Every weekend, you drive into town for your contactless curbside pickup at

your favorite restaurant. Across the street from the restaurant are six parking

sports, lined up in a row. While you can parallel park, it is certainly not your

preference. You will not be required to parallel park when the rearmost of

the six spots is available, or when there are two consecutive open spots. If

currently there are four cars occupying four of the six spots in a random

arrangement, what is the probability that you will have to parallel park?

There are a couple ways you can solve this. One would be to list out all the individual cases and count which ones require parallel parking.

The one I’m going to use is to look at where the two empty spots are. With 6 parking spots and 4 cars, there are 15 combinations total. There are 5 combinations where the two empty spots will be next to each other. There are another five combinations where the last spot is open. However, we have to consider that this counts a combination twice, and results in 9 combinations where parallel parking is not required. We take the original 15 combinations and subtract 9 from it, resulting in a 6/15 chance that parallel parking will be required.