

Our team did research for the Mathematical Contest in Modeling, a contest put on by the Consortium for Mathematics and its Applications. The contest lasts for ninety-six hours, during which participating teams must choose one of three mathematically-posed, real-world problems to investigate and develop a model for. Our team chose to investigate the question of whether or not there truly is a "sweet spot" on a baseball bat. In this context, a "sweet spot" is a location on the bat where, if the ball hits, the ball will receive maximal distance with minimum jarring of the batter's body.

To gather information for this project, we researched the physics and current knowledge of baseball, so that we could build our model from existing groundwork. Our sources of information came from the Internet and books from the library. Our research technique consisted of exploring the general background of our topic from Internet sources, and then we used the UMD Library Catalog to find books specific to the topics in physics and baseball relevant to our model. The Internet information acted as a springboard to find in-depth material in the library.

While the competition required that we not collaborate with others in developing our model, we did take advantage of the library staff to find sections of the library devoted to the topics we were interested in looking into, and we happened to come across several books that we had not seen in the catalog online, but in any event were extremely useful for background information. The books reaffirmed the information we had found online and provided a unified set of sources upon which to base our model.

Our main sources from the Internet consisted of scholarly papers written on the specifics of baseball physics relevant to our model and sites with general information from universities and otherwise educational background. These sites provided reliable sources of information from which the grips of the model could be formulated. The books we used were also unbiased, as the information they presented was accumulated scientifically and the studies/experiments were appropriately attributed. Our general guidelines for selecting sources were to make sure that it corroborated information from other reliable sources, confirm its relevance to our research goals, and make sure it explained where all critical results came from, such as the coefficient of restitution for a typical baseball bat which was a critical parameter in our model analysis. What we learned from our research was basically how to determine what information is both valid and relevant to the problem being investigated. Our preliminary research suggested a line of attack for our model to take up, and while information from our earlier sources wasn't necessarily the most scientifically grounded, it provided us with the insights we needed to begin considering factors that would be important to the model. It was using these guiding points that we began to make more careful and detailed forays into the topic, and this general technique of approaching a topic will doubtless be applicable to many more research endeavors in our academic futures. Also, our experiences with the Internet sources we came across forced us to critically analyze sites for bias and scientific grounding, and so we went to great extent to corroborate Internet information with information from the library resources. The ability to find common information from multiple sources so as to confirm their legitimacy and see where the information comes from will be an indispensable skill for our future research efforts.