

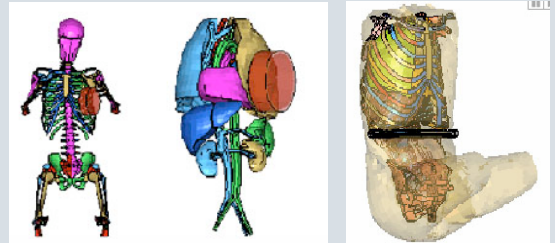


Crash Test Dummies Then and Now

Ford is a leader in safety research and technologies such as industry-first rear inflatable seat belts. Now the company is taking that expertise to the virtual world. Ford scientists are creating one of the world's first digital models of a human child. The goal is to enhance future safety technologies that could benefit everyone.

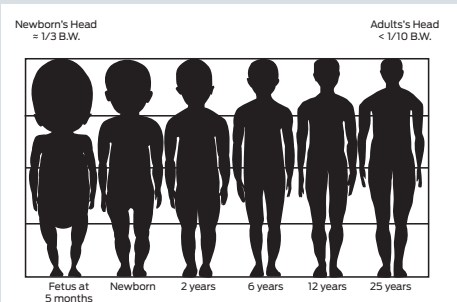
Entering the virtual realm

Crash test dummies made of rubber and steel were first joined by virtual companions in 2003. These Human Body Models (HBMs) were designed with precise detail to help simulate human responses in automobile crashes. Now Ford is launching one of the world's first research projects to create a digital model of a human child with more lifelike re-creations of the skeletal structure, internal organs and brain – designed to better understand crash force effects.



Growing pains

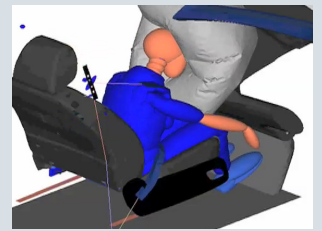
A child's body is very different from an adult's, so a more lifelike model could help Ford researchers explore new safety technologies. For example, crash forces affect a small child's head and neck differently since a child's head is much bigger in proportion to the body.



Adapted from Robbins et al. In Growth, Yale University Press, New Haven, 1928. Used with permission.

Virtual crashes

Ford has become a leader in the world of virtual safety research. Ford safety engineers in the U.S. and Germany crash-tested the new Ford Focus more than 12,000 times in real and virtual situations to prove out new technologies designed to protect occupants in crashes. The virtual simulations have become so realistic that the number of physical vehicle crash tests has been significantly reduced.



In the beginning ...

Ford started off using battering rams – or iron blocks – to study automobile safety. Researchers fastened the rams to ceiling beams and swung them like pendulums into test cars. The researchers used dummies to determine areas of passenger contact within the cars.

Meet the FERDs

FERD I and FERD II were two lifelike plastic dummies that Ford engineers used, starting in the 1950s. With electronic instruments for brains, the dummies played the role of passengers in actual full-scale crash tests conducted at the Ford test track. The two FERDs (acronyms for Ford Engineering Research Department) had steel weldments for skeletons, with tough plastic bodies for muscle covered with softer muscle to simulate skin.



Modern-day dummies

Ford participated in the development of the most sophisticated crash dummy on the planet, the WorldSID dummy for side-impact crashes. The dummy contains more than 220 different sensors to measure more responses related to potential injury than any other crash dummy. Ford also created a pediatric crash dummy with a special abdominal insert, designed to help develop restraints to improve the safety of children. The insert is similar in size and shape to a 6-year-old human's abdomen and is constructed of a shell made up of multiple layers of liquid silicone to more accurately help measure the effects of crash forces on the abdomen.

