



# CALIFORNIA STATE SCIENCE FAIR 2014 PROJECT SUMMARY

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<b>Project Title</b> <b>Tsunamis and Stilts</b>	
<b>Objectives/Goals</b> <b>Abstract</b> Tsunamis are one of the fiercest natural catastrophes that can happen. In poor countries people make houses out of whatever materials they can find. Houses are often built out of cardboard, thin wood, and corrugated tin. Although the materials they use to build houses can't be replaced because of the cost, are there ways to make houses safer against tsunamis? We are doing an experiment to test these ways and see if these minor changes can save many lives. To find a way to make cardboard houses stand up better to tsunamis and other big waves is the purpose of our experiment. We are going to try two different ways: we will angle one of the houses and we will put the other on high stilts. Our hypotheses are that the house on stilts is going to hold up the longest and that the angled house will hold up the second best. <b>Methods/Materials</b> We used 3 cardboard boxes, 8 short wood pieces, 4 long wood pieces, 6 flat wood pieces, 18 screws, and sand. Using these materials we built 3 cardboard houses and 3 wooden bases. We put the houses in the sand at the beach. We counted the number of waves until the houses got knocked over. We placed equal weight for each house (box and wood base) and repeated the experiment 3 times. <b>Results</b> In the first test run, all houses survived the first 16 waves. The 17th wave knocked over the angled and control houses, and the 19th wave knocked over the house on stilts. In the second test run, where we placed weight in houses by filling them with sand, all houses survived the first 17 waves. The 18th wave knocked out both the control and the angled houses. After 34 more waves, the house on stilts was still surviving and it possibly could have survived many more waves. In the actual experiment, we found that the control house survived 5 waves on average. The angled house survived 10 waves on average. The house on stilts was never knocked over. We stopped the experiment after 40 waves each time, but it might have lasted much longer. <b>Conclusions/Discussion</b> Both of our hypotheses were correct. The house with stilts held up the longest and survived the most waves. It never got knocked over. The house that was angled survived longer than the control house. The control house held up the worst. In poor countries we suggest they use stilts on their houses to make them survive better in tsunamis. If they can't find the extra materials to make stilts, they should angle their houses to the waves.	
<b>Summary Statement</b> We test whether there are inexpensive changes that can be made to houses to make them survive tsunamis better.	
<b>Help Received</b> Father drove to beach and took pictures to record the experiment.	