# Review of: "The Lesser Evil: Plutonium-239 or Uranium-235? A Study on F0 Atomic Bomb Survivors"

Zivkovic Milena[1]

1 University of Kragujevac

1. **Title**

Proposed Title: "Decoding the Fallout: A Comparative Study of Plutonium-239 and Uranium-235 Impact on F0 Atomic Bomb Survivors"

**Abstract**

2. **Original:** "The plasticity of the rate of aging d(log μ(x))/dx has never been formally addressed, as it has been casually inferred as mortality rate μ(x) or risk log μ(x)."

**Revised:** "The plasticity of the aging rate, expressed as d(log μ(x))/dx, has been informally acknowledged, often conflated with mortality rate μ(x) or risk log μ(x). A formal examination of this plasticity is lacking."

**Original:** "A pseudo-benefit initial mortality risk by distance to the epicenter was also observed among 0-5mGy survivors, suggesting that selection for mortality was determined by stringency from impact and frailty from natural selection."

**Revised:** "Among survivors within the 0-5mGy range, an apparent pseudo-benefit initial mortality risk, linked to the distance from the epicenter, implies that mortality selection is influenced by both impact severity and natural frailty."

**Original:** "Furthermore, the standardized mortality ratio suggests Pu-239 has a more drastic effect on age-specific mortality trajectory than U-235; 0-5mGy, Pu-239 11%(M) 37%(F); U-235 4%(M) 0.5%(F)."

**Revised:** "Moreover, the standardized mortality ratio indicates a more pronounced impact of Pu-239 on age-specific mortality trajectories compared to U-235. In the 0-5mGy range, Pu-239 shows 11% (M) and 37% (F), while U-235 exhibits 4% (M) and 0.5% (F)."

3. **Methods This paragraph should be before the findings.**

**Introduction**

**Original:** "Few researchers will doubt that once the magnitude of mortality risk is elevated, the rate of aging must be accelerated."

**Revised:** "There is little doubt among researchers that an increase in mortality risk is concomitant with an acceleration in

the rate of aging."

**Original:** "In radiation studies, the quadratic equation has been the preferred choice to measure the dose-response relationship."

**Revised:** "Radiation studies have traditionally favored the quadratic equation for assessing the dose-response relationship."

**Original:** "However, it is still unknown whether humans, who are relatively larger in body size compared to laboratory test animals, have the physiological capacity to recover upon radiation exposure."

**Revised:** "Yet, it remains uncertain if humans, being relatively larger in body size than laboratory test animals, possess the physiological capacity for recovery following radiation exposure."

**Original:** "The difference in the characteristics of the radioactive isotopes Uranium-235 (U-235; Hiroshima) and Plutonium-239 (Pu-239; Nagasaki) that were detonated over the two prefectures in Japan during the end of the Second World War could lead to differences in age-specific mortality trajectories and to persist in its life-detrimental effects across all age groups [1][2][3][4]."

**Revised:** "Differences in the characteristics of the radioactive isotopes, Uranium-235 (U-235; Hiroshima) and Plutonium-239 (Pu-239; Nagasaki), detonated over the two Japanese prefectures at the end of the Second World War, may contribute to variations in age-specific mortality trajectories and the persistence of life-detrimental effects across all age groups [1][2][3][4]."

**Original:** "Background radiation exists on Earth, specifically for U-235 [6]. Therefore, my analytical study shows the exceptional case whereby mortality derived from background radiation can be taken as an advantage during comparative analysis."

**Revised:** "Background radiation exists on Earth, particularly for U-235 [6]. Consequently, my analytical study highlights an exceptional case where mortality derived from background radiation can be advantageous during comparative analysis."

4. Please round values in Table 1. for example: 1.04+/-0.02

**Table 1.** Standardized mortality ratio of U-235 and Pu-239 ATE45 mortality imprint on males and females residing in Okinawa between 1975 and 1979

|  | Hiroshima (U-235) | Nagasaki (Pu-239) |
|---|---|---|
| **<3km from epicenter of Okinawa** |  |  |
| **Males** |  |  |
| Low | 1.040±0.024 | 1.111±0.024 |
| Extreme | 1.743±0.030 | 3.613±0.043 |
| **Females** |  |  |
| Low | 1.005±0.025 | 1.370±0.030 |
| Extreme | 3.932±0.050 | 1.518±0.031 |
| **3 − 10km from epicenter of Okinawa** |  |  |
| **Males** | 1.073±0.024 | 1.030±0.023 |
| **Females** | 1.194±0.028 | 1.160±0.027 |

5. You need to improve your English.

6. One potential concern regarding the methodology is the choice of Okinawa as the reference population for comparing mortality risk. Despite Okinawa's reputation for longer life expectancy, it may not be the most suitable comparison group for atomic bomb survivors in Hiroshima and Nagasaki. The author should explicitly justify the selection of Okinawa in this context.