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Is the Bang Worth the Buck? A Value-Based and Statistical Analysis of the US Army's Movement from the 5.56 to the 6.8 Round

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Abstract: The United States Army recently decided to invest in next generation weapon systems utilizing a 6.8mm munition and replacing the current M855 5.56 NATO round. This research models, analyzes, and compares the cost versus value of the 5.56 NATO round versus the proposed program implementing the 6.8mm round highlighting the potential benefits and limitations the change makes on the performance of a standard infantry unit. To analyze performance, several scenarios are created and implemented within Infantry Warfare (IWARS), the Army's authoritative model for small unit constructive simulation. Key metrics of interest include lethality, survivability, and cost. The analysis finds the 6.8mm round improves lethality in all aspects, especially as engagements increase in distance. Survivability, however, was not found to be significant enough to prove a viable effect. Nonetheless, movement to a 6.8mm round provides a greater cost-value return than almost any small arms investment by the U.S. military to date.

Keywords: Cost-Value, IWARS, Constructive Simulation, Lethality, Survivability