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2. In the automobile gasoline mileage example, assume the drag forces are proportional to

$Sv$ , where  $S$  is the cross-sectional area perpendicular to the direction of the moving car and  $v$  is

its speed. what conclusions can you draw? Discuss the factors that might influence the choice

of  $Sv^2$  over  $Sv$  for the drag forces submodel. How could you test the sumodel?

Given that the drag force are proportional to  $Sv$  where  $s$  is the cross sectional area perpendicular to the direction of the moving car and is the speed.

Conclusion

that can be drawn is that as there is an increase in the cross section area the drag force will also

increase. Hence more drag force is to be applied in order to move the car with the given speed".

In case if we consider the choice of  $Sv^2$  over  $Sv$  then the sub model will possess a betterment to that of the original model. Since the drag force are proportional to  $Sv^2$  and hence the proportionality of the model is maintained and it may attain equilibrium.