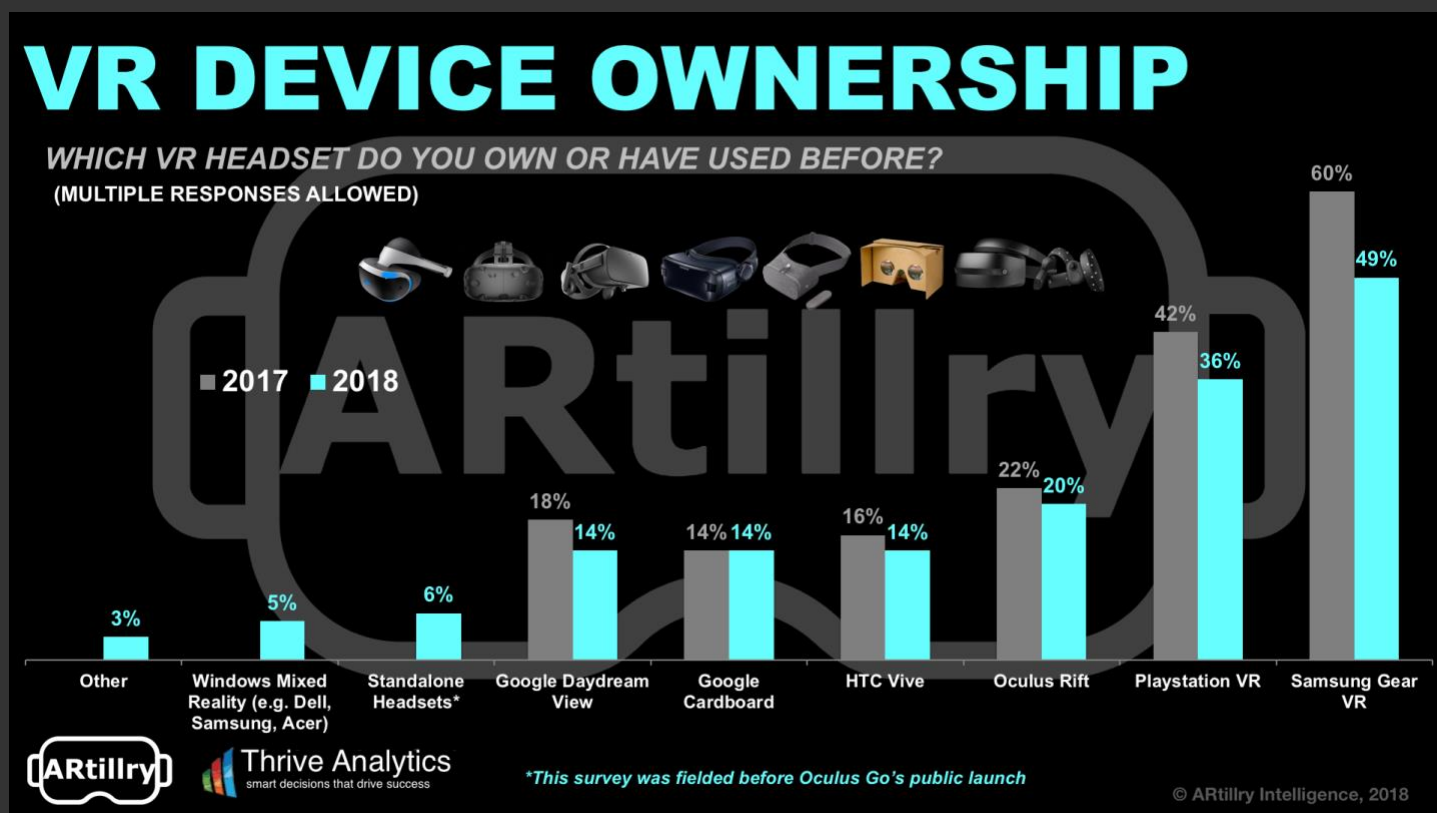
Going one level deeper, what devices are gaining the most traction? Samsung’s Gear VR scored highest at 49 percent. This isn’t surprising due to its relatively low price (\$129), and large installed base of compatible Samsung smartphones. But it did decline from 2017 (more on that in a bit).

Playstation VR (PSVR) scored second highest in adoption among survey respondents (36 percent). This isn’t surprising for the same reasons stated above. Its price is low relative to other devices in its class (Rift and Vive), and it has an addressable market of 60 million PlayStation 4 consoles.

Oculus Rift and HTC Vive had the third and fourth highest penetration. They scored lower than PSVR despite better specs – likely due to higher price and the need for a dedicated PC with costly graphical processing. There’s also greater setup friction (tracking equipment, etc.), especially for Vive.

Rift and Vive’s relative position is also notable. Many 2017 estimates pegged Vive’s adoption higher than Rift, such as Steam’s user hardware survey^{iv} and analyst sales estimates. However, the same sources have shown Rift trending upward, which is now supported by these survey figures.

Google Cardboard scored low (14 percent) in reported adoption, which is surprising. Its pricing barrier is the lowest of the pack, and in some cases non-existent due to promotional giveaways. Therefore, low reported usage is likely due to declining interest in the once-popular (circa 2016) device.



Lastly, it's important to note the rise of new categories tracked in this wave of research, including standalone headsets and Windows Mixed Reality headsets. These headset classes have emerged in the past year and show lots of potential, which are starting to be shown in these survey results.

Standalone headsets especially could accelerate industry sales growth by bringing more users into VR. That's due to a lower price point and much less friction to set up and launch VR sessions. Oculus Go in particular could be such an accelerant, though this survey was fielded before its market launch.

Its \$199 price tag and mainstream-friendly features could give consumer VR the jumpstart it needs. As examined in ARtillery's Global XR Forecast (and explored further in the pricing section of this report), Oculus Go's price stems from Oculus' loss-leader pricing strategy to gain early market share.

This positioning has informed our projections for 1.3 million Oculus Go's shipped in 2018. It will continue to grow throughout our forecast period, bringing many more consumers into VR. Meanwhile, with a giftable price point, we believe its impact will start to be seen during the holidays 2018 period.

"For \$200, it's pretty amazing," said Tested's Jeremy Williams in a recent review. "It's in many ways already looking better than Rift, which is a two-year-old product. Visually it's really impressive and I think everyone who puts this on, no matter where you're coming from in VR, is going to be surprised."



Following Trends

Beyond Wave II results alone, there are also telling signs in the trending factors from 2017 to 2018. Most notable is Samsung Gear VR's sharp decline. We attribute this to two factors. First, prices have dropped for tier-1 headsets such as Oculus Rift, making higher-end VR more affordable.

The second factor is that the market is fragmenting, including the introduction of standalones and Windows MR devices, as mentioned. **This has not only caused Gear VR's share to fall but share losses can be seen for several VR headsets across the board, though not as steep as Gear VR.**

In fact, simultaneous share reductions for several headsets seems counterintuitive. We've theorized that this is due to the industry's stage. In 2017, a larger share of the user base was early adopters, whose savvy profile correlates with multiple-headset usage (multiple responses allowed).

As VR continues to grow slowly into mainstream consumer ownership, the profile of that user base is comparatively less compulsive than tech-maven early adopters. We surmise that this is one reason that Wave II respondents appear to report a lesser number of headsets used or owned (figure 5).



Satisfaction: The “How Good?”

Drilling down from ownership, how are consumers satisfied with their headsets? Satisfaction levels from the survey align with the conclusions made above, but with a few surprises. Overall, the takeaway is that satisfaction levels are favorable across the board, indicating a strong future for VR.

Specifically, 65 percent of users are moderately satisfied (30 percent) or extremely satisfied (35 percent). This contrasts the opposite end of the satisfaction spectrum where only 7 percent of users are either moderately dissatisfied (4 percent) or extremely dissatisfied (3 percent).

These are strong quality signals. In fact, there are few consumer products that show such high satisfaction levels. However, we should note that the AR results in our sister report published in May showed even higher satisfaction levels, with 73 percent of users moderately or extremely satisfied.

This tells us a few things. For one, VR's highly visual and immersive format, though still early, is already proving to captivate consumers. This is largely due to its revolutionary – rather than evolutionary – interface when compared with non-immersive experiences from other media formats.

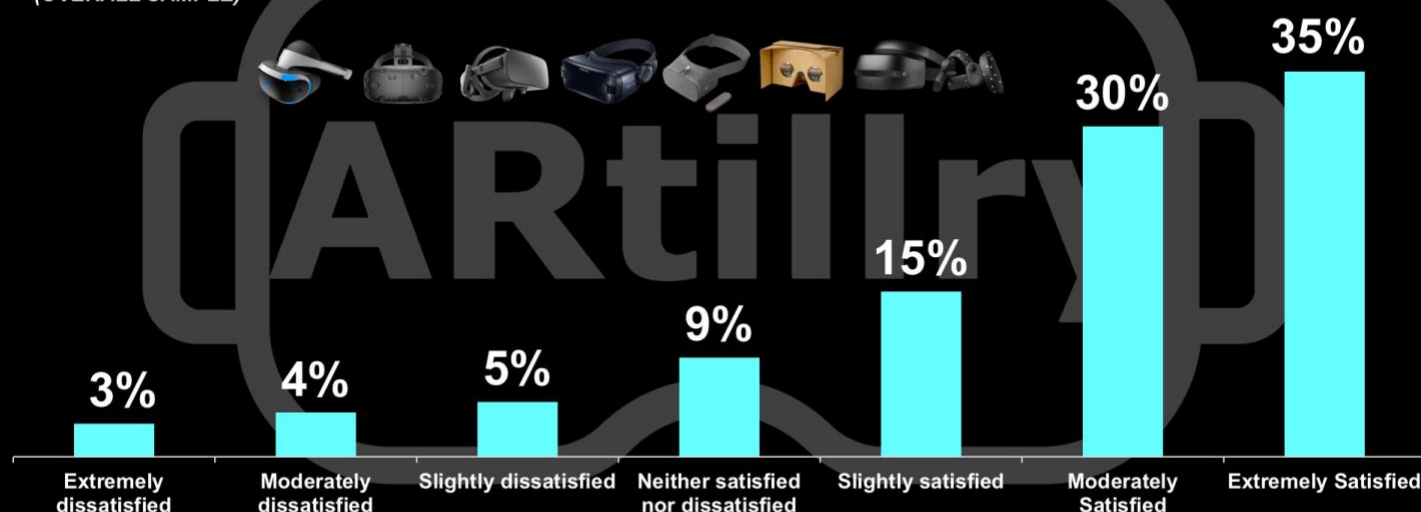
These satisfaction levels also align with another key principle ARtillery has observed. After receiving a VR demo — say a gaming or productivity app — new users often grasp it right away, then express excitement levels emphatically and ideate other areas where it might apply to their lives and work.



Image Credit: Samsung

VR HEADSET SATISFACTION

HOW SATISFIED ARE YOU WITH YOUR VR HEADSET?
(OVERALL SAMPLE)



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smart decisions that drive success

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“I’ve been working in tech for many years and have never seen a new technology that people understand so quickly when you give them a demo,” Strata CEO John Wright told ARtillery recently. “And their minds will immediately go to other VR applications that make sense.”

One reason for this cognitive leap is VR’s visual intensity. It strikes users to such an immersive degree that they understand it on deeply visceral levels. But because it’s so visceral, it can’t be explained in words. So people have to try it in person to get excited about it and really “get it.”

This is all to say that it stands to reason that VR satisfaction levels are so high for those who have tried it. But that contrasts the low interest levels for those who haven’t tried it (explored later). [This underscores one of the VR industry’s biggest challenges: getting people to just try it.](#)

Naming Names

Drilling down another level, how do the above satisfaction ratings map to individual devices? Answering that question can start to indicate the VR features and formats that resonate most with consumers. [The high-level takeaway is that satisfaction is high across the board, with some variance.](#)

Specifically, how do satisfaction ratings array within each headset? In other words, for each headset, what percentage of users were moderately or extremely satisfied? [The highest score on this measure goes to HTC Vive \(82 percent\) followed closely by Rift \(81 percent\), then PSVR \(79 percent\).](#)



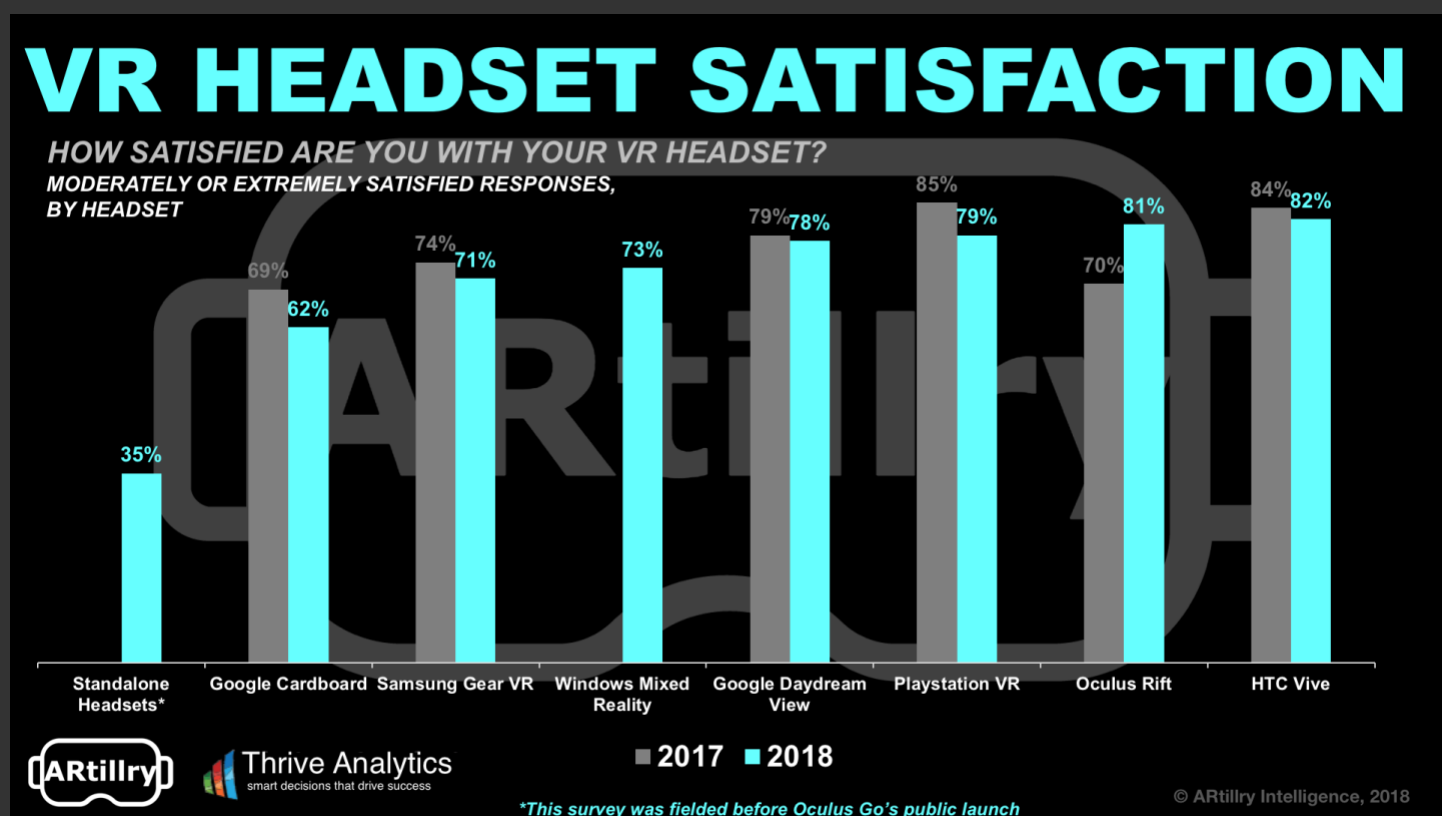
These rankings aren't surprising, as they represent VR's top tier. But the biggest mover of the three is Oculus Rift, which grew from 70 percent to 81 percent satisfaction in Wave 2. Similar to ownership shares examined above, Rift's growth is a result of Facebook/Oculus' recent investments in VR.

As mentioned above and explored more below, Facebook's deep pockets and drive towards a long-term platform strategy engender aggressive price competition (which margin-dependent hardware players like HTC and Samsung can't do). It also invests in hardware quality and content production.

Moving on to satisfaction levels for lower-tier headsets, they likewise scored high and, in some cases, surprisingly so. For example, Google Daydream View scored just one point lower than Play Station VR. However, its technological specifications and user experience are far less advanced.

Samsung Gear VR's 71 percent satisfaction rating is logical, as is cardboard's 62 percent rating. Standalone VR scored lowest, which makes sense for one reason: This survey was fielded before Oculus Go's launch, during a time when standalone VR was characterized by lower-quality devices.

We believe strongly that this survey's next wave will identify the standalone category with much greater satisfaction ratings, due to Oculus Go. In our ongoing use and testing of Oculus Go, it has impressed us in quality levels and price, due mostly to Oculus' investments discussed above.



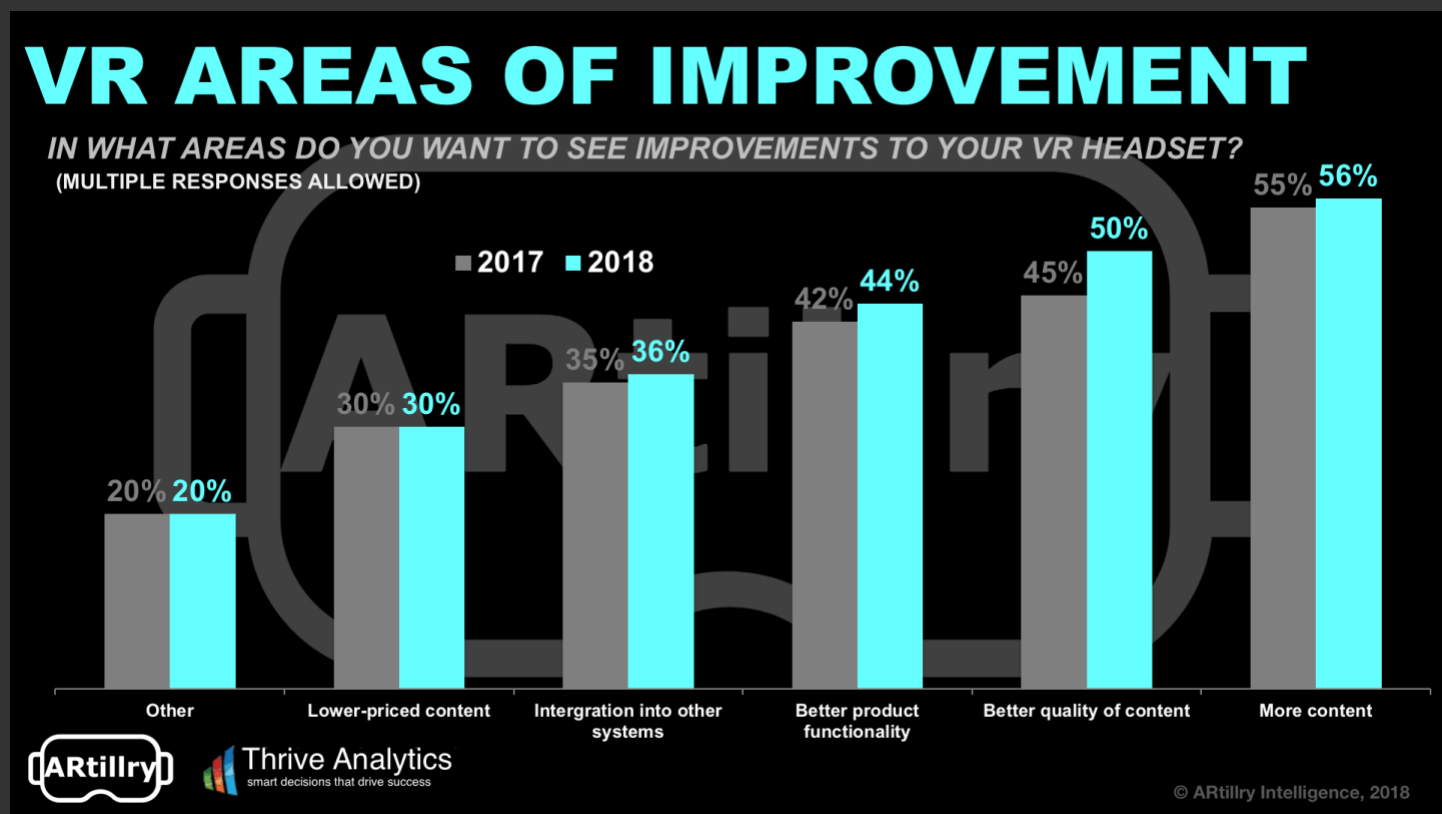
Areas of Improvement: The “What If?”

Among the things that VR users desire, it’s all about content. 56 percent said they want more content, and 50 percent want better quality content – the top two responses. This confirms what ARtillery has examined several times: Content will be king in VR just like it is in most other mediums.

But the challenge today is a classic “chicken & egg” dilemma for devices and content. Put briefly, there isn’t enough content to compel mass adoption of VR hardware; and there isn’t enough of an installed hardware base to compel content creators to invest time and money.

We’ll see this dilemma naturally alleviate over time, as more content is created, and more devices are sold, in a sort of slow-moving step function. Meanwhile there’s a clear hunger for content. This should signal a gap in VR’s value chain, and a business opportunity for potential entrants.

Invoking Oculus Go yet again, it could help accelerate that step function. It enters the market with more than 1,000 compatible apps, due to its backwards-compatibility with Gear VR. This will not only help its own appeal and competitive positioning but attract more mainstream users into VR in general.



Part II: Non-User Attitudes

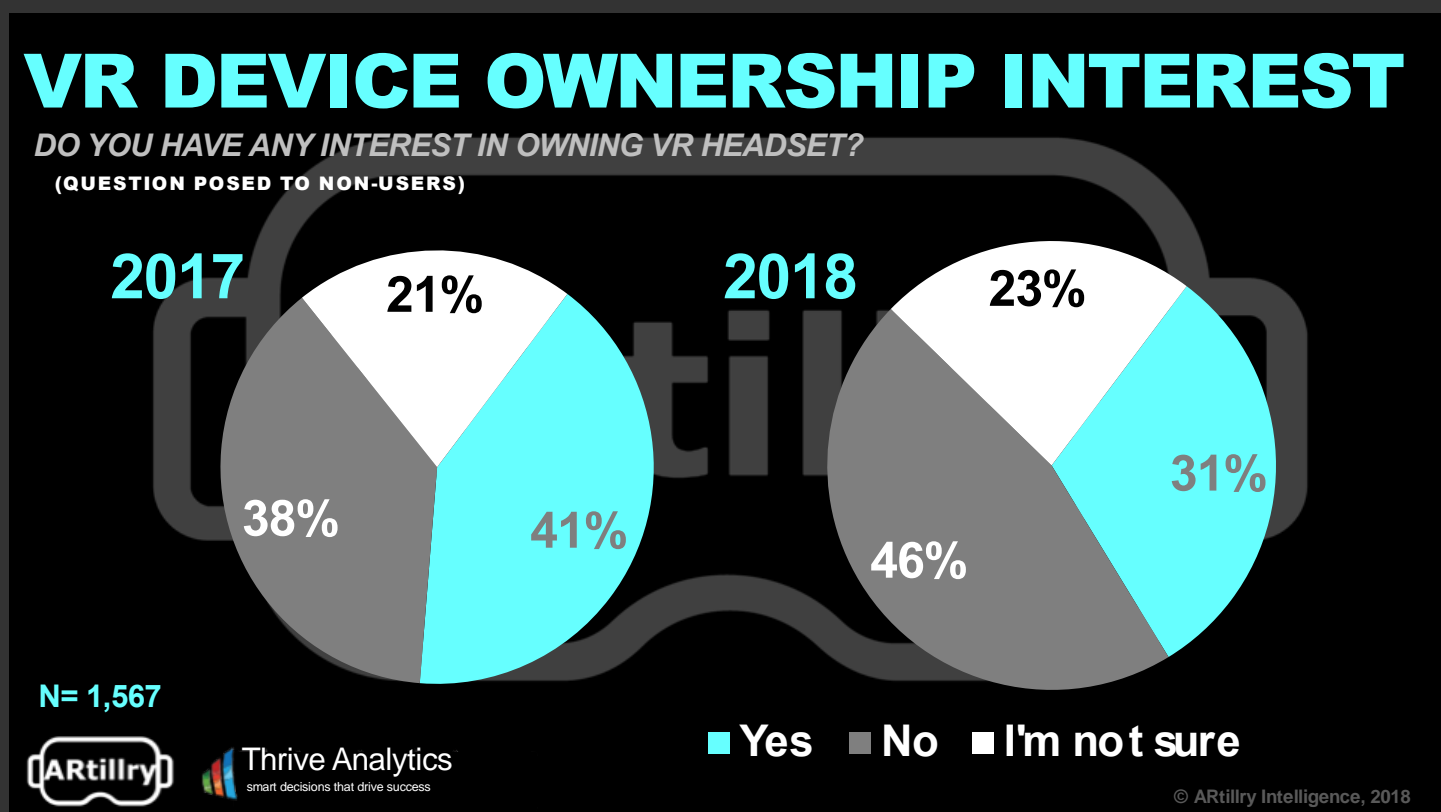
Perhaps more important than current VR users, what are non-users saying? Because they're much larger in number at this early stage, appealing to them is a strategic imperative. And that requires knowing what they like and don't like. The following sections examine these non-user attitudes.

Adoption Likelihood: The "If?"

Moving from users to non-users, how do they feel about VR and how eager are they to jump into it? 31 percent report interest while 46 percent aren't interested, and 23 percent aren't sure. These results are promising in one sense, however their comparison to 2017 doesn't paint a pretty picture for VR.

Specifically, the 31 percent of non-users who reported interest is down from 41 percent in 2017. That's a pretty sharp decline and is likely a result of the overall cooling of interest we've anecdotally observed over the past year. Consumer interest has clearly waned from its early 2017 high.

However, another way to read these figures is as a classic market correction. As we observed in January's ARtillery Intelligence Briefing,^{vi} the drop in VR interest and investment should be viewed as a return to market-reflective levels, and away from the hype cycle that ruled 2016 and early 2017.

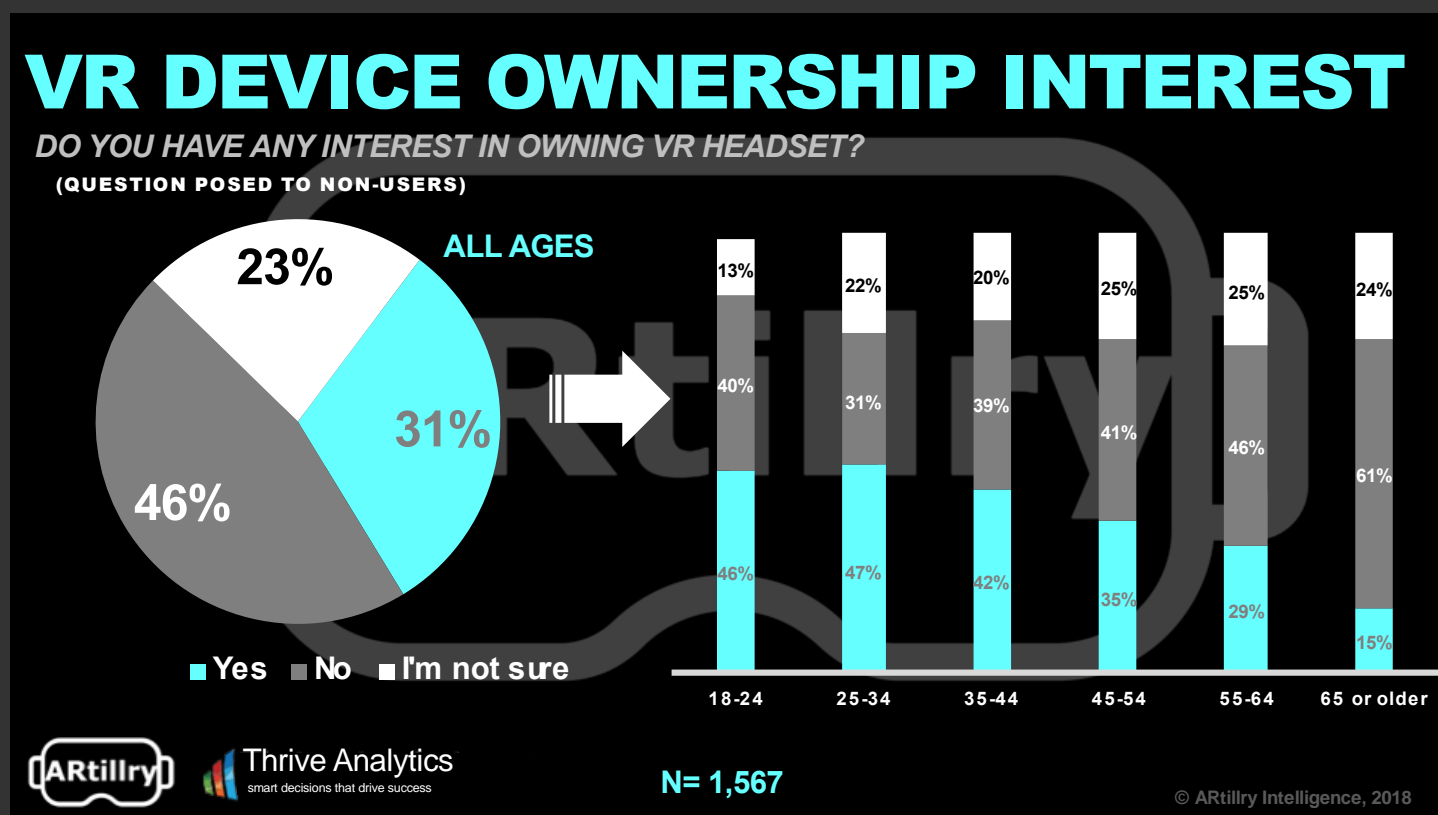




Just like the 2000's eCommerce bubble, market projections weren't inaccurate... they were just early. Eventual market sizes exceeded those lofty expectations, but not until 5-7 years later. We believe VR interest, and these representative survey results, will likewise bounce back in the coming years.

As for interest by age, this segmented in ways that were both expected and aligned with Wave I results. Interest was highest among younger age groups such as 25-34 (47 percent) and 18-24 (46 percent). Interest level in fact has an inverse relationship with age, declining steadily as age increases.

ARtillery believes this youth correlation is due to digital natives' savvy, comfort and interest to experience emerging technology. This is an important realization, as it indicates a strong future for VR as younger generations cycle into the ranks of buying-empowered adult consumers.





Reasons: The “Why Not?”

More important than binary interest levels in VR are the reasons behind them. This can shed light on non-users’ reasons for disinterest and therefore what features and components can be changed or optimized to bring more people into VR. Their objections can be a telling indication of what’s missing.

So the question is, among non-VR users reporting negative or unsure interest, what are their reasons for that sentiment? Why aren’t they interested? Not surprisingly, price and content were factors (price is explored more later). But the biggest reason was the rather damning “just not interested.”

This stark and definitive sentiment about disinterest was the largest single answer (57 percent) amongst all ages who responded to this question. ARtillery believes that this indicates two key challenges and areas of improvement for VR proponents: education and distribution.

This goes back to the quote from Strata’s John Wright: Those who try VR for the first time are often sold on the new experience right away. But the flip side is that the medium’s level of immersion dictates that you have to see it to believe it. And relatively few people get that chance to try it.

REASONS FOR VR DISINTEREST

WHY AREN'T YOU INTERESTED IN OWNING A VR HEADSET?

	All Ages	18-24	25-34	35-44	45-54	55-64	65 or older
Too expensive	37%	50%	36%	31%	37%	47%	29%
I've heard it causes motion sickness	13%	9%	15%	15%	9%	15%	11%
Just not interested	57%	50%	59%	57%	52%	59%	62%
Lack of content	8%	28%	14%	5%	7%	7%	4%
Poor quality of content	4%	15%	6%	4%	3%	4%	3%
Other	7%	4%	4%	6%	11%	3%	7%



 Thrive Analytics
smart decisions that drive success

(MULTIPLE RESPONSES ALLOWED)

N= 721

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This is simply because the friction involved in trying VR – especially Tier 1 VR – is high. That includes not only cost, but technological invasiveness such as set up, rearranging furniture, etc.. This means that getting that “first taste” to the masses should be a key business objective for the VR industry.

There are a few adoption accelerants ARtillery has identified to accomplish that consumer acclimation:

1. Retail installations, such as demos at Best Buy
2. Location-based VR, such as VR arcades
3. Standalone headsets, such as Oculus Go

Retail installations have been challenging, such as Oculus’ discontinued Best Buy program.^{vii} We believe these will resurge in 2019. Location based VR (LBVR) is also worth examining, including free-roam team competitions (see The Void) that can benefit from network effects and social dynamics.

LBVR can also accelerate overall industry growth by lowering barriers through a “rent versus buy” dynamic. In other words, **it replaces VR’s ownership barriers with more digestible and temporal experiences – in both time and cost. Moreover, it accomplishes that “first taste,” on a larger scale.**

And there’s an important historical parallel at play. In the 70s and 80s, arcades were prevalent before home gaming console ownership became ubiquitous. VR Arcades could fill that same gap – albeit temporarily – for VR. This can help model a trajectory for VR’s directions and opportunities.

Lastly, standalone/untethered headsets will accelerate mainstream adoption as examined earlier. **Oculus Go for example has a mainstream-friendly (and giftable) price point, its content library is vast, and its onboarding friction is low.** It therefore checks the most boxes for mainstream user appeal.



Part III: The Collective Mindset

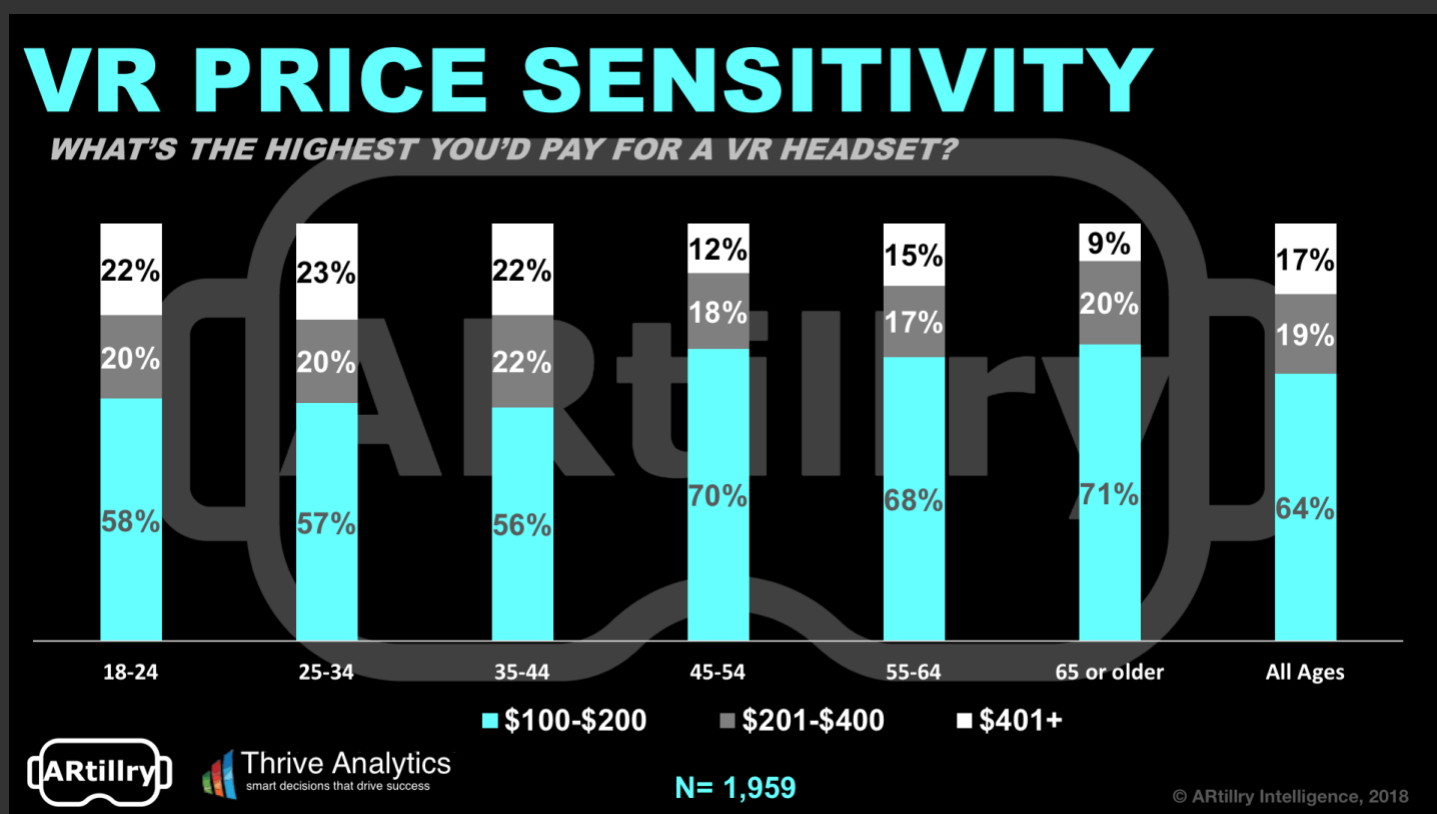
Moving beyond user and non-user specific sentiments, what are the VR variables that cut across both groups. For example, what does price sensitivity look like for all consumers? And what are the types of VR experiences that are most appealing? These questions are covered in the following sections.

Price: The “How Much?”

As examined above, price is an important factor in VR adoption, just as it is with most products. But what are the specific ways that price is currently a barrier to VR adoption? And more importantly, what price points represent triggers for consumer interest – or disinterest – in VR ownership?

To begin, the greatest interest in VR not surprisingly exists at lower price points (\$100 - \$200). And the least interest lies with more expensive purchases (greater than \$400). Given that tier-1 headsets primarily exist at those higher price points, they are most susceptible to price sensitivity.

Broken down further, there’s a clear correlation between price sensitivity and age. Younger consumers are more willing to pay greater sums for VR headsets. This is likely due to the same reasons that make them more attracted to VR in general (digital savvy, interest), as explored above.



Seeding a Market

But the biggest takeaway is the pricing barrier beyond which adoption inflects: \$200. This is consistent with Wave I findings and emboldens our subsequent analysis about this “magic price point” for consumer VR.^{viii} It’s no mistake that it’s also the price of VR’s biggest projected mover: Oculus Go.

As suggested above, Oculus Go is priced at \$199 to bring higher-end VR to a greater swath of the mainstream public, and to better seed a VR marketplace. *Oculus has the luxury (Facebook) of treating VR hardware as a loss leader to build market share and a longer-term platform strategy.*

This is something Facebook missed by not launching a smartphone as a direct consumer touch point. It instead has to reach consumers through apps that operate on devices that Google and Apple control, so there’s no vertical integration nor hardware optimization it can control.

Given Mark Zuckerberg’s vision of a VR future, that’s not a barrier he wants to face again. *Though smartphones are highly conducive to social engagement and connectivity, Facebook sees VR as an even greater bedfellow for the future of digital social interaction (though it could take a while).*



Image Credit: Sony

But that long-term approach comes at a cost: to sacrifice margins for market share. That's due to the fact that **platform wars are often won through momentum set in early days to attract users**. Then there's a domino effect of developer interest and incentive, content creation... and more users.

Put another way, it's all about attracting users by any means to seed a marketplace and establish an installed base. **That economically attracts developers who create content, which attracts more users. Those users in turn attract more developers... and this virtuous cycle of network effect commences.**

Meanwhile, consumers win by receiving a strong value on hardware from Oculus. But not everyone wins: companies reliant on short-term hardware margins (Samsung, HTC, etc.), will find it harder to compete. HTC's Focus standalone headset already delayed U.S. distribution plans for this reason.

Overall, it's a lesson in loss-leader economics (for those who can afford it), and strategic positioning in early days of platform wars. We saw the same thing in the smartphone OS wars. And like we saw then, consumers benefit most. **Prices should continue to drop, along with an arms race for VR quality.**

Along those lines, one looming question is if these competitive pricing dynamics will move into Tier-1 VR. **Given that Oculus is aggressive with Rift pricing too, could it impact HTC Vive and others?** That could already be happening per the headset share shifts examined earlier in this report.



Image Credit: HP



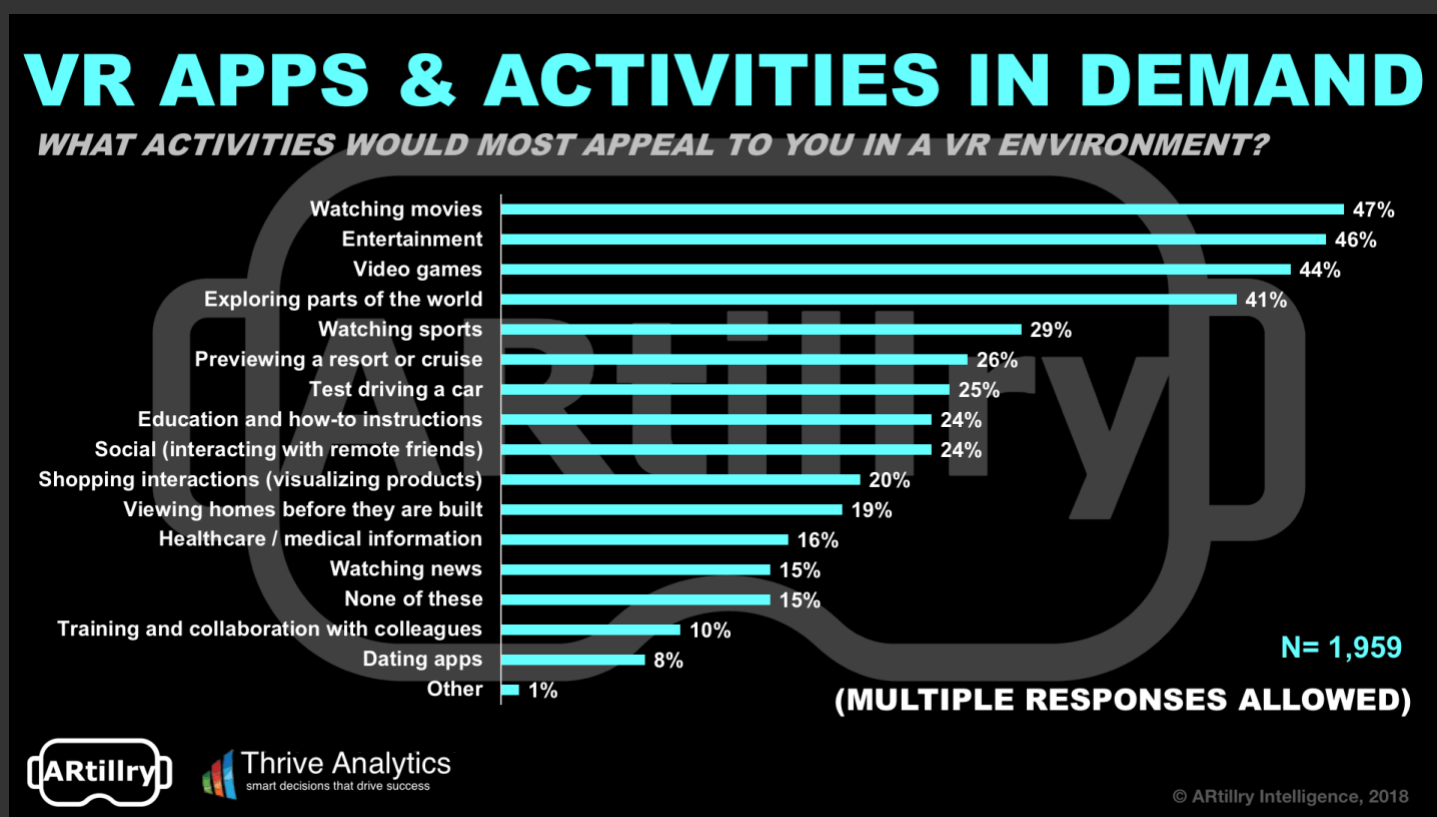
Demand Signals: The “What’s Next?”

Another useful exercise is to speculate the VR applications and activities that are most appealing on hypothetical levels. This question was posed to the entire sample (users and non-users) and returned telling results. **The high-level takeaway is that it’s once again all about content.**

The top result for desired VR activities was watching movies (47 percent), followed by other forms of lean-back entertainment (46 percent), interactive video games (44 percent) and exploring parts of the world (41 percent), watching sports (29 percent) and test-driving a car (24 percent).

Interestingly, these results are a mix of “native” VR activities (fully immersive 3D) and standard 2D screens that have been brought into a VR environment (such as watching movies). **The fact that the latter represents the most popular result is telling of the very early stage that VR is still in.**

As we’ve examined,^{ix} eventual VR successes will design native experiences. In other words, they can *only* exist in VR. They’ll apply unique capabilities to immerse users in 3D sensory experiences. **This will represent a learning curve for developers... just like we saw with native smartphone app design.**

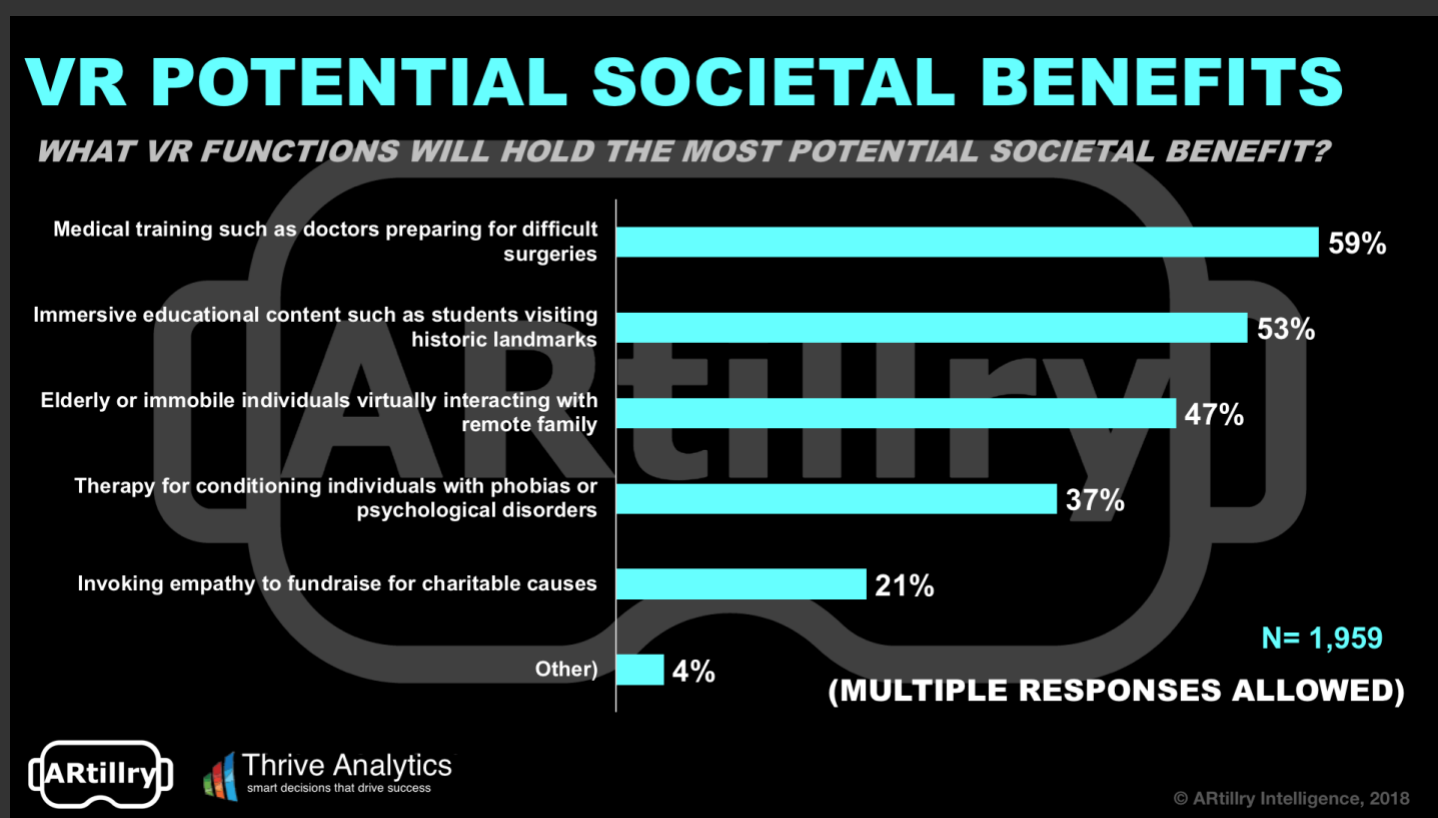




Meanwhile, activities that ARtillery believes are under-rated in these results include employee training and collaboration, social interaction, education and shopping interactions. These are areas we're examining and project strong long-term use cases for VR, despite lower reported interest today.

As for more altruistic VR applications – those that serve a greater good rather than a personal need – respondents rated medical training as the top use case. That was followed by education, communications for the elderly and mental therapy/conditioning. None of these were surprising.

Bottom line: these results in totality should be considered when evaluating VR's points of intersection with existing business. For example, online travel, car shopping, and sports broadcasters should examine such consumer sentiments when designing product road maps and long-term evolution.



Final Answer: “Will You Buy VR?”

Taking everything so far into consideration, all respondents were asked about the likelihood of purchasing a VR headset in the next year. This is perhaps a more telling sentiment than their interest levels – a point-blank feeling on their probability of an actual near-term purchase.



These results paint a less favorable picture for VR. 13 percent of respondents reported either “likely” (8 percent) or “extremely likely” (5 percent) chance of VR ownership over the next year. And 72 percent reported either “likely” (14 percent) or extremely unlikely (58 percent) chance of ownership

This more sobering indication of near-term consumer VR growth further compels the adoption accelerants explored earlier. VR Arcades and theme parks will accomplish this to some degree as will standalone VR, which ARtillry Intelligence likes to collectively refer to as “gateway drugs.”

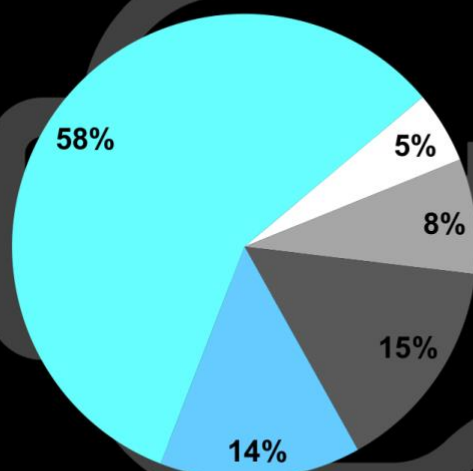
ARtillry Intelligence also believes VR adoption will start slow, then hit a tipping point and suddenly accelerate. That will happen when a critical mass of consumers gets that initial “first taste” of VR. Interest levels will grow among those consumers... and influence others in their social graphs.

That will happen in tandem with growing content libraries, killer apps, and the forward march of Moore’s Law. The latter will drive compelling devices that are faster, cheaper and untethered. All of these factors will converge to push VR’s mainstream penetration, but it will likely take several years.

“The thing about revolutions is it tends to feel like they happen all at once,” said Unity XR Lead Tony Parisi at AWE. “But that’s not the way it really happens. It’s a series of small changes. Its little seemingly innocuous things that add up to finally turn something to where it goes to a tipping point.”

VR PURCHASE INTENT

HOW LIKELY ARE YOU TO PURCHASE A VR HEADSET IN THE NEXT YEAR?



60% of individuals who are extremely likely or likely to purchase a VR system in the next 12 months are male.

■ Extremely Likely ■ Likely ■ Neutral ■ Unlikely ■ Extremely Unlikely

N= 1,959



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Final Thoughts: Strategic Implications

One of the key themes throughout this report is the stark difference in sentiment between VR's current users and those who haven't tried it yet. Users report impressively-high satisfaction and engagement. Non-users conversely show explicit disinterest and price sensitivity.

These findings hold important lessons for VR proponents. Once again, it's a double-edged sword: VR's highly visceral interface captivates users. But that same orientation makes it so the advantages can't be communicated adequately by traditional methods of product marketing.

People need to experience VR before they convert, which presents logistical challenges in pushing that "first taste" at scale. Our sister report on mobile AR had similar findings, but its adoption barriers are lower due to "zero cost hardware" (existing smartphone) and less bulky/invasive devices.

Back to VR, Oculus Go could have the price, content and package to accelerate VR interest and adoption in the way that the industry needs. ARtillery Intelligence projects 1.3 million units shipped in 2018, which isn't a lot, but it could accelerate industry growth through a gateway drug dynamic.



For VR developers, this has important implications. Though it has a more basic user interface and less sophisticated positional tracking (rotational head tracking versus full-6D spatial movement), Oculus Go could be a strategic point of entry to a larger addressable market for content or games.

But based on its unique capabilities, it requires optimizing content accordingly. For example, the device's 72 Hz processing, 3 degrees of freedom and low interactivity make it better suited to a "lean-back" experience. That can mean movies (which scored high in this survey) and casual games.

This follows a core native design principle that should guide VR developers: Optimize software for the tools you have now, rather than getting carried away in features that the device can't or shouldn't handle. Oculus CTO John Carmack advocates this optimization strategy, especially for Oculus Go.

"Some of [my favorite VR experiences] are clearly very synthetic worlds where it's nothing but cartoony, flat-shaded things with lighting but they look, and they feel good," he said. The lesson: a low-poly approach is better if it works, versus intensive graphics that the device can't handle.

Most of all, it should be remembered that this optimization process will be a moving target. VR has a long way to go and will evolve quickly. But several points along that path will meanwhile represent value for those who can utilize available toolsets and apply them in optimal ways their fields.

"This is a multi-year roadmap, so these are things we can get stressed about and worry about, but we shouldn't," said Parisi at AWE. "Let's get back to the knitting for now, we're going to be solving these problems as an industry and as a community here together for the next couple decades."



About ARtillery Intelligence

ARtillery is a publication and intelligence firm that examines augmented reality and virtual reality, collectively known as XR. Through writings, data and multimedia, it provides deep and analytical views into the industry's biggest players and opportunities. It's about insights, not cheerleading.

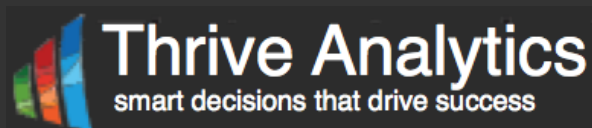
Run by career analyst and journalist Mike Boland, coverage is grounded in a disciplined and journalistic approach. It also maintains a business angle: Though fun and games permeate VR and AR (especially the former) long-term cultural, technological and financial implications are primary.

Learn more at <https://artillery.co/about>





About Thrive Analytics



Thrive Analytics is a leading digital marketing research and customer engagement consulting firm. With clients spanning leading national brands as well as publishers and agencies serving the small business community, it pairs proprietary market research services and data analytical tools with time-tested business insights and methodologies to help organizations measurably improve customer experience, loyalty and sales results. Its mission is to provide superior research and support services that inspire clients to make smarter decisions. For more information or to contact, visit:

<http://www.thriveanalytics.com>

About Virtual Reality Monitor

Virtual Reality Monitor™ is Thrive Analytics' proprietary survey of virtual reality/augmented reality technology users. These surveys, conducted semiannually, track the adoption rates, usage, satisfaction levels, profiles and many other areas related to VR/AR users. Each wave has a customizable section for client specific inquiries. Results & key insights are communicated in advisory reports & presentations, charts & infographics, newsletters & articles and custom data views. Information from these studies are used by marketers, product managers, consultants and other people working in the technology space.

About Intelligence Briefings

ARtillery Intelligence Briefings are monthly installments of VR/AR data and analysis. They synthesize original and third-party data to reveal opportunities and dynamics of VR and AR sectors. In addition to data, a layer of insights is applied to translate market events and raw figures into prescriptive advice.

More information, past reports and editorial calendar can be seen at:

<https://artillery.co/artillery-intelligence/>

About the Author

Mike Boland was one of Silicon Valley's first tech reporters of the Internet age, as a staff reporter for *Forbes* (print) starting in 2000. He has been an industry analyst covering mobile and social media since 2005, and is now Chief Analyst of *ARtillery Intelligence*, covering emerging tech.

Mike is a frequent speaker at industry conferences such as VRLA, ad:tech and LeadsCon. He has authored in-depth reports and market-sizing forecasts on the changing tech & media landscape. He contributes regularly to highly read online news sources such as *TechCrunch*, *Business Insider* and the *Huffington Post*.

A trusted source for tech journalists, his comments have appeared in A-list publications, including *The New Yorker*, *The Wall Street Journal* and *The New York Times*.

Further background, history and credentials can be found at:

<http://www.mikebo.land/>





Methodology

ARtillery Intelligence has partnered with *Thrive Analytics* by writing the questions for the *Virtual Reality Monitor* consumer survey. These questions were fielded to 1,959 U.S. Adults. Additionally, *ARtillery Intelligence* wrote this report, which contains its own insights and viewpoints on the survey results.

For market sizing and analysis, *ARtillery Intelligence* follows disciplined best practices, developed and reinforced through its principles' 15 years in research and intelligence in the tech sector. This includes the past 2.5 years covering AR & VR exclusively, as seen in research reports and daily reporting.

Thrive Analytics likewise follows best practices in consumer research, developed over its long tenure as a consumer research firm. More information and background on each firm can be seen in the preceding "about us," sections, or through the website links included with those descriptions.

More details about the survey sample (demographics, etc.) can be seen in this report's introduction.

Disclosure and Ethics Policy

ARtillery has no financial stake in the companies mentioned in this report, nor was it commissioned to produce it. With respect to market sizing, ARtillery remains independent of players and practitioners in the sectors it covers. It doesn't perform paid services or consulting for such companies, thus mitigating bias — real or perceived — in market sizing and industry revenue projections.

ARtillery's disclosure and ethics policy can be seen in full at:

<https://artillery.co/about/disclosure-and-ethics-policy/>

Contact

Questions and requests for deeper analysis can be submitted at:

<https://artillery.co/contact/>



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