



California Science Center  
**CALIFORNIA STATE SCIENCE FAIR**  
**2001 PROJECT SUMMARY**

<b>Your Name</b> (List all student names if multiple authors.) <b>Daniel C Minnich</b>	<b>Science Fair Use Only</b>  <h1 style="margin: 0;">J1118</h1>
<b>Project Title</b> (Limit: 120 characters. Those beyond 120 will be ignored. See pg. 9) <b>Dare to Take a Hit</b>	<b>Division</b> <u>X</u> <b>Junior (6-8)</b> _ <b>Senior (9-12)</b>
<b>Preferred Category</b> (See page 5 for descriptions.) <b>11 - Mathematics &amp; Software</b>	
<b>Abstract</b> (Include Objective, Methods, Results, Conclusion. See samples on page 14.) Use no attachments. Only text inside these boxes will be used for category assignment or given to your judges.	
<p><b>Objective:</b> The objective is to determine the player's best strategy when dealt a soft eighteen in blackjack.</p> <p><b>Materials and Methods:</b> Fifteen hundred games of blackjack were played. Hands were dealt for one player and the dealer. The player was always dealt a soft eighteen. The player always took a hit. If the player drew an ace, two or three the player would stand. With a four or higher, the player would stand or hit based on the basic blackjack strategy for hard hand totals. The dealer took hits based on Las Vegas rules. Results from the "hit" strategy were compared to a "stand" strategy by re-tabulating the results ignoring the hands in which the player had bust.</p> <p><b>Results:</b> The results indicate that the probability of a win or tie is 1.9% higher with a "hit" strategy when the dealer's upcard is a nine or higher, but the probability of a win or tie is 7.2% higher with a "stand" strategy when the dealer's upcard is an eight or lower.</p> <p><b>Conclusion/Discussion:</b> My hypothesis proved correct. The player's best strategy when dealt a soft eighteen is to take a hit if the dealer's upcard is a nine or higher. If I were to explore this project further I would like to make several enhancements to the tests. First, the number of test hands should be increased. This might be accomplished using computer simulations. Second, I would like to add more advanced statistical analysis.</p>	
<b>Summary Statement</b> (In one sentence, state what your project is about.) The purpose of this project is to determine the player's best strategy when dealt a soft eighteen in blackjack.	
<b>Help Received in Doing Project</b> (e.g. Mother helped type report; Neighbor helped wire board; Used lab equipment at university X under the supervision of Dr. Y; Participant in NSF Young Scholars Program) See Display Regulation #8 on page 4. My dad helped by supplying ideas for the project. My mom helped with editing and technical assistance with Excel (used for the data analysis).	