



**CALIFORNIA SCIENCE & ENGINEERING FAIR
2019 PROJECT SUMMARY**

Name(s) Maddox Smith	Project Number J0121
Project Title I'm Your Wingman: Aerodynamics of Wings and Winglets	
Abstract Objectives To verify stability of wings with our without winglets. My goal was to verify which which type of wing is preferable from a safety versus efficiency. Methods Building a wind tunnel. Used a cardboard box, duct tape, clear plastic to create a viewing area, and foam board to create wing shapes. I simulate airflow by using a hairdryer in the highest setting. Results The average movement for the wing without winglets was 2/3 inches. The wing with winglets moved on average 1 1/4 inches. My objective was to understand the stability of wings with winglets since airlines have begun to use them to improve fuel efficiency. Conclusions I was interested in the project because of my research and family members involvement in aircraft. Also the last time I traveled on a plane I was interested in the winglets. I found winglets are used for better fuel economy, however, I wanted to know if they made the plane more stable. Further testing included more modern prototypes of winglets airlines are now using.	
Summary Statement Aerodynamic testing of the stability of wings with and without winglets.	
Help Received Parents helped in display board only.	