**Appraisal of Olmstead (1936)**

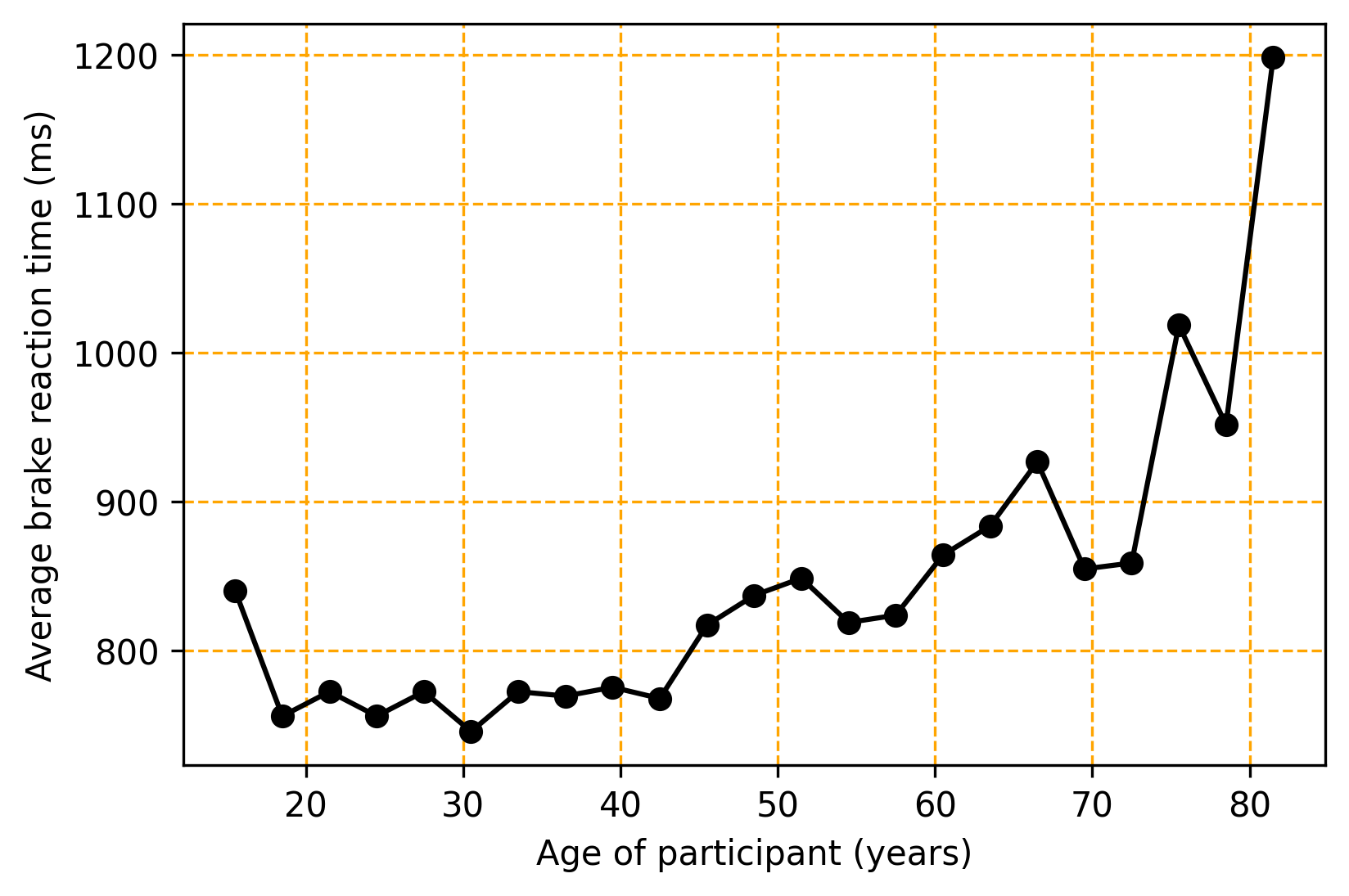
Upon reviewing the early literature, we discovered an interesting paper by Olmstead (1936). In his study, the brake reaction times of thousands of drivers were measured and associated with age, driving experience, and self-reported driving speed (“Usual speeds: In Country …….. MPH In City ……. MPH”). Reaction times were measured in response to a red stop light placed in the background. Participants sat in a mockup and had to control a miniature car using steering gear and the accelerator. Olmstead claimed: “The effect obtained was quite realistic and the motorist had the feeling of actually driving the miniature car during the test.” (p. 17).

The results obtained are highly interesting, and given the difficulty of retrieving Olmstead (1936) online, they are shared here to benefit other researchers.

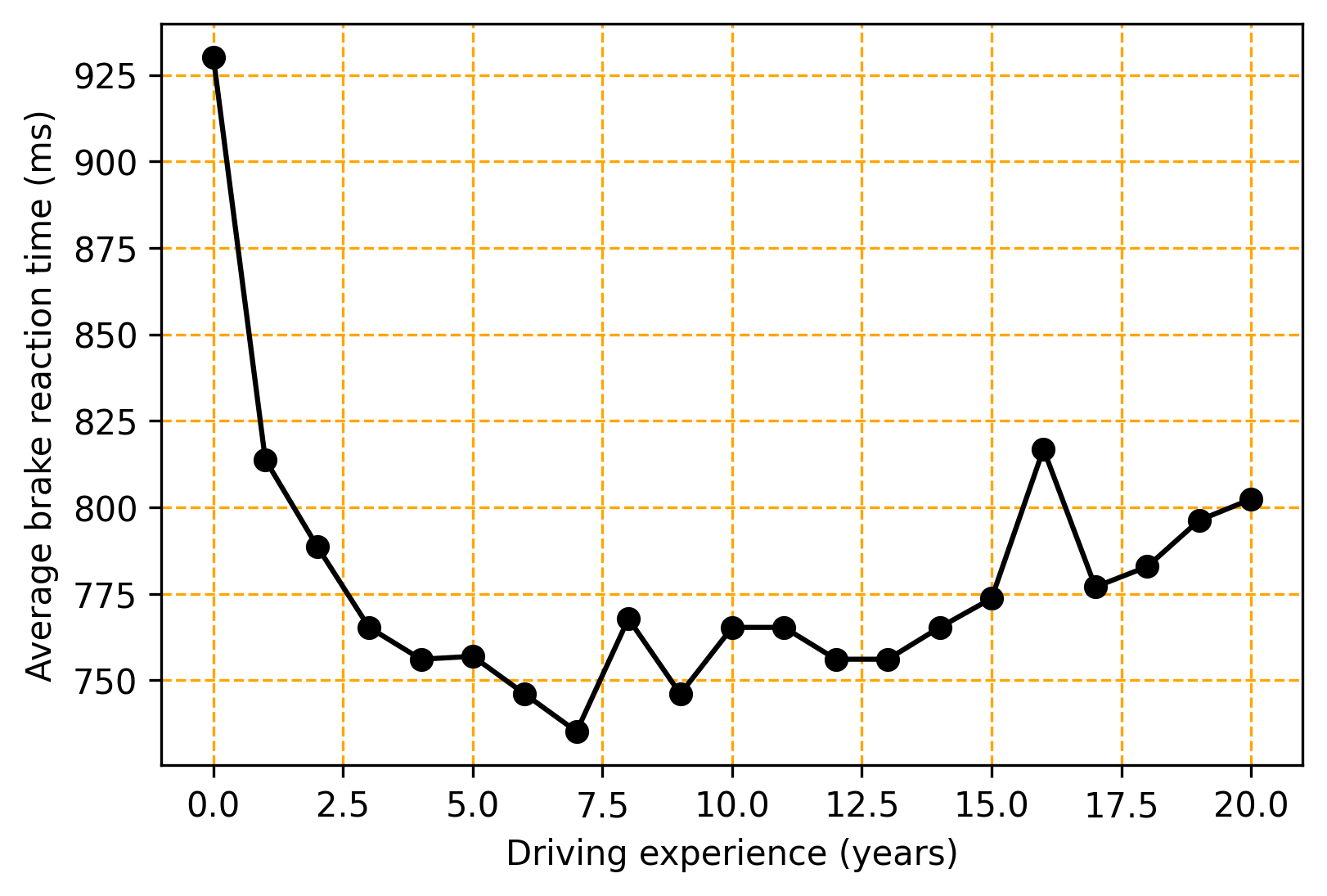
In particular, the results show that

* Brake reaction times tend to slow down with age, especially above the age of 60 (Figure S1). This finding mirrors much literature (e.g., Der & Deary, 2006).
* Brake reaction times improve with the first years of driving experience (Figure S2). This finding demonstrates that the simulator of Olmstead (1936) carries some validity.
* There is a negative association between self-reported speed and brake reaction time. Olmstead (1936) suggested that the negative association may be responsible for the lack of association between brake reaction times and accident involvement: “in general the advantage of having a quick reaction time is nullified by the tendency to drive at higher speed” (p. 23). This finding can be related to later research about different information-processing mechanisms, such as unintentional errors versus deliberate violations (Reason, Manstead, Stradling, Baxter, & Campbell, 1990).

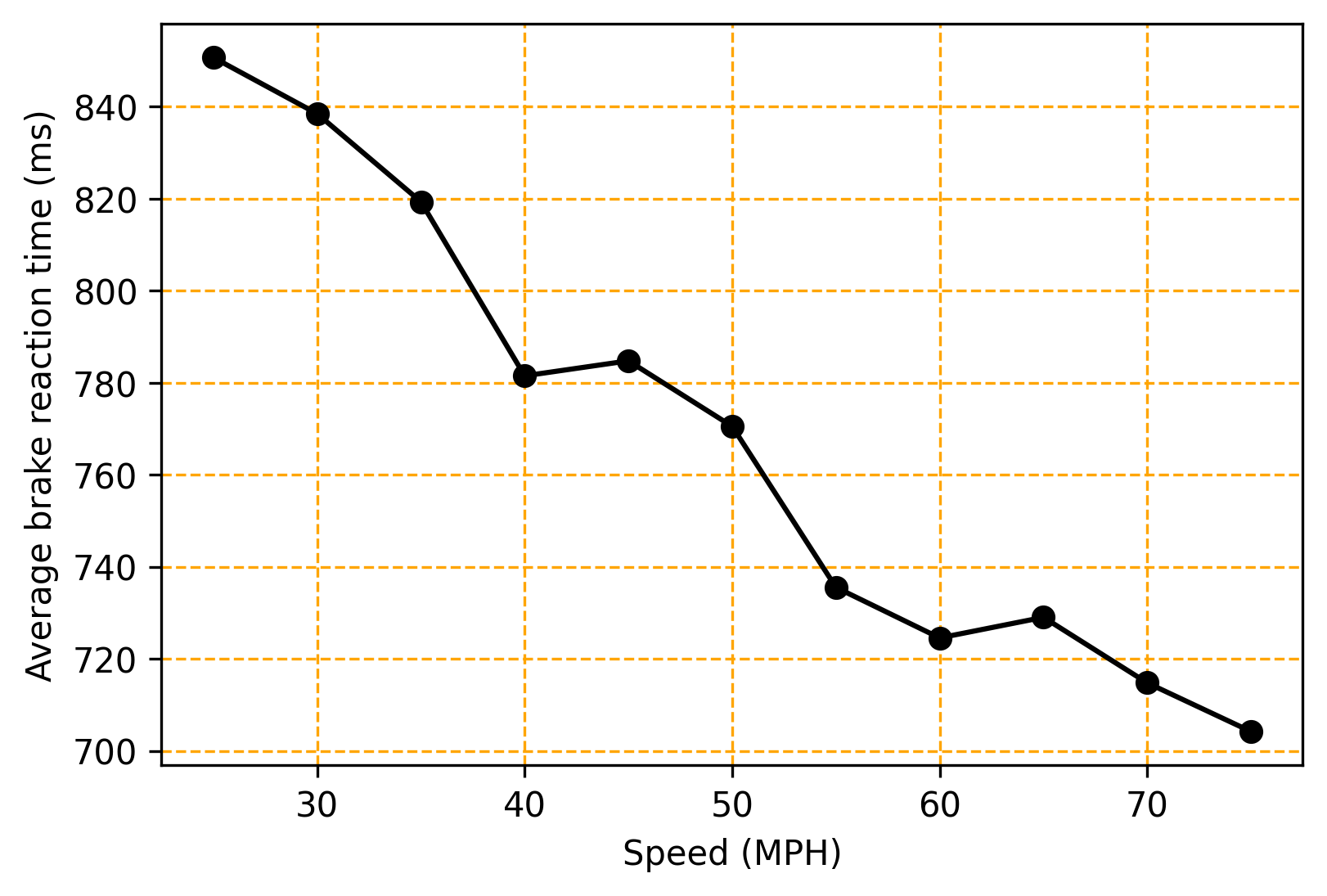
Olmstead (1936) found no systematic association between brake reaction time and self-reported accidents.



*Figure S1.* Average observed brake reaction time versus self-reported age of the participant. The age waws divided into 23 groups with 3-year intervals (9685 cases, average age overall = 28 years, average brake reaction time overall = 780 ms).



*Figure S2.* Average observed brake reaction time versus self-reported estimated years of driving experience. Driving experience was divided into 21 groups with 1-year intervals (9019 cases, average driving experience overall = 12.4 years, average brake reaction time overall = 780 ms).



*Figure S3.* Average observed brake reaction time versus self-reported usual speeds on country roads/ The self-reported speed was divided into 11 groups with 5-MPH intervals (1924 cases, average self-reported speed overall = 48 mph, average brake reaction time overall = 780 ms).

**References**

Der, G., & Deary, I. J. (2006). Age and sex differences in reaction time in adulthood: results from the United Kingdom Health and Lifestyle Survey. *Psychology and Aging, 21*, 62–73. <https://doi.org/10.1037/0882-7974.21.1.62>

Olmstead, F. R. (1936). A study of factors influenced by automobile brake-reaction times. *Proceedings of the Twenty-Second Michigan Highway Conference* (pp. 16–27). Ann Arbor, MI: University of Michigan.

Reason, J., Manstead, A., Stradling, S., Baxter, J., & Campbell, K. (1990). Errors and violations on the roads: a real distinction?. *Ergonomics*, *33*, 1315–1332. <https://doi.org/10.1080/00140139008925335>