

# Aerodynamic Bicycle

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The bicycle has progressively lost practicality due to the increasing pace of commuting, however, the bicycle follows a desirable concept for modern and future commuting. Bicycles are less damaging to the environment than cars both in manufacturing and use, however lack the desired speed of commuters. By streamlining the bicycle and cyclist with aerodynamic shells, greater aerodynamic efficiency and speed may be obtained, making the bicycle a more effective form of transportation. To determine the most aerodynamically efficient design for the shell, miniature models will be made to be tested in a wind tunnel to identify the design with the least drag. The miniature models will follow specific regulations to isolate the shape as the variable, not size. The two most aerodynamically efficient designs will be recreated in full-size and tested to observe the effect on top speed, distance traveled, and average speed to determine how the shells increase bicycle performance, and if so, by what amount. The shells did increase bicycle performance, as a greater top speed, distance, and average speed were recorded on both aerodynamic shells over an unmodified bicycle. The more aerodynamically efficient shell achieved an increase in top speed by 22%, distance travelled by 19%, and average speed by 7%. This improved performance makes the bicycle a more practical mean of transportation for commuters, reducing carbon emissions.