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Waiting in Lines Across the World: An Analysis of Lines in the Amusement Industry

Introduction

Lines are a quintessential part of world culture. As universal as banks, post offices, train stations and restaurants are, so too are the lines which feed them. Lines are often a nuisance; a barrier to the activity or product you seek. Lines can also, however, be a social space, and a means of building anticipation. Lines are almost always the product of a nation's culture and time orientation. In the amusement industry, Disney has worked hard to move queues efficiently, implementing industry standard policies like switchback queues and innovating queue logistics with products like Fastpass. This high level of control and standardization in Disney's logistics would seem to ensure consistent throughput on similar attractions across its worldwide parks. Instead, queue times vary wildly across the world, even when possible confounding variables like park attendance are factored. The goal of this paper is to shed light on the causes of general queuing attitudes across the world, to dissect differences in the amusement industry among global competitors, to investigate the industry-standard practices Disney has put in place to keep operations running smoothly, and to explain why those measures struggle to be upheld in select markets. The goal, ultimately, is to suggest some ways Disney can adapt their queuing models to new and existing foreign markets as attendance increases. This in turn should allow for greater profits, higher park capacities and increased customer satisfaction. The findings should also provide guidance for managers on ways congestion can be limited.

Literature Review

Traditional queuing theory sees those waiting in lines essentially as passive participants, patiently waiting to be served and then being ready for a specific job once they reach the front of the line. It is a mechanistic view of the line, and one that derives itself from the homogeneity of factories. In reality, as Pamiés, Ryan and Valverde discuss in their essay, consumers are a very active part of the line. Customers in general want a shorter wait, and they will go to great lengths to ensure this. If a new checkout counter opens at the grocery store, for instance, a customer is likely to move over if not many people have done so already. Likewise, when a line has little organization, people may begin to form a quasi-service order, where customers communicate amongst themselves to determine a fair order based on arrival time and length of service required. In the most extreme cases, customers may take advantage of a lack of organization and jockey their way ahead by cutting (Pamiés et al., 2015). It is important to consider that customers will often consider the start of service (i.e. the time when the worker begins bagging groceries, etc.) as the end of the line, making customers' former urgency dissipate. This is why a passenger may not have their ticket ready before boarding an airplane, for instance. They want to get to the service far more than they want that service done quickly. Finally, when the actual wait time cannot be decreased, customers desire and take measures to decrease their perceived wait times (Maister, 1985). In the era of smartphones, most people have an easy distraction ready at their fingertips, but perceived waiting times can also be reduced with a pleasant waiting environment or people to talk to. People are not actually waiting any less, but the feeling of waiting less is powerful in and of itself. In the context of an amusement park, operators must facilitate quick boarding and offloading of riders, since riders are unlikely to be efficient once they have reached the front of the line. While organization of the line is important for efficiency and to avoid rule-

breakers, riders can be given responsibility to do some of the organization themselves to lower costs. To lower perceived waiting times, theming and interactive elements can make a major impact. All these processes have been adopted in some measure in the industry already, but some parks have had more success than others. Disney has consistently been a leader in wait time management, as will be discussed in more detail later.

Because lines are not the passive entities they are often characterized as, it stands to reason that cultural factors have a major impact on the way they operate. Indeed, research suggests that lines are often an important indicator of overall social values. In the Soviet Era, lines became an important means of social interaction in Eastern Europe as citizens waited to cash in rations. To this day, the former Iron Curtain is full of largely patient queuers. Meanwhile, in Japan and Germany, rigid social norms and high time valuation make delays much more frustrating. In Spain, proper lines are quite rare, instead being replaced with informal queues where each new arrival must ask *¿Quién es el último?* (Who is the last?) and keep track of their position accordingly (Pamiés et al., 2016). In India, an excess population means jockeying, pushing and harassment. This is especially true at ticket counters and public transit, where much of the research on queuing takes place. Many lines in India are split into groups for VIPs, women (to avoid them being groped or assaulted by lascivious men), and specific service categories (sales, repairs, rentals, returns, etc.), though the latter is common beyond India (Gandhi, 2013). This division makes sense given the stratification of traditional Indian society. Although, paradoxically, the Indian population values overall time saved as well. This means that if one person enters a store with a 5-minute problem (say, purchasing a piece of fruit) and another enters with a 30-minute problem (say, placing a complex order at the butcher counter), Indians will often let the former customer ahead of them. This paradox shows how even within a given

culture, context can be highly important. The US, being very independent, hates to wait in lines. But for times when those lines turn into an anticipatory, communal experience with a shared common interest, people are willing to wait for hours. The famous line for Hall H at Comic-Con, where the most influential panels are held, entails days wasting away in the Sun and missing out on other panels. People are still willing to tolerate and even thrive in this environment due to the fun atmosphere and shared love of comics (Accomando, 2022). The same can be said of new technology releases. The iPhone's 2007 release prompted lines as long as several days, not just for people to get their hands on the product, but to socialize with like-minded technology enthusiasts (Dormehl, 2022).

As theories on line psychology and efficiency have developed, Disney has been remarkable in responding to them and developing their own solutions to make guests happy. Many of their developments have become industry standard. Since the construction of Disneyland in 1955, Disney has been at the forefront of logistics technology in their parks. Early queues were arranged in a switchback, which made lines look smaller, stopped queues from blocking pathways and other attractions, and encouraged conversation between guests (Brandon, 2020). These lines were later iterated to move in more randomized serpentine patterns to make guests feel they were making forward progress, even when their real progress was minimal. While on opening day it was standard practice for guests to buy ride tickets in front of each ride, booths were soon moved to encompass all the rides in a given land. These larger booths had to handle more complex transactions, but the need to wait in line less frequently and the decreased number of transactions made total time waiting much shorter. Three months after the park opened, ticket books were introduced, bundling tickets for different rides into a package that spread demand to less popular attractions. The best rides would require a C ticket while the

lowest quality or least popular rides would only require a cheaper A ticket. The system was later expanded to include even more complex D and E-ticket ride categories (Vagnini, 2019). The system worked well to ensure a well-rounded experience for guests, but had a major shortcoming. Because the system assigned comparative values to attractions, long lines would build at E ticket rides, while A ticket rides were often walk-ons.

The high cost of individual rides, a holdover from classic carnivals, led many guests to spend fewer days in the park, using up their ticket books and then leaving. In the 1960s and 1970s, Disney faced greater competition from parks like Six Flags, Pacific Ocean Park and Kings' Island, which featured unlimited rides for the price of admission. A family could go in the morning, stay until the evening and avoid thinking about cost. Some of these new parks began to use Disney construction techniques as well. The hub-and-spoke model, where themed lands with unique landmarks would split off from a central, park-defining landmark, was a great way to improve guest wayfinding and to evenly distribute crowds. It also allowed each section of the park to stand out on its own, and to be more physically and visually separated from the rest. Kings' Island with its Eiffel Tower replica used similar design principles, along with Knott's Berry Farm and its Sky Cabin, Magic Mountain and its Sky Tower and Canada's Wonderland's Wonder Mountain's Guardian. These helped to ensure more even distribution of crowds into many different queues, encouraging guests to explore and avoiding bunch-ups near the entrance. In response to these industry changes, Disney began in the late 1970s to offer a World Passport on both coasts, which would allow unlimited access to attractions for a one or two-day period. By 1982, rides would be included in the ticket price, with up to four-day tickets being offered (Marshall, 2005). The new program increased hotel stays, days visited, and paved the way for Disney's dominance today in resort properties.

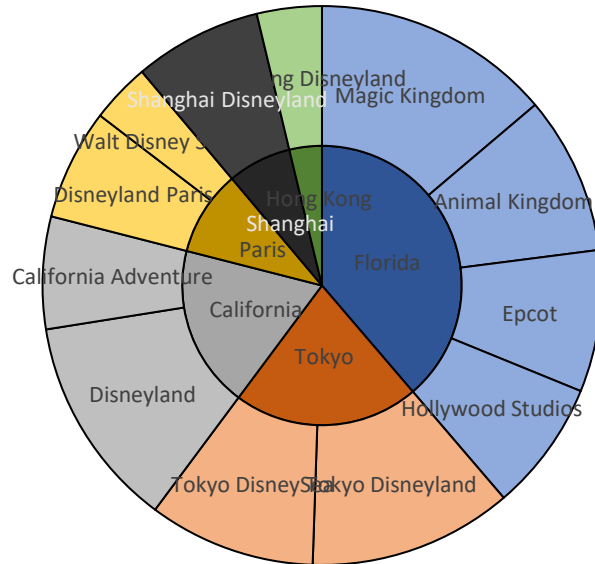
Free rides with admission was revolutionary for a high-end theme park like Disneyland, and drove tremendous growth. But with that growth came new challenges. Lines that rarely got longer than a half hour stretched into multi-hour waits. Capacities of new attractions, like Space Mountain, could hardly handle the excess demand. This new issue persisted until 1999, when Disney introduced Fastpass. Inspired by ski lift single rider lines, Fastpass sought to allocate unused capacity on less popular attractions to lessen waits on popular attractions, thereby decreasing the standard deviation of wait times and improving guest satisfaction. The program worked by giving guests a one-hour return time window for an attraction. As the day progressed, the return times available would extend further into the day until all Fastpasses had been allocated. While users waited for the return time to arrive, they could ride attractions with lower wait times, see shows, or take part in profit-generating activities like shopping and dining (Cain, 2000). The program was offered for free in an effort to improve guest satisfaction, increase in-park spending and avoid creating a class system within the parks. The program was a huge success and was quickly adopted at its international properties. As of 2023, the program has been replaced in all markets by paid equivalents (“What’s Changed...,” 2023). As of now, the impact on standard deviation of waits is not entirely clear, although given how well the system worked to decrease them at the outset, they could increase significantly. Further research is needed in this area.

Methodology

The amusement industry presents an interesting opportunity for queue study. While much research has been done on the qualitative analysis of international queuing practices, like those done by Pàmies, Ryan and Valverde in Spain, quantitative study is more limited. This is largely

due to a lack of data, as most companies keep data about their lines a trade secret. Public institutions, meanwhile, rarely keep detailed notes of their queues. Amusement parks are different. Because they publish wait times freely in their applications and online, it is possible to look at data across many years and track patterns. With Disney's high degree of control in its operations, it stands to reason that its parks would have low variation in its wait times between countries. Many rides are carbon copies of their foreign equivalents, including the Haunted Mansion and Dumbo the Flying Elephant. Many others have only minor changes. Big Thunder Mountain's track is only slightly longer in Paris than at other parks, and Paris' Space Mountain includes inversions, for instance. Some rides appear very different, but have the same general structure. Journey to the Center of the Earth at Tokyo DisneySea and Test Track at Disney's Epcot have very different themes, but use the same ride technology and have similar throughputs. To investigate whether wait times actually vary, the average wait times for each ride at each park since 2014 for Florida, California and Paris, 2016 for Shanghai, and 2020 for Tokyo and Hong Kong will first be calculated. Data since the given years is all the data available for each park, and because this study seeks to find comparative statistics between countries rather than year-over-year improvements, datasets of varying sizes and across different years should not significantly skew the results. These average wait times are not particularly useful in and of themselves. A small park with only 500,000 annual visitors achieving 30-minute waits is much less impressive than a park with 20,000,000 annual visitors achieving the same average wait time. And the attendances of Disney parks do vary wildly. The following graph expresses Disney's attendance by resort and park:

Park Attendance by Country



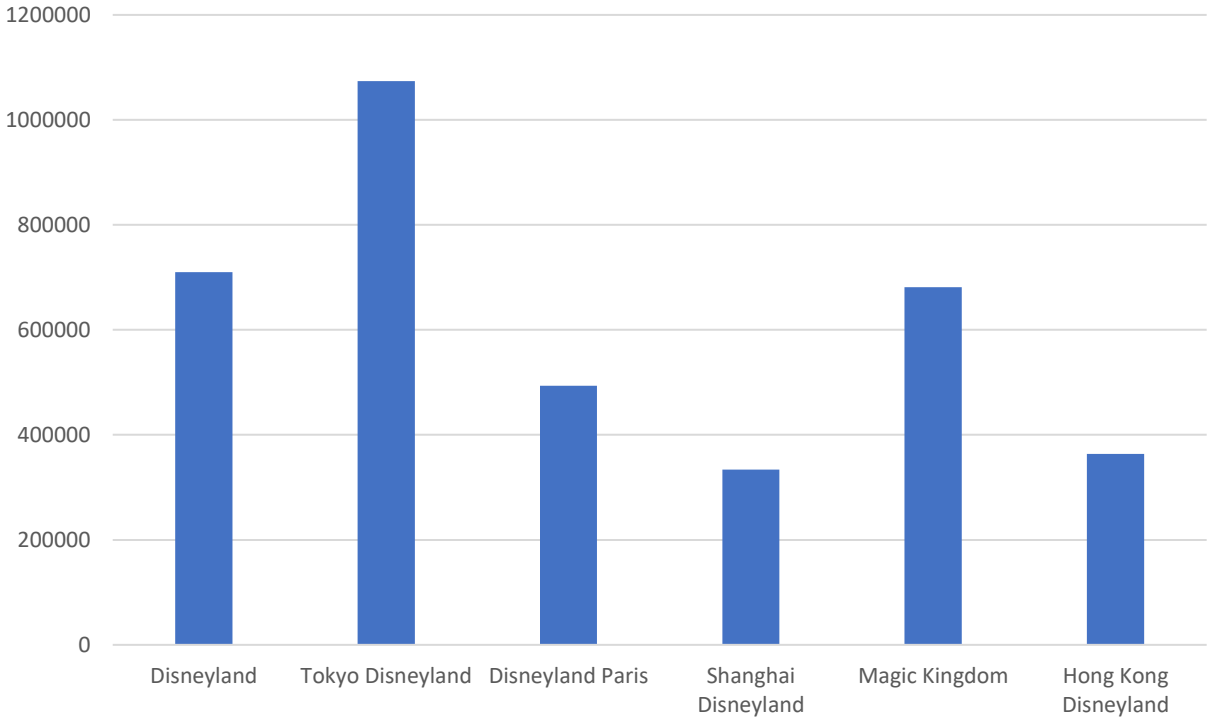
homogeneity of Disney’s parks in terms of number of attractions and their capacities, makes it unnecessary to account for total park throughput in these calculations. By dividing the annual attendance by average wait time, a resulting attendance-adjusted efficiency score can be created which gives a better picture of relative park performance. Attendance data is gathered from AECOM’s annual amusement industry report, while wait time data comes from Queue-times.com, a service which uses wait times published directly by amusement parks on their applications and website to give an accurate description of wait times at many amusement parks worldwide.

A few shortcomings exist in this analysis strategy. First, not all parks have the same number of attractions. While “castle” parks, the marquis parks at each respective resort, do not differ significantly in attraction count, differences in secondary parks like Disney’s Hollywood

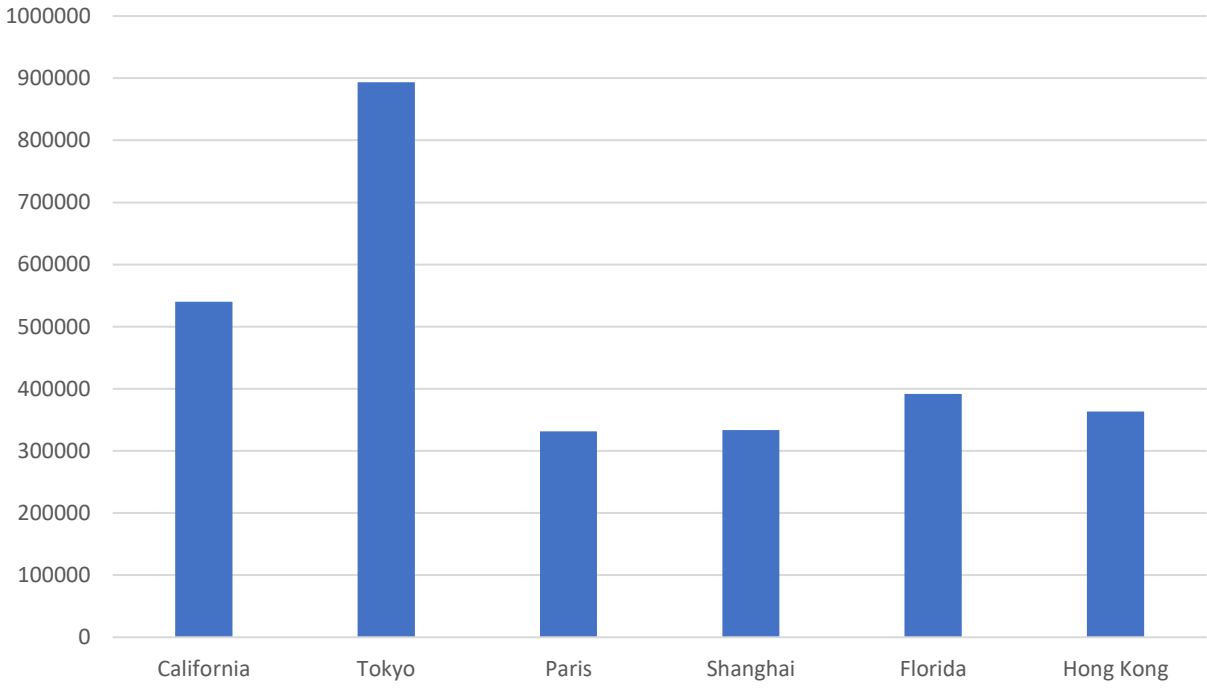
Studios or Walt Disney Studios in Paris, are much more significant. Disney tries to account for this by ensuring the rides these parks do have (usually fewer) are equipped with extra capacity. The Incredicoaster at Disney's California Adventure, the sister park to Disneyland regularly runs seven high-capacity trains on the track at once, despite an industry standard of two or three. And in Florida, both Toy Story Mania at Hollywood Studios and Soarin' Around the World at Epcot had major overhauls just for the purpose of increasing guest throughput at parks with limited attraction offerings. It would be unrealistic to compare parks by total ride capacity, since some rides are so unpopular as to offer negative wait times during parts of the day, where there are so few guests in line that ride cars cannot be completely filled. This reality has the tendency to skew up capacity when actual wait times on the median attraction may not be affected very much. Moreover, capacity data is very difficult to acquire for rides outside the most popular offerings, and theoretical capacities are often much different from the highest practical capacities. It is nearly impossible to find this information without direct private data from the operators. Again, for Disney rides, this is not horribly significant. But while large theme park chains have similar park wide capacities, comparisons with outside parks should be taken with a grain of salt. Secondly, this study tends to ignore entertainment, shows and meet-and-greets, which can all spread guests out and reduce demand for rides. This aspect was ignored largely because entertainment offerings do not differ significantly across the chain, and thus should not imply many comparative differences. Most smaller parks have little to no entertainment offerings.

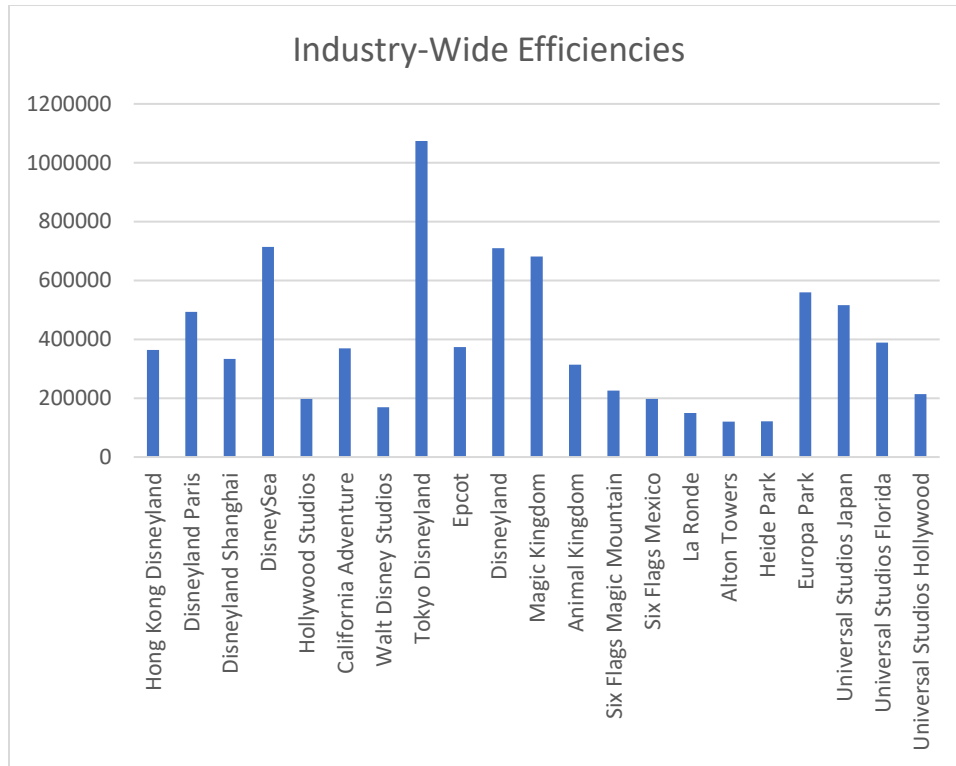
Park	Annual Attendance
Tokyo Disneyland	17,910,000
Disneyland (California)	18,666,000
Disneyland Paris	9,745,000
Tokyo DisneySea	14,650,000
Hollywood Studios	11,483,000
Walt Disney Studios (Paris)	5,245,000
Magic Kingdom (Florida)	20,963,000
Hong Kong Disneyland	5,695,000
Shanghai Disneyland	11,210,000
California Adventure	9,861,000
Epcot	12,444,000
Universal Studios Hollywood	9,147,000
Universal Studios Japan	14,500,000
Six Flags Mexico	2,803,000
Six Flags Magic Mountain	3,610,000
La Ronde	2,500,000
Alton Towers	2,520,000
Heide Park	1,700,000
Europa Park	5,750,000
Animal Kingdom	13,888,000
Universal Studios Florida	10,922,000

Castle Park Efficiencies



Efficiency for All Resort Parks





Discussion

The first data point to note is at Tokyo Disneyland, where the average nominal wait is a very low 16.68 minutes, and the ratio of attendance to wait time is a whopping 1,073,624 - well over one million and significantly higher than any other park owned by Disney or otherwise. Even DisneySea, full of more experimental and complex attractions, manages a ratio of 713,610, higher than any other Disney Park in the world save for the aforementioned castle park on its property. The Disney company noted in 1983 when Tokyo Disneyland opened that Japanese guests were especially patient and efficient when waiting in line. This makes sense, as Japan is a highly collectivist culture in which the demands and comfort of the group are often more important than those of the self. This is perhaps most clear on Japanese train lines, where their Shinkansen cross-country trains run a delay on average of no more than 24 seconds (“The Tōkaidō Shinkansen...,” 2020) and can be turned around and cleaned in seven minutes (Yukako,

2015). Guests frequently complain when delays last longer than just two minutes, and “people-pushers,” boarding assistants, work to make sure people do not stall when trains reach each station. Some personal comfort is given up in exchange for greater reliability for all. Amusement park rides work much like trains in their boarding procedures, albeit with some extra steps, and thus Japanese guests are used to being speedy.

The same conclusion cannot, however, be said of France. Disneyland Paris has the worst ratio of guests to wait time of any castle park, at 493,418. The other park on property, Walt Disney Studios, fares even worse with a score of 169,194. This even trails behind other parks in Europe with looser management structures. Germany’s Europa Park, for instance, achieves a ratio of 559,735. Even notoriously inefficient parks have better scores, like Six Flags Magic Mountain in California, which manages a score of 225,282. France is a much more individualistic culture than Japan, with a Hofstede score of 71 to Japan’s 46 (“Country Comparison Tool,” 2023). This may create a greater imperative for guest comfort over operations performance. However, the United States is even more individualistic, and manages a much higher efficiency at most properties. Probably a much greater contributor to queuing inefficiencies is the fact that Paris is the 6th most visited city in the world. France represents the majority of guests at Disneyland Paris with 49%, but the United Kingdom represents 17%, Spain 9% and The Netherlands 5% (Statista, 2016). This makes Disneyland Paris one of the most nationally diverse parks in the world in terms of visitors. All of these countries have highly variable cultures and wildly different perceptions of individuality. This creates extra tension and conflict in lines when queuing standards clash. A Brit or Dutchman well-adjusted to waiting in an organized queue may become frustrated by a Spaniard more willing to save spots or practice other more informal queuing practices. Likewise, that same Spaniard may find waiting in a

proper queue tedious and unnecessary. Disneyland Paris has done a reasonable job accommodating a large number of queuing cultures, but greater education over expectations could go a long way.

The US is a more interesting case. While individualism reigns supreme at 91 (“Country Comparison Tool,” 2023), higher than any other country in which Disney operates a park, lines tend to stay consistently efficient. The original Disneyland scores 709,995, just short of DisneySea in Tokyo. Florida’s Magic Kingdom scores 681,460. Other resort properties tend to score lower, like Disney’s California Adventure at 369,788 and Hollywood Studios at 197,983. However, these parks have much fewer rides, accounting for much of the difference. Disney is able to exercise greater control over lines in their country of origin, which makes line policies much more effective. Disney’s rigorous and detailed onboarding process, called Traditions, details the specific roles for each position along with giving training on company values and appearance standards (Watson, 2022). Due to cultural idiosyncrasies, it is only followed at US parks, when a similar, adapted program could result in huge efficiency gains if implemented abroad. Americans have also, throughout history, needed to worry much less about food shortages, fuel caps and corruption than in other societies. Lines are equalizers, and so Americans do not have to worry as much about someone jockeying ahead or a product running out.

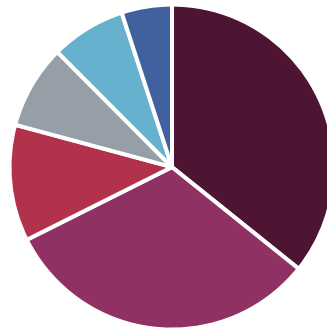
Finally, China and Hong Kong both have quite low scores as well in line with Disneyland Paris at 363,511 for Hong Kong Disneyland and 333,748 for Shanghai. Both of these parks are standalone, and so cannot be compared to other parks on property. Collectivism scores quite high in both places (“Country Comparison Tool,” 2023), but lines are notoriously disorganized in part because of old communist practices, where buyers could never know for sure if there would be

enough product available once they reached the front (Spinks, 2018). Lines are often more likely to resemble a clump, and line-cutting is not unusual, prompting notable government reformation in the lead-up to the Beijing Olympics in 2008 (Reynolds, 2008). These two parks also have an especially unique disadvantage: they are new. Hong Kong Disneyland opened in 2004, and Shanghai only opened in 2016. For comparison, Disneyland Paris opened in 1992, Tokyo in 1983, Disney World in 1971 and the original Disneyland in 1955. It is fair to say that in all parks, time allows for process improvements and streamlined operations.

As a final note on the data, it is interesting to see that in general, these efficiency trends hold for individual rides as well as for parks as a whole. Big Thunder Mountain Railroad, which is identical aside from some special effects differences and a small layout extension in Paris, scores 778,696 in Tokyo, 622,200 in California and 216,556 in Paris when comparing wait times to annual attendance. The Tower of Terror, a popular drop ride, scores 357,317 in Tokyo, 208,782 in Florida and 174,833 in Paris. Pirates of the Caribbean, which uses an identical ride boat ride system worldwide despite differences in ride length, scores 2,558,571 in Tokyo, 888,857 in California and 573,235 in Paris and 487,391 in Shanghai. Shanghai's poor performance here can be explained by the greater special effects and reputation as a standout ride at that park, leading to longer lines. This pattern does not always hold true. The Haunted Mansion, for instance, has better performance in Paris than all parks except Tokyo, perhaps due to a less classic status of that version of the attraction. Still, these numbers further support that this data is not being skewed heavily by other factors like total number of attractions or availability of other entertainment. On effectively identical attractions across borders, efficiency differences persist due to the factors discussed above.

It is worthwhile discussing why Disney, or any amusement company, cares in the first place about reducing their wait times. Nobody likes to wait in line, but Disney has managed to keep attendance high despite some of the longest nominal wait times in the world. Perhaps, its attractions are so good, that guests are willing to wait in a line of any length to experience them. Well, comparative studies of its parks, and all parks, show this is not the case. A 2019 survey by Arival Magazine indicates that the difference between a 30–60-minute wait and an under 10-minute wait increases an attraction’s perceived value by more than double, regardless of the quality of the attraction itself (Blumenfeld, 2020). Moreover, there does seem to be a correlation between operating efficiency and park revenue. The American parks leverage their iconic status to charge high ticket prices as high as \$189 per day, but abroad, the relationship is much more striking. Tokyo Disneyland charges about \$60 for a one-day, weekday ticket (“Park Tickets...,” 2023), which multiplied by its 17,910,000 annual visitors equates to just shy of \$1.1 billion in revenue from ticket sales alone. Shanghai Disneyland charges about \$62 for that same ticket (“Theme Park Ticket...,” 2023), but with only 11,210,000 annual visitors, its revenue sits at just \$695,020,000. And in Paris, despite its much higher cost of living compared to Shanghai, 9,745,000 annual visitors bring in just \$776,968,850 at \$79.73 per day (“Park Tickets,” 2023). Hong Kong prices its tickets at \$82 for a regular day (“Tickets Store...,” 2023), allowing its 5,695,000 annual visitors to bring in a paltry \$466,990,000 per year, in line with its second-to-worst efficiency rating. There are, of course, confounding variables like annual pass sales, multi-day tickets and hotel revenue which give a more complete picture. But it is hard to argue that efficiency speaks when it comes to an amusement park’s bottom line. The Disney Parks with the lowest waits have been able to effectively leverage their positions into better attendance and higher ticket prices.

Assumed Revenue With Single Day Tickets



- Magic Kingdom
- Disneyland
- Tokyo Disneyland
- Disneyland Paris
- Shanghai Disneyland
- Hong Kong Disneyland

Conclusion

So, what can Disney do to improve their efficiency and negate poor international queuing practices? It seems that although Disney places many controls on its line management, there are still opportunities for friction to occur with loose articles, line jumping, slow boarding and general confusion. Disney should take steps to mitigate these causes of friction directly. The first and most obvious course of action is to hire line monitors. People in these specialized roles would be able to enforce line rules and work to educate people on different line types, like single rider and Fastpass. Disney already implements people in these roles at the start and end of lines, but by placing someone in the center, Disney can avoid people from cutting, and make lines more equitable. This may end up being a temporary measure, meant to inform the public on best practices, but if a permanent position, Disney may need to take into account the high cost of living in the cities they operate in, and thus a higher cost of acquiring labor. While this change

could have a major impact on the way people travel through the line, boarding behavior may be more difficult to change. Disney can tackle this, perhaps, by showing pre-ride movies demonstrating how to get into each seat and emphasizing haste. It would also help a lot to have guests bring fewer items on board each train, requiring guests to put their bags in lockers. Sound cues could perhaps help as well. Playing sounds like “Are you ready yet?” Could cue guests into a vehicle’s impending departure and further encourage a quick pace. To avoid clumping behavior in China and Hong Kong, aisles can be narrowed to ensure only one person at a time can get by. And in times of conflict, particularly at the Paris parks, staff may need additional training to get involved, mediate and separate guests when needed. Realistically, Disney may also need to consider re-introducing Fastpass to bring waits to an acceptable medium and avoid stalls at the front, which are likely to occur when guests have been waiting for a long time. Disney, in general, must be able either to enforce tighter controls of its proven methods, or to either adapt to the lines of the cultures in which they operate by developing new practices.

Wherever there are people, there will be lines. Owners of businesses can choose to ignore them and let them inefficiently organize themselves, or they can put in the work to govern and create rules for them. Choosing the former, though easy, can have a devastating impact on revenue and guest satisfaction. Disney is at the forefront of line management practice, introducing features like switchback queues that have become industry standard, but they still have many shortcomings. By ignoring differences in international queuing standards, along with removing useful features like Fastpass, Disney is enabling competitors to capture market share that while minor in the short term, could turn into a serious issue in the near future. It does not help that Disney prices its park tickets far above its competitors, especially abroad. If Disney

wants to stay competitive, they will need to implement some changes. Time will tell of their success.

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