# **Case Study: The Exillirous Safari modelling exercise**

## **The problem**

Exillirious Safari is a very famous attraction in the UK entertaining families and adults for over 50 years. The main park visitors are families with children. Visitors are admitted daily from 9am-5pm. Last entry to the park currently is set to 4pm currently. (put a fixed distribution which stops people coming at 4pm) The safari park manager is keen to explore their trade on the weekend and reports that Saturdays are the same as Sundays.

Table 1 The data on weekend (e.g. Saturday) arrivals provided by the Safari park manager, based on her best guess and the numbers are approximate

|  |  |  |  |
| --- | --- | --- | --- |
| Arrivals of different groups: | Between 9am and 11am | Between 11am and 2pm | Between 2pm and 4pm |
| Families (parents with children in any combination) | 300 arrivals in this period | 120 arrivals in this period | 40 arrivals in this period |
| Couples | 200 arrivals in this period | 100 arrivals in this period | 5 arrivals in this period |
| Friends (groups of four people) | 100 arrivals in this period | 50 arrivals in this period | 30 arrivals in this period |

The safari park manager is particularly concerned about the visitors experience at the park and does not want them to feel like they are spending their day queuing so will go out of her way to avoid those scenarios. **Customers should not spend more than 10 minutes queuing for any attraction.** **Numbers are also expected to increase in the summer 2023.**

The park has recently undergone some updating to its facilities and the expected opening date is the 10th of May 2023. The management team is considering how many visitors they should allow into the park **daily** and **whether they should make any changes to their operating times or outlets.**

## More information about Exillirious Safari

Exillirous Safari is an open-air entertainment park. Tickets are typically purchased online and on mobile apps and the car registration is scanned on entry to allow free parking. It has a large car park with fields nearby to accommodate overflowing parking with extensive capacity.

It holds over 200 species of exotic animals, taking care of the largest groups of white lions, cheetahs, hippopotami, and meerkats in the world. The park is dedicated to the conservation of animals. Amongst other staff it employs five full-time researchers (animal biologists) and does a great deal of work in species conservation.

The park has a path to guide visitors through a one-way system to each attraction, so customers generally only visit each attraction once. The safari park manager provided you with a map of the theme park which is usually given to visitors. Attractions at the Theme Park include the African animals village trail (e.g. caged animals); the penguin cove; the dinosaur world; and a playground (which provides a lot of seating for those with picnics even if they are not families). These are available to all visitors depending on their preferences. Most visitors go to all the main attractions if they have the time by following the one-way system.

The park facilities include two shops (one at the entrance and one at the exit) selling souvenirs and products suitable for visitors to purchase, 1 theme park restaurant, 2 kiosks selling ice cream, drinks, and sweets.

Table 2 The data provided by the Safari Park manager, based on her best guess and the numbers are approximate.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Gift shop use (open all day) | Restaurant (open between 11am-3pm) | Kiosks (Open all day) |
| Visitors | 50% use the gift shop at the entrance point. However, if they have used the initial gift shop, they will not use the exit one. The rest tend to use the exit one. They spend around 2 minutes paying. | 20% of visitors use it. Others bring food with them to have a picnic. They typically will spend between 20 and 40 minutes eating at the restaurant.  (No extra eating activity) | 99% of visitors will purchase something from any of the kiosks at least once during their visit. They spend 5 minutes on average choosing and paying. |
| Other information | The gift shops have 4 tills each at the checkout point currently. The size of the stores is large. Browsing in the store is usually only about 5 minutes. | The restaurant can cope with 100 groups. Tables need to be cleaned in between groups and it takes 5 minutes to clear these. | The theme park is spacious and people often stand near the kiosks in the open air to consume food (doesn’t take more than 10 minutes) and drinks purchased at the kiosk. There is plenty of space and unlimited capacity here. |

There are plenty of toilet block and sanitation facilities.

## **Your task**

Consider the information provided and decide which parts you will include in your simulation. As part of this assignment you will: develop a Conceptual Model; develop a baseline computer model (the current situation); undertake Validation and Verification (and/or report what you would be doing here ideally); Undertake Calibration; Undertake experimentation (report baseline findings and report on scenarios).