

Bass Model

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This paper focuses on the KIA EV6, one of TIME’s best inventions of 2023. It will explore the vehicle’s predecessor in innovation, apply the Bass Diffusion Model to estimate its adoption, and forecast the number of global users.

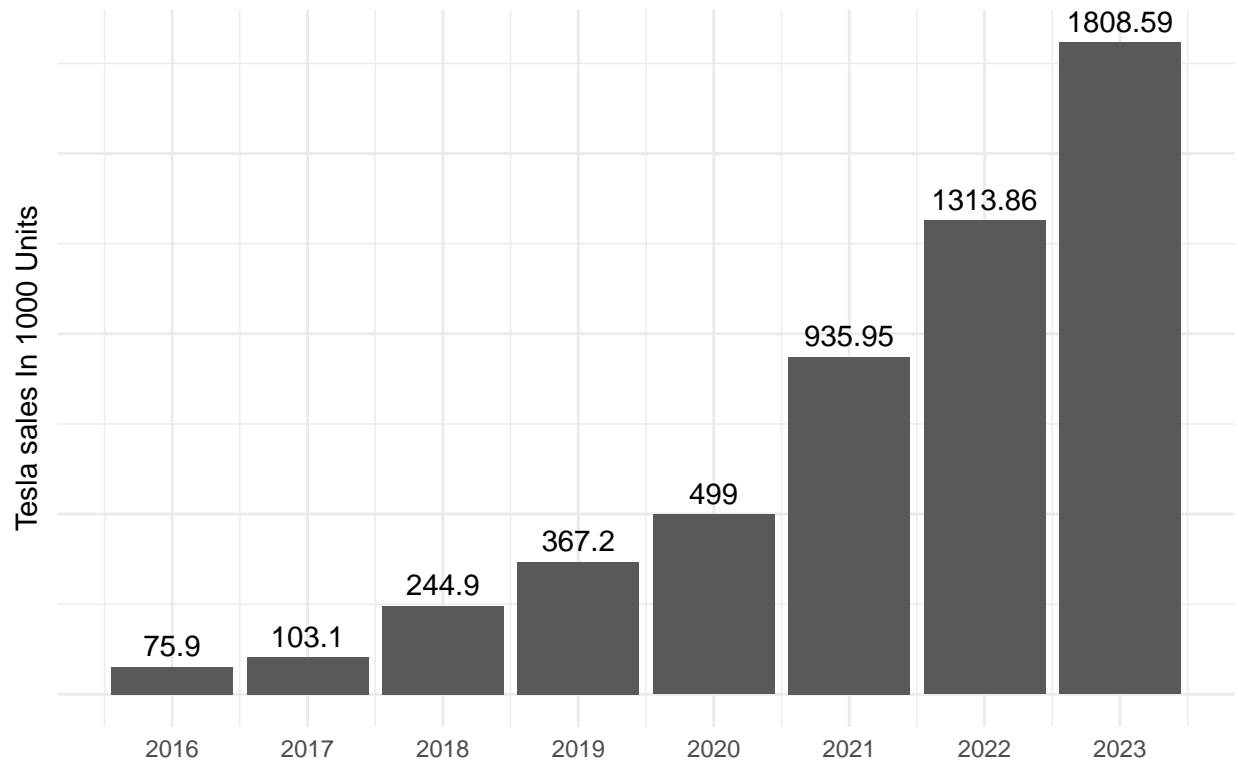
Although electric vehicles are generally expensive, KIA’s EV6 GT—named the 2023 World Performance Car at the World Car Awards—stands out as an affordable alternative, costing nearly half of what other EVs do without compromising on performance. The EV6 GT accelerates from 0 to 100 km/h in just 3.4 seconds, reaches a top speed of 260 kph, and even includes a “drift mode” (TIME, 2023).

Kia’s EV6 GT encapsulates the brand’s philosophy, which centers around the idea that movement drives human progress. It seeks to empower people to explore new destinations, form meaningful connections, and embrace fresh experiences. Kia aims to inspire its customers by offering innovative products, immersive vehicle interiors, and services that free up time for personal pursuits (TIME, 2023).

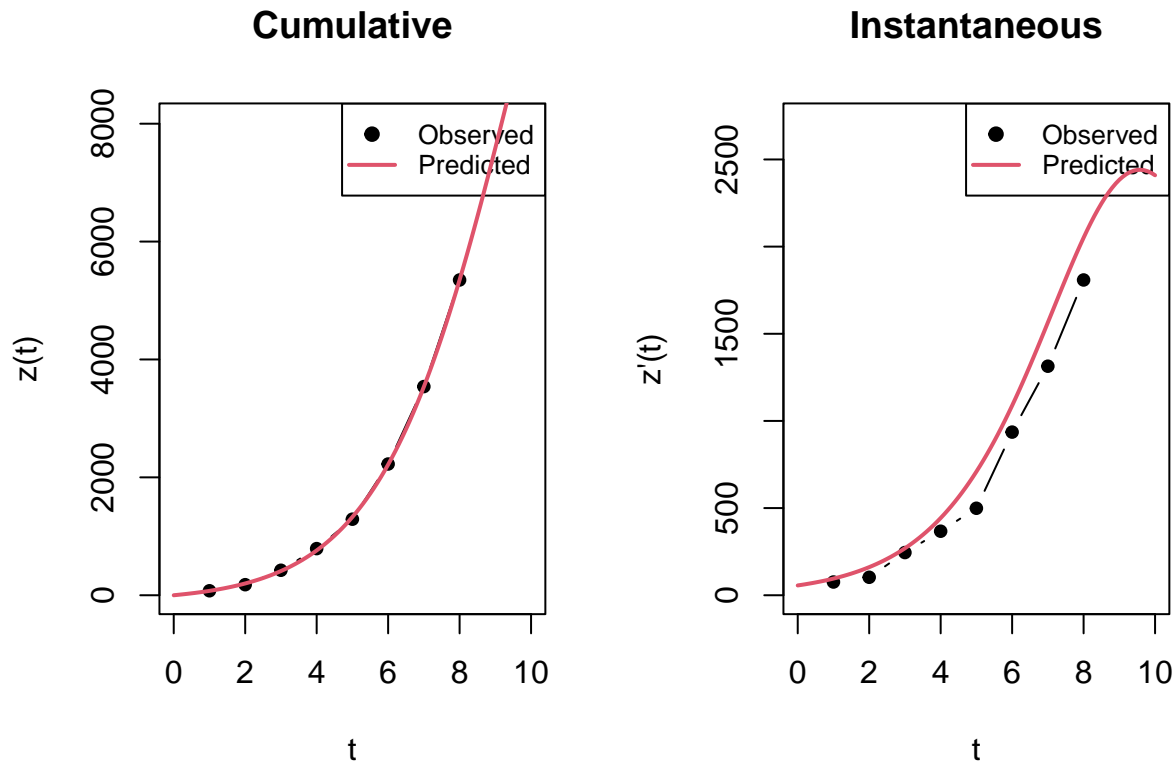
A comparable past innovation is Tesla’s electric vehicle series. Both the KIA EV6 GT and Tesla models represent a strong commitment to electric mobility, offering environmentally friendly alternatives to gasoline-powered vehicles. These brands focus on sustainability, integrating advanced technology to enhance performance, efficiency, and the overall driving experience. They also share sleek, futuristic designs that reflect a modern approach to vehicle aesthetics. Moreover, both the KIA EV6 GT and Tesla aim to deliver a premium driving experience, offering responsive handling, cutting-edge safety features, and luxurious interiors. Together, they play a crucial role in the ongoing shift toward more sustainable transportation solutions.

For the analysis of look-alike innovation, sales data from 2014 to 2023, obtained from Statista, will be used for comparison and Bass Model diffusion estimations.

Tesla Electric Series World-Wide Sales



The graph illustrates Tesla's global electric vehicle sales from 2016 to 2023, measured in thousands of units. The trend shows a consistent and significant increase in sales year-over-year, with a particularly sharp rise starting in 2021. In 2016, Tesla sold approximately 76,000 units, and by 2023, this number had surged to over 1.8 million units, showcasing Tesla's growing dominance in the electric vehicle market. The steep acceleration in sales from 2021 onwards reflects both the increasing consumer demand for electric vehicles and Tesla's expanding production capacity.



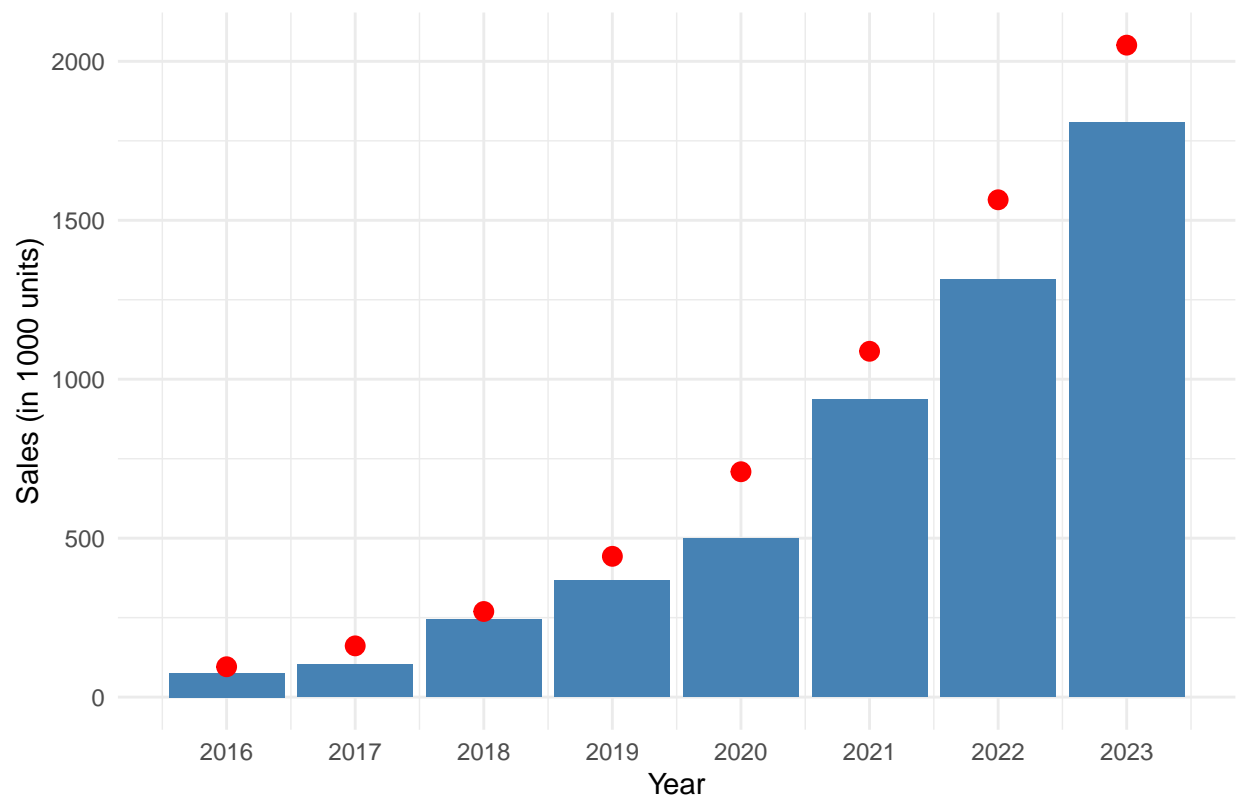
```
## Call: ( Standard Bass Model )
##
##   BM(series = tesla$'Tesla sales in 1000 units')
##
## Residuals:
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
## -37.390  -6.208   2.357  -0.153  10.508   30.796
##
## Coefficients:
##           Estimate Std. Error    Lower    Upper p-value
## m 1.806735e+04  2.437149e+03  1.329062e+04  2.284407e+04  7.03e-04 ***
## p 3.115310e-03  2.696729e-04  2.586760e-03  3.643859e-03  8.53e-05 ***
## q 5.341205e-01  1.752740e-02  4.997675e-01  5.684736e-01  7.14e-07 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error  24.73652  on  5  degrees of freedom
## Multiple R-squared:  0.999909  Residual sum of squares:  3059.478
```

ased on the summary of the model, the estimated values for the parameters are as follows: the innovation rate p is approximately 0.003115, the imitation rate, q is approximately 0.534121, and the market potential m is approximately 18067.35. These estimates indicate a relatively low innovation rate and a higher imitation rate, suggesting that while initial adoption may be slow, subsequent uptake through imitation is likely to be significant. The market potential reflects a substantial opportunity for growth in sales, reinforcing the potential for widespread acceptance of the innovation.

```
## bass model
##
## Parameters:
##               Estimate p-value
## p - Coefficient of innovation    0.0014    NA
## q - Coefficient of imitation     0.4642    NA
## m - Market potential             49479.7794    NA
##
## sigma: 54.8096
```

We have almost the same values as for Method 1. I will choose the parameters from the first method.

Tesla Electric Series World-Wide Sales and Predicted Sales



Sources

The product

<https://time.com/collection/best-inventions-2023/6326978/kia-ev6-gt/>

The look-like product

<https://www.statista.com/statistics/502208/tesla-quarterly-vehicle-deliveries/>