

# Height-Adjustable Portable Makeup Chair

By Christina Totorica, Cristian Garcia,  
Edgar Sanchez, Erik Mote

## BACKGROUND/PROBLEM

Current makeup chairs in the market are not portable and suitable for artists of different heights.

## OBJECTIVE & DESIGN

Objective: Design a makeup chair that can accommodate artists of different heights while also being easily portable to fit into most cars.

- Max Weight = 250lb
- Min Height = 18 inches
- Max Height = 31 inches
- Lightweight ~20lb

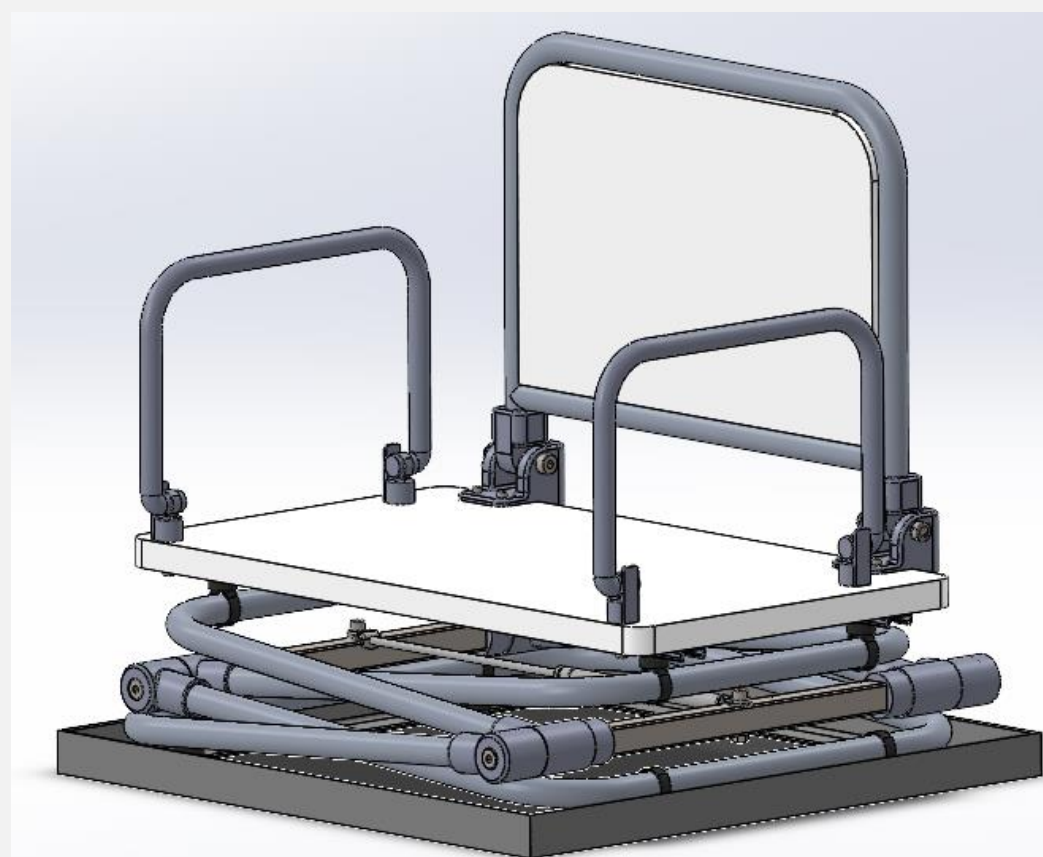


Figure 2. CAD Model of Chair in Two Positions



Figure 3. Verification Prototype in Standing Position



Figure 4. Verification Prototype Compressed

## TESTING

- Height adjustment tests for smooth and secure adjustments
- Stability tests during regular usage and makeup scenarios
- Simulated real-life situations to evaluate durability and wear resistance

## ANALYSIS

- Examined design, manufacturing process of chair
- Conducted structural analysis for safety and weight capacity
- Assessed feasibility of adjustable height mechanism for individuals 18-31 inches in height

### Seat Height Deflection

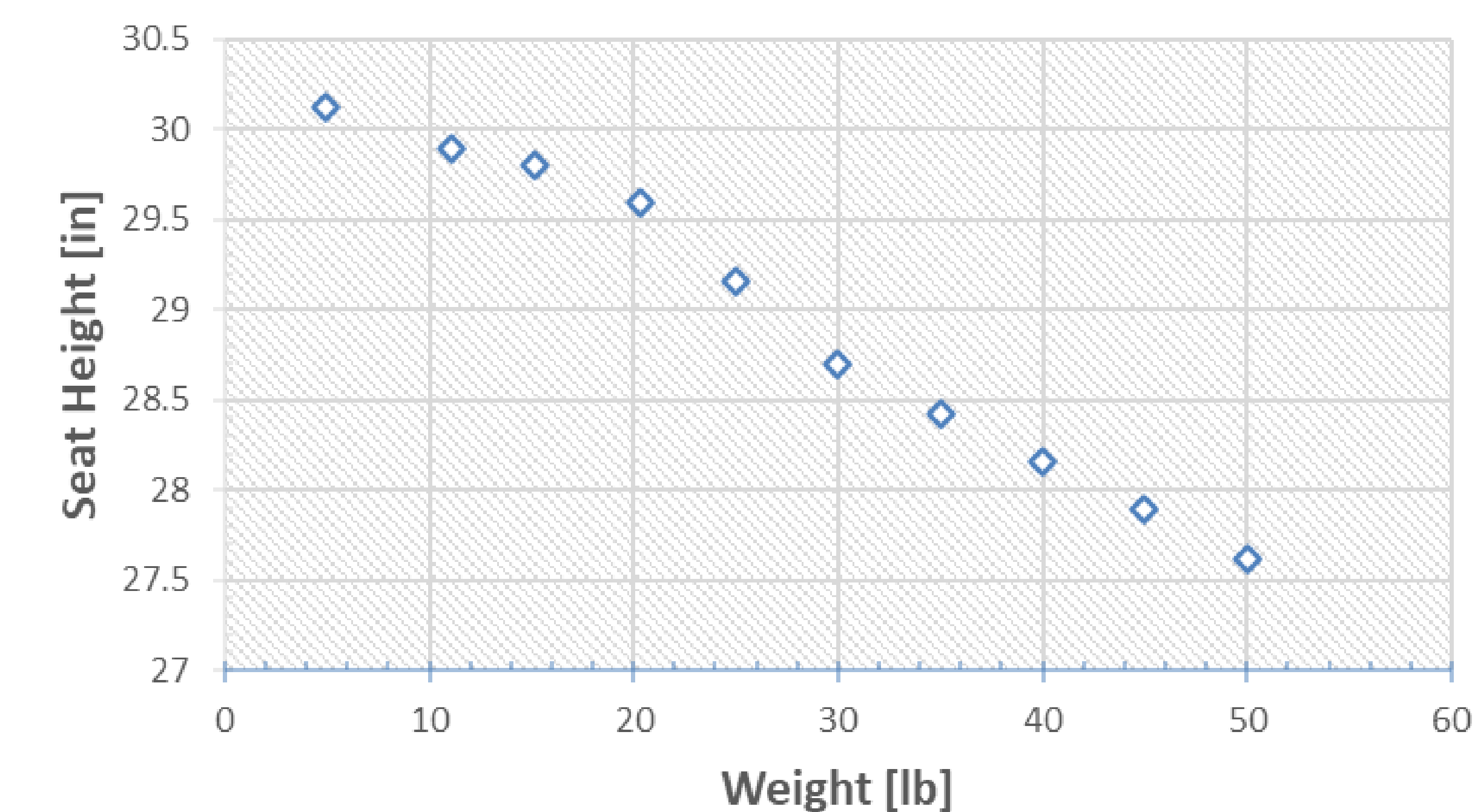


Figure 5. Testing Results from Seat Deflection

## MANUFACTURING

- Materials chosen include hollow aluminum tubes due to its durable and lightweight characteristics.
- 3D printed components such as couplings, joints, and other add-ons were used to enhanced the functionality and user experience of the chair
- Aluminum band saws, the tube shark portable tube bender, and other tools provided by the Cal Poly machine shops were used to manufacture and assemble the final prototype.

## CONCLUSION & NEXT STEPS

- Chair meets the specified weight and height requirements, ensuring versatility and safety for users, but main adjusting component needs refining
- The use of hollow aluminum tubes and 3D printed components has resulted in a durable yet lightweight chair
- As for the next steps, we plan to gather user feedback and further refine the design based on their experiences before we hand-off our project to our sponsor



Figure 1. 3D Printed Components