

Underperformance of Nike By You

Challenge:

As a hypothetical, suppose that Nike has approached you as a client. Their senior executives are concerned that the [Nike By You](#) (formerly [NikeiD](#)) business has missed sales forecast targets for the last two fiscal months. Further suppose that you had almost every data point a business might reasonably collect at your fingertips: every click on the website, product metadata, sales history, customer data, etc.

Outline an analysis plan illustrating how you would diagnose the recent divergence from the sales forecast, the various hypotheses you would test, how you would validate them, and if validated, what actionable recommendations you would propose to senior leadership to help inform their decisions on how to improve the Nike By You business. Feel free to outline other data sources you might bring in to supplement your approach. For this exercise you can neglect the impact of COVID-19, which would in practice likely result in a decrease in sales.

Approach Overview:

It is important to keep the context of the problem in mind when considering how best to find solutions. Nike is an enormously successful company worth tens of billions of dollars, and it has not earned its place atop the global athletic apparel market by winging it. A quick search of the Nike career site turns up a prominently featured [Data & Analytics team](#), as well as more than [75 open positions](#) under the analytics career umbrella. Thus, we can assume from the outset that we are not going to make a helpful contribution by simply throwing a few tried-and-tested algorithms at the wall and seeing what sticks. No doubt Nike has teams of talented individuals working on these kinds of problems, teams which built the existing sales forecast models based on considerable expertise and experience within the industry. Our job, then, is not to reinvent the wheel, but rather to help identify subtle factors that have cropped up recently which may 1) be responsible for the shortfall of sales relative to model projections and 2) have been overlooked by expert analysts used to focusing on other factors.

Here I have taken a detailed look at two potential explanations for the sales shortfall. The first is that some of Nike's highest-profile NBA partners – LeBron James, Kevin Durant, and Kyrie Irving – have combined for unusually disappointing seasons this year, likely hurting sales of their signature shoe lines and possibly impacting Nike By You sales as well. NBA superstar endorsements are key drivers of shoe sales generally, but since the Nike By You line markets itself more as a lifestyle brand than a basketball one, such effects may have been neglected by the analysts previously. The second potential explanation I examine is that of falling sales in China. No doubt an enormous market for Nike, nuances in the impact of current events and the inclusion of a growing sentiment of domestic pride may have complicated prior efforts at modeling sales in the region, leading to the observed divergence from the sales forecast.

Ultimately, of course, the real-world version of this challenge would leave room for additional factors. While it is certainly good to go into a project with some well-developed ideas, it is equally important to keep an open mind as you go about data exploration. Perhaps Nike's customer data would show that the shortfall actually originated because Africa was not hitting its anticipated targets, or maybe some internal marketing surveys would show that consumers have shifted their expectations for product personalization in recent years. In either case, we would want to do external research similar to what I've outlined below for my primary hypotheses, trying to understand the additional factors at play and drawing causal links between them and the declining sales. Simply pointing out where or why sales have declined is only half of the battle. Indeed, the most valuable contribution we can make to a client like Nike is to offer practical recommendations based on our inferences regarding the underlying causes.

Hypothesis #1 – Nike’s Premier NBA Ambassadors Have Underwhelmed

It is no secret that NBA superstars play a pivotal role in the shoe market. Some four decades ago, Michael Jordan’s eponymous Air Jordan brand revolutionized sneaker culture, earning record sales and reshaping the marketing landscape for athletic wear. In the intervening years, [the vast majority of NBA players have had shoe deals of some kind](#), but the driving forces of the market – the true movers and shakers of the sneaker world – have been those who followed in MJ’s size 13 footsteps with signature shoe lines. Rather than wearing standard-issue Nike offerings, these superstars are invited to offer significant input into developing a line of tailor-made shoes, which they then wear and promote throughout the season.

Active players with Nike-produced signature shoes [include generational talents like LeBron James, Kevin Durant, and Kyrie Irving](#). By partnering with these centers of the basketball world, every buzzer beating shot, no-look pass, and electrifying dunk that gets posted to Twitter or Instagram becomes a miniature Nike advertisement. Typically, such a trio would form a nearly bulletproof marketing lineup. In addition to their longstanding status among the best players in the NBA, all three currently play in sizable markets, with James in Los Angeles (along with prominent fellow Nike athletes Anthony Davis and Russell Westbrook) and Durant and Irving having recently relocated to Brooklyn, meaning they are regularly featured in nationally televised broadcasts that [reach millions of viewers](#).

This year, however, has been an anomaly of sorts. LeBron James and the Los Angeles Lakers – just two years removed from a championship title run – have floundered, missing the playoffs even after the attention-grabbing acquisition of Russell Westbrook prior to the start of the season. The Brooklyn Nets, themselves embroiled in controversies surrounding Kyrie Irving’s refusal of the COVID-19 vaccine and the late-season swap of James Harden for Ben Simmons, were unceremoniously swept by the Boston Celtics in the first round of the playoffs. Thus, despite the Nets and Lakers being [pre-season championship betting favorites](#), this season marks the first time in 17 years that the second round of the NBA playoffs will not feature any of these Nike-affiliated superstars.

Certainly, this is not an ideal situation for the company. As the playoffs ramp up, popular discussions would typically be very positive, centering on continued comparisons between LeBron James and Michael Jordan as the greatest NBA player of all-time, Kevin Durant’s lofty place among history’s best pure scorers, or Kyrie Irving’s phenomenal ball handling – all accompanied by photos and video clips of them wearing their unmistakable Nike gear. Instead, pundits and fans are now [deriding James’ perceived role in constructing the Lakers’ roster](#), [criticizing Durant’s underwhelming performance against Boston](#), and seeming to [get fed up with Irving’s off-court eccentricities](#). If player success helps to drive sales, as implied by endorsement deals that [offer significant bonuses](#) to players who advance in the playoffs and win individual awards, then it is natural to consider the impact of disappointing seasons, particularly when they occur simultaneously among some of Nike’s most notable partner athletes.

Given that we are concerned with slumping Nike By You sales, we are interested in the impact of faltering NBA endorsements only insofar as they reflect on Nike sales more broadly. If their underwhelming seasons hurt KD 14 or Kyrie Infinity sales, that is certainly a problem that Nike writ large will want to address, but it does not answer the question at hand. Fortunately, with the available data it should be feasible to examine the extent to which this might impact sales of Nike products that are not directly affiliated with high-profile athletes. To begin with, we would want to look at sales for the associated signature shoe lines, Nike’s more generic basketball offerings, and the Nike By You shortfall. If this hypothesis is correct, I anticipate that it would manifest as a sort of gradient, impacting sales of signature shoes the most and generic basketball apparel and Nike By You sales to a lesser extent. It would be worth checking on the full range of Nike athletic products as well, but given the extreme breadth of product offerings I would not be surprised if the effect of subpar NBA endorsements (assuming it is significant in the first place) were completely washed out in the noise of competing factors in the broader athletic apparel market.

If the signature shoes did not miss forecast targets over the previous two months, I would also want to discuss their modeling approach with some of Nike's data scientists, as I expect that the factors included in the projection tools vary between the company's different market segments. Given their direct association with the various players, models projecting sales for the signature shoe lines almost certainly include some component for quantifying player performance and popularity. [The Nike By You website](#), however, primarily flashes images of lifestyle items – rather than basketball ones – across the screen, so I would not be surprised if its projection model had no such factor. If this is the case, then the impact of underwhelming endorsements might not be immediately evident when looking only at how sales diverge from projections, since sales projections for the signature shoe line would have taken this effect into account while those for Nike By You would not. Thus, the gradient mentioned previously, while still possibly present in reality, would be hidden.

We could examine this using a couple different methods. The most straightforward approach would be to leverage the more than 20 year history of the Nike By You business and simply examine whether or not high-profile player performance has impacted sales in prior years. Did sales go up after LeBron James and Kyrie Irving finished off their historic 3-1 comeback against the Golden State Warriors in 2016, for example? Did they go down in 2019 when James' Lakers missed the playoffs and an injury-hobbled Durant saw his Warriors lose in the Finals to newly signed New Balance player Kawhi Leonard and the Toronto Raptors? As a longer baseline exercise, have sales or page views increased when prominent Nike athletes have high scoring games, particularly in nationally televised matchups? Such historic evidence would lend a lot of credence to this hypothesis. Alternatively, we could construct a sales projection model for the signature shoe lines ourselves, intentionally neglecting factors relating to recent player performance, and then check whether this model yields sales shortfalls consistent with the expected gradient.

If these tests fail, then underwhelming endorsements are likely not the culprit, and we would need to look elsewhere to explain the sales shortfall. If, on the other hand, they validate the hypothesis, then we can make a few recommendations. In order to correct the observed discrepancies in the Nike By You sales projections model, it would need to be modified to include a factor quantifying the impact of high-profile athlete performance. We should be able to incorporate this change easily enough with the available historic sales data. At that point it becomes a standard prediction exercise where you build a handful of different models around your chosen predictive features, tune the associated hyperparameters (most likely using cross-validation), and then pick the best performing model. This would give Nike a better model for projecting future sales, but it would not address the current slumping sales. Ultimately, though, I am not sure how much there would be to do in this case. If you're Nike, you are obviously not going to cut ties with LeBron James or Kevin Durant over a single underperforming season. If you are sufficiently concerned, however, you could help safeguard against future situations like this by focusing marketing efforts more intensely on a number of next-generation stars like Ja Morant, Luka Dončić, and Giannis Antetokounmpo, all of whom are already Nike partners. While doing so is probably a good idea in general, given that James and Durant are on the back nine of their careers, so to speak, it is unlikely that such an unusual combination of poor performances will occur simultaneously in the future among Nike's highest profile athletes, so drastic actions would not seem to be warranted here.

Hypothesis #2 – Nike By You Has Lost Some Ground in China

China's rise as a global economic power is well-documented. From 2010 to 2020 the country's GDP ballooned [from \\$6 to nearly \\$15 trillion USD](#), an increase of more than 140%. The United States, in comparison, experienced relatively modest growth, with GDP [rising by less than 40%](#) over the same period. Indeed, the past 15 years or so have been revolutionary for China in numerous ways. In addition to significantly increased spending on its military and space programs, China has made [transformative infrastructure investments](#), building nearly 2,000 new skyscrapers, paving more than 50,000 miles of highways, and constructing the world's largest high-speed rail network. President Xi Jinping's rise to – and subsequent consolidation of – power has jilted hopes for a transition to governance more reminiscent of Western democracies, and the country has begun to assert itself on the global stage in ever-more significant ways. This shift is perhaps best exemplified by the [Belt and Road Initiative](#), a nearly trillion-dollar project through which China offers loans for foreign infrastructure investments in countries otherwise unable to obtain such financing.

The days of China acting primarily as an export state are clearly long passed, and the country of some 1.4 billion people – [over half of whom are now counted among the global middle class](#) – has rapidly become a true force in the global consumer economy. In fact, much of China's recent economic growth has resulted from the purchasing power of its emergent middle class, with [more than half of its economy now being driven by domestic consumption](#). While this relatively new market is a tempting area of expansion for virtually all global enterprises, it is especially so for a company like Nike that has aggressively placed itself atop the basketball apparel ecosystem for a very simple reason: basketball is incredibly popular in China. By [some estimates](#) there are more basketball fans in China than there are citizens in the United States, and the NBA is the country's [most widely watched professional sports league](#). It should come as no surprise, then, that Nike has put significant effort into establishing and expanding its presence in China, even [including additional, larger royalty bonuses](#) for sales in the country associated with sponsored NBA players. In total, Nike currently has [some 7,000 stores](#) in operation in the country, and in 2021 its Chinese sales [yielded a staggering \\$8.3 billion USD](#), accounting for about 20% of the company's total global revenue. Footwear sales in China alone produced some [\\$5.7 billion in revenue](#) last year.

While the sales figures associated with Nike's Chinese market share are no doubt impressive, it is unclear how robust they will be moving forward. Last year, under considerable pressure from Western consumers and in conjunction with other major companies like H&M, Nike released [a statement](#) clarifying that it does not source any of its products from Xinjiang, the region in northwest China that has become a center of international controversy after whistleblowers published evidence of human rights abuses against the resident Uyghurs and other minority groups in the province. The statement went on to emphasize ongoing audit practices focused on ensuring that forced labor is not used in the Nike supply chain. While this helped placate some concerns among Western consumers, [it sparked immediate backlash in China](#). Wang Yibo, a popular Chinese actor, terminated his contract as a Nike representative in response to the statement, and on Weibo, China's popular Twitter analog, responses critical of Nike were among the highest trending topics.

The backlash was not limited to social media, either, as Nike's China sales [fell by 20%](#) following the outcry. It is worth noting that COVID-19, which we are meant to neglect in this hypothetical, likely played some role in this sales shortfall, but it does not seem to be the sole culprit. While Nike was suffering a steep loss in sales, domestic companies that would have been facing similar supply chain issues and factory closures were enjoying significant growth, with sales [increasing some 17%](#) during the same period. Still, if sales were down solely due to Nike's public stance on Xinjiang there would be good reason to expect this to correct itself in the future. After all, social media outcry typically dies down with time as other stories come to dominate the headlines. The problem for Nike, however, is that there are signs that this is a deeper trend. [A 2019 survey](#), for example, found that more than half of Chinese consumers claim to have avoided purchasing products from American companies to show support for China amidst growing tensions with the U.S. [The polarizing reactions](#) on Weibo relating to U.S.-born Olympians Eileen Gu and Zhu Yi, both of whom chose to

compete for China in this year's Winter Games, further illustrate the growing relevance of Chinese nationalism, particularly in the realm of athletics.

Moreover, the shifting sands of the Chinese market are likely to play a significant role in Nike By You sales specifically, as evidenced by [Nike's high-profile Guangzhou store](#) incorporating a heavy focus on the personalized product offerings of the Nike By You business. Unlike with the underwhelming player endorsements, where the impact on Nike By You sales (if extent in the first place) would be a second order effect, here the impact would be direct. It isn't hard to envision causal factors in Chinese culture that might have produced the shift, either. Nike has been doing business in China for [more than 40 years](#), meaning it first entered the market in the immediate aftermath of [the Cultural Revolution](#). After enduring a decade of forceful attempts at instilling the rigid ideology of Mao's *Little Red Book* throughout society, it is easy to imagine that, as Chinese consumers became more affluent, the prospect of foreign goods – especially those that encouraged individualism like the Nike By You offerings – would be well-received. History had observed a similar pattern two decades earlier when, after the collectivization policies of [the Great Leap Forward](#) failed, Chinese citizens were eager to return to the private property system and even actively engaged in government criticism through [the Hundred Flowers Movement](#). Times are changing, however. Almost fifty years have passed since the Cultural Revolution ended, and under the increasingly authoritarian government of Xi Jinping, Chinese citizens have seen their [quality of life improve tremendously](#). Individualism, once an avenue of stylistic rebellion against failed collective economic policies, may simply lack the luster it once held in China, particularly when it comes attached to an American company amidst rising international tensions.

Disentangling any underlying cultural and psychological factors at play would certainly be a difficult task armed only with the available sales data, making it a promising candidate for the kind of subtle effect that might have escaped notice by Nike's data scientists thus far. Fortunately, the basic prediction of the hypothesis, that Nike By You sales have been underperforming in China, should be easy enough to test. Nike's customer and sales data no doubt includes information about the location where purchases are being made and where products are being shipped to, so it would be straightforward to check if, over the past two fiscal months, sales in China had been faring worse than those elsewhere in the world. If we do not, at minimum, find that Nike By You has had slumping sales in China, then we would move on to other hypotheses, but given that Nike has, in general, been [underperforming in China](#) recently, I would be somewhat surprised if we did not observe such a signature.

Assuming instead that we did observe the predicted sales shortfall, the first question becomes how to address shortcomings in the sales projection model. If sales have only diverged from the model in recent months, I imagine that Nike's data science team must have found a way to account for backlash related to the Xinjiang statement, perhaps by parameterizing negative Weibo trends. I could certainly envision a scenario where this approach used training data from the peak of the backlash, and might therefore be prone to underpredict future sales shortfalls if Chinese consumers more deeply internalized the incident. In such a scenario they would not simply be turning away from Nike because of the Xinjiang statement, the impact of which would ostensibly fade over time, but as part of the longer term trend toward domestic companies like [Li-Ning and Anta Sports](#). Thus, while negative trends attacking Nike might not be front and center on Weibo any more, consumers may still shun Nike products, and their impact would thus be missed by the projection model. This is all hypothetical, of course, and in the real-world version of this challenge I would be able to be more precise after having discussions with those behind the model itself.

If this does turn out to be the primary cause of the observed sales deficit, that Chinese consumers are increasingly turning toward domestic companies for their athletic apparel, then Nike will face an uphill – but likely not impossible – battle to retain its sizable market share in the region. The tricky part will be doing so while navigating the often-times incompatible needs of its other markets. To be sure, from both an ethical and a strictly business perspective, Nike is in no position to come out tomorrow with a full-throated endorsement for China's handling of the situation in Xinjiang. Fortunately, it likely does not need to do so. Like all social media backlash, it is unlikely that the Xinjiang issue alone is causing a long-term issue. Instead, the shift among Chinese consumers is largely cultural, and that gives Nike an environment it can work within. A great example

of a company finding success in a somewhat similar situation is Toyota's [push for expansion within the U.S. market](#). Aside from the name, it is almost hard to tell that Toyota is a Japanese company here in the U.S. They sponsor some of the biggest names in NASCAR, market a robust lineup of pickup trucks, and rarely run an advertisement that fails to emphasize their commitment to manufacturing within the U.S. In short, they meet American consumers where they are, and Nike has the opportunity to follow much the same path in China. Indeed, CEO John Donahue is already on record saying that ["Nike is a brand that is of China and for China"](#).

Of course, establishing that kind of brand identity is not a short-term process. It has taken decades for Toyota to obtain the positive perception it now enjoys in America, and even that remains a work-in-progress. Nike may be more interested in a short-term fix to buoy Nike By You sales before the next quarterly report, which would require a different strategy. One promising avenue might be to court Eileen Gu, already a popular athletic icon in China, and someone uniquely suited to bridge the gap between an American company and Chinese consumers. The gold medalist [already has a deal with competing Chinese brand Anta](#), but every contract has a buyout. If Nike is serious about quickly moving the needle in this area, bringing Gu on board as a Nike By You spokesperson and coupling her endorsement with a heavy social media campaign focused on Nike's alignment with modern Chinese consumer culture – that is, being a brand “of and for China” – would likely do the trick.