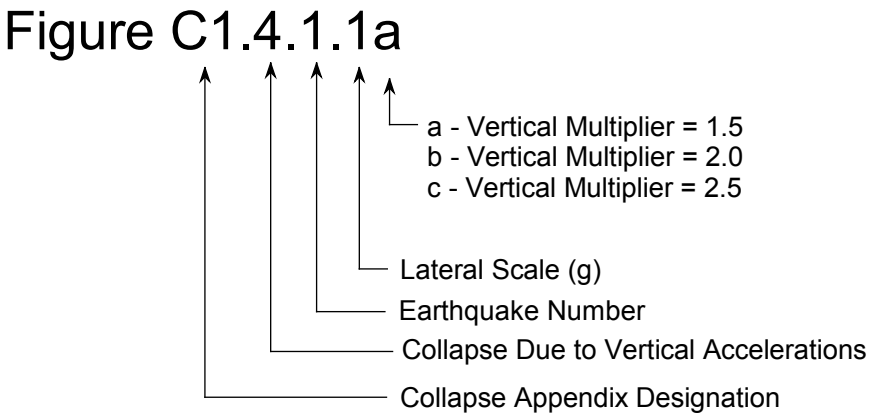
Appendix C1.4 – Collapses and Saves Due to Vertical Accelerations

Figure Number Designations:



The figures in Appendix C1.4 show collapses and saves due to vertical accelerations. In the figures, "collapse" is defined as an increase in ductility demand above a prescribed value due to vertical accelerations. A "save" is defined as a decrease in the ductility demand below a prescribed value due to vertical accelerations. The total number of collapses and saves conforming to aforementioned definitions for an entire set of analyses (1470 nonlinear dynamic analyses) is shown in each of the figures. The collapses are plotted in the positive direction of the y-axis and saves are plotted in the negative direction of the y-axis. Three limits for the change in ductility demand are used: 0.5, 1.0, and 2.0.

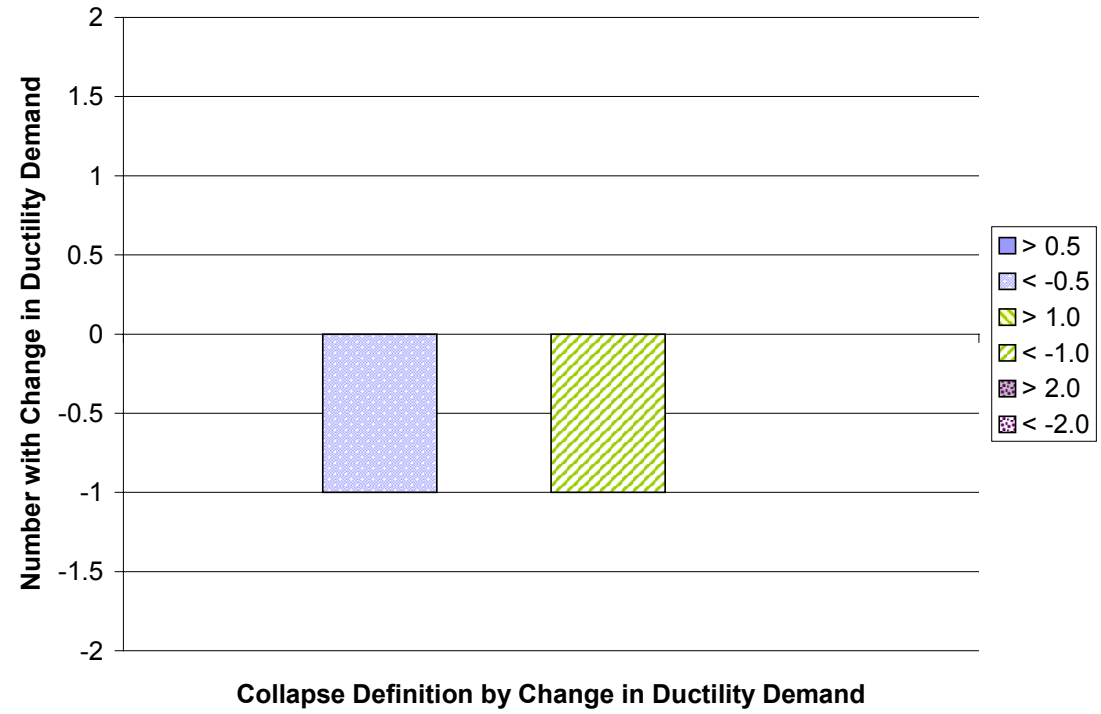


Figure C1.4.1.1a – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 1 with a Lateral Scale of 0.1 g and a Vertical Multiplier of 1.5.

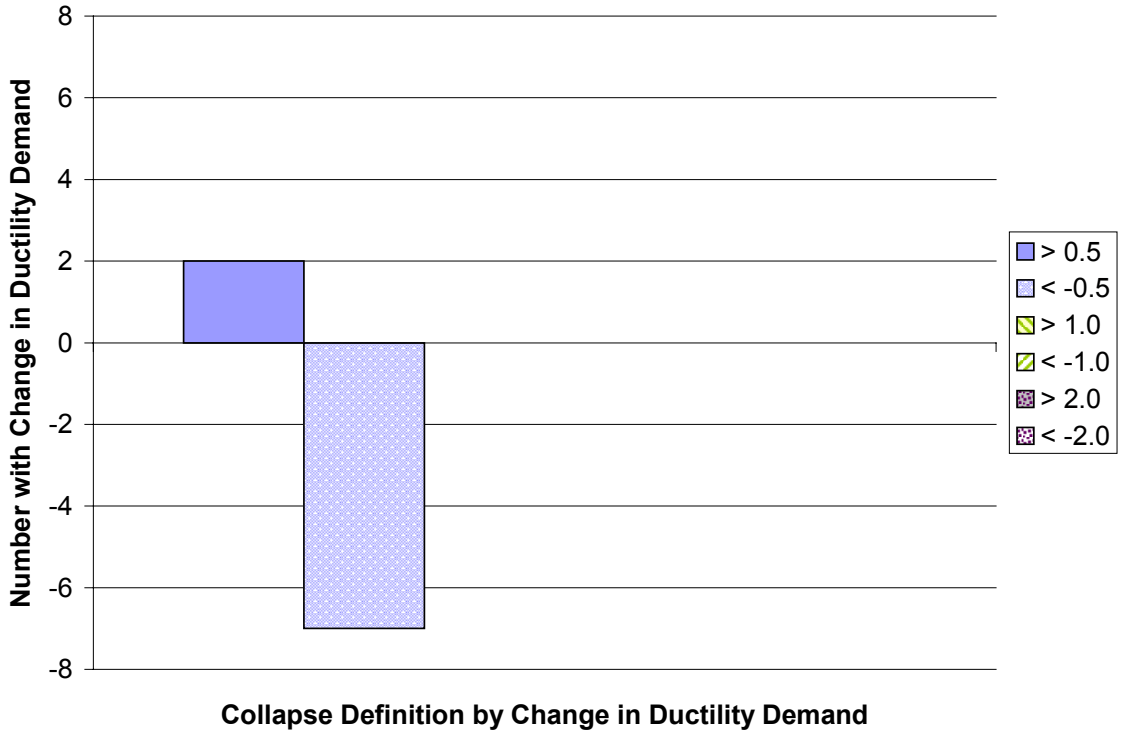


Figure C1.4.1.2a – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 1 with a Lateral Scale of 0.2 g and a Vertical Multiplier of 1.5.

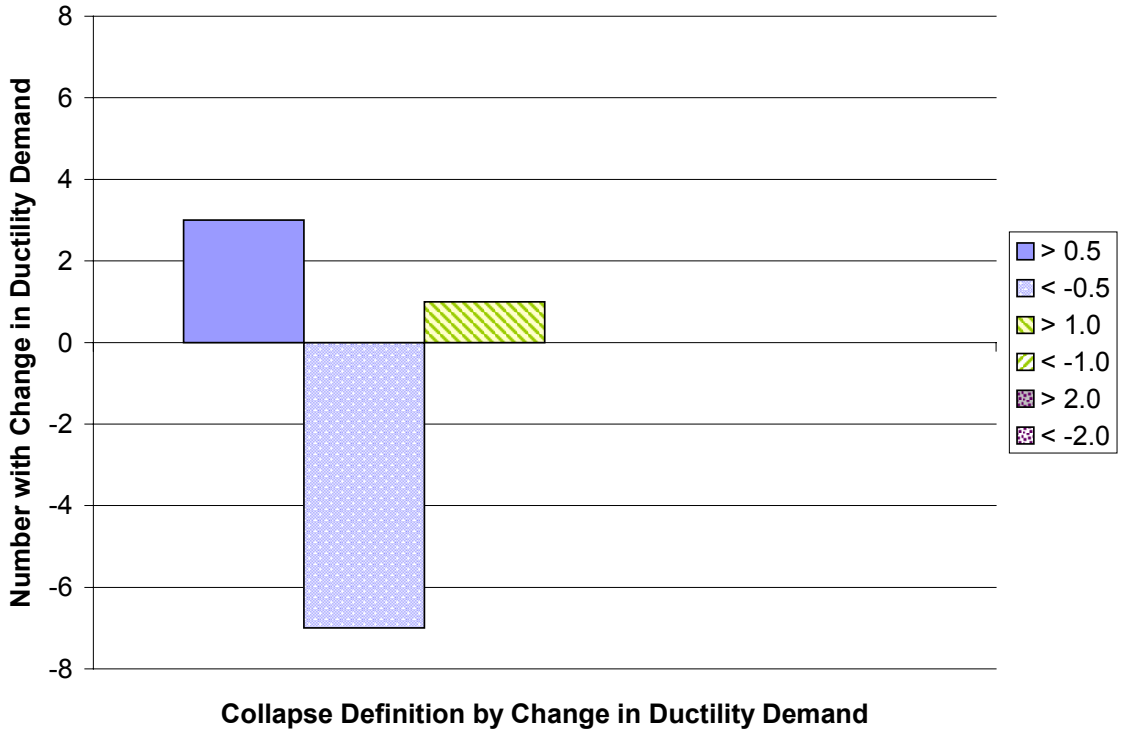


Figure C1.4.1.2b – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 1 with a Lateral Scale of 0.2 g and a Vertical Multiplier of 2.0.

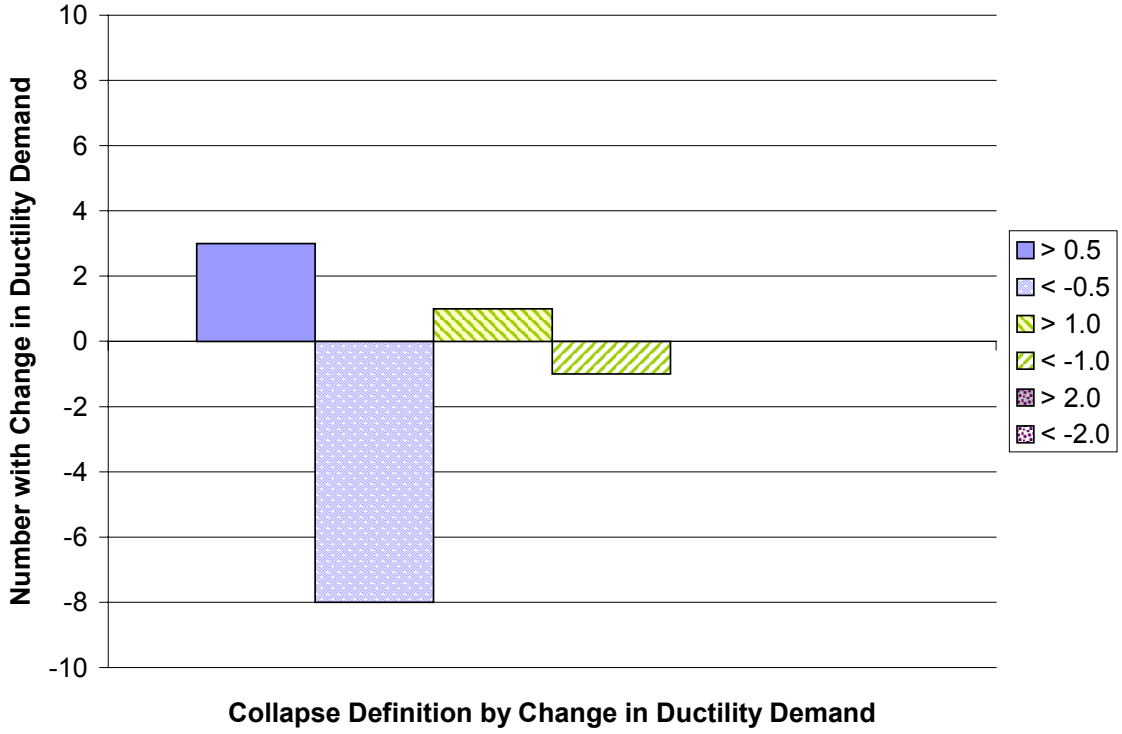


Figure C1.4.1.2c – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 1 with a Lateral Scale of 0.2 g and a Vertical Multiplier of 2.5.

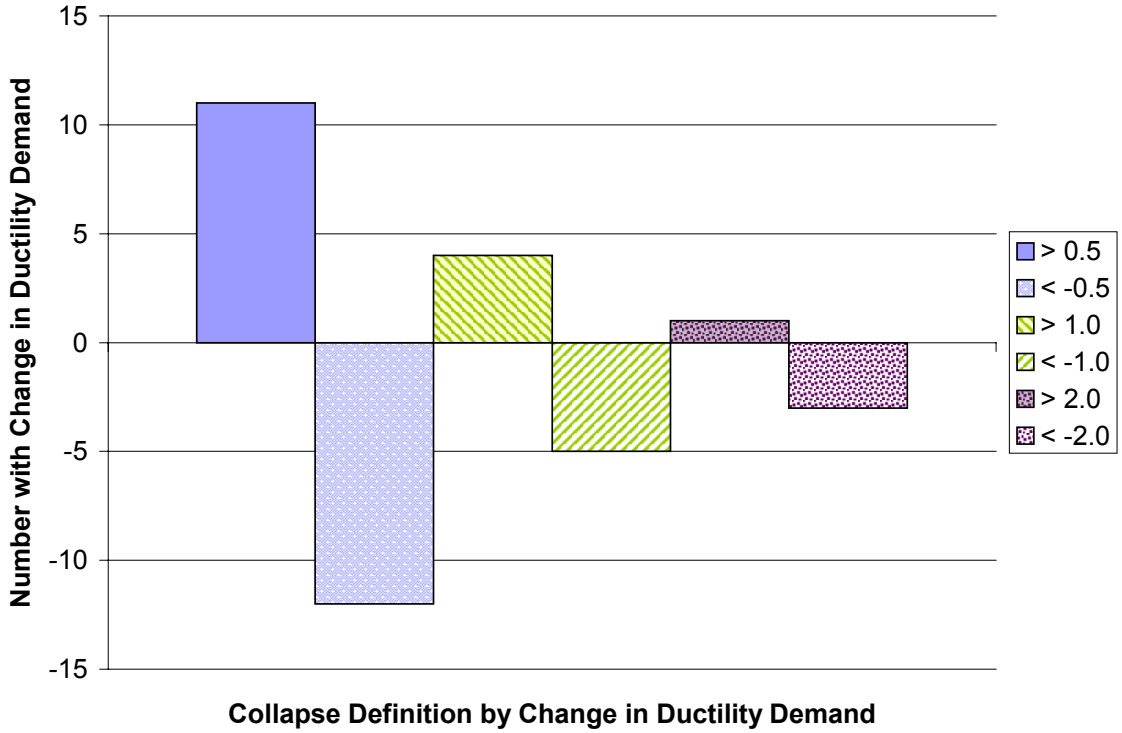


Figure C1.4.1.3a – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 1 with a Lateral Scale of 0.3 g and a Vertical Multiplier of 1.5.

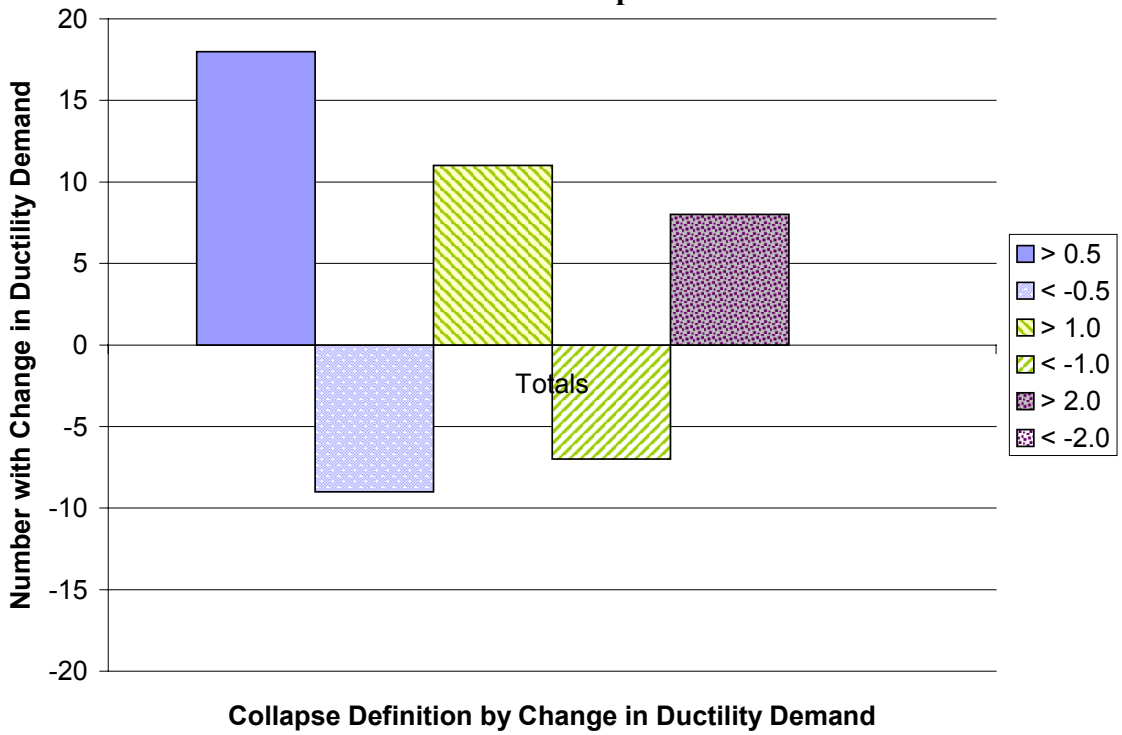


Figure C1.4.1.4c – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 1 with a Lateral Scale of 0.4 g and a Vertical Multiplier of 2.5.

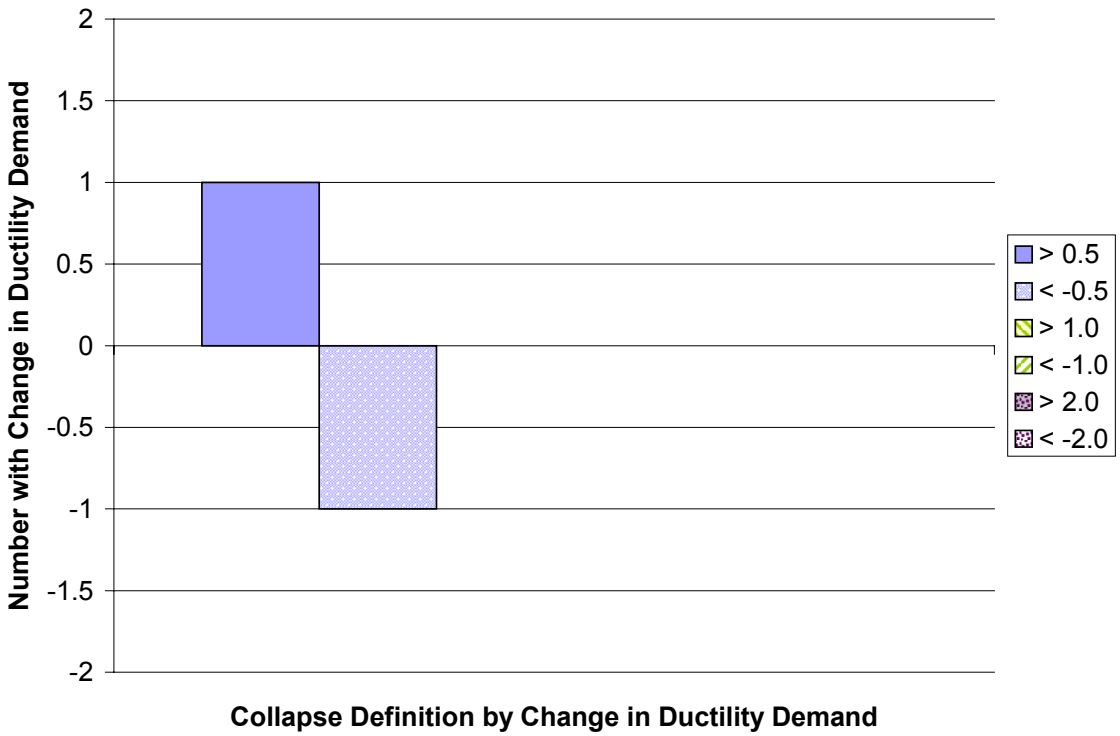


Figure C1.4.2.1a – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 2 with a Lateral Scale of 0.1 g and a Vertical Multiplier of 1.5.

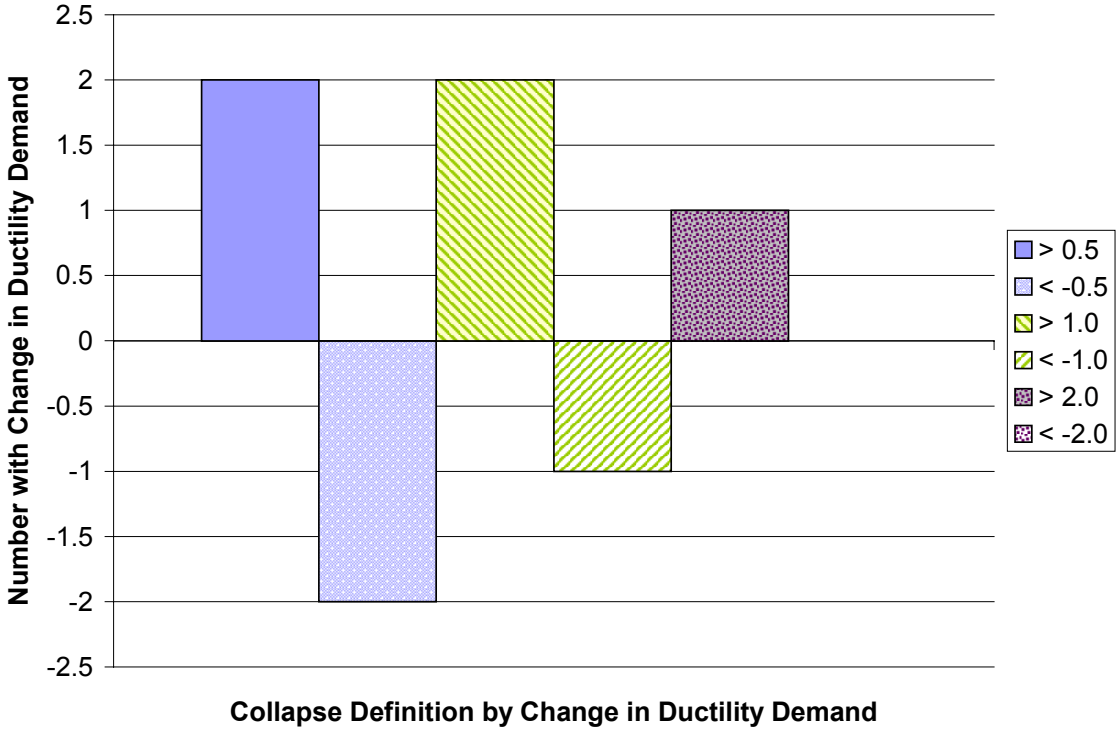


Figure C1.4.2.2a – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 2 with a Lateral Scale of 0.2 g and a Vertical Multiplier of 1.5.

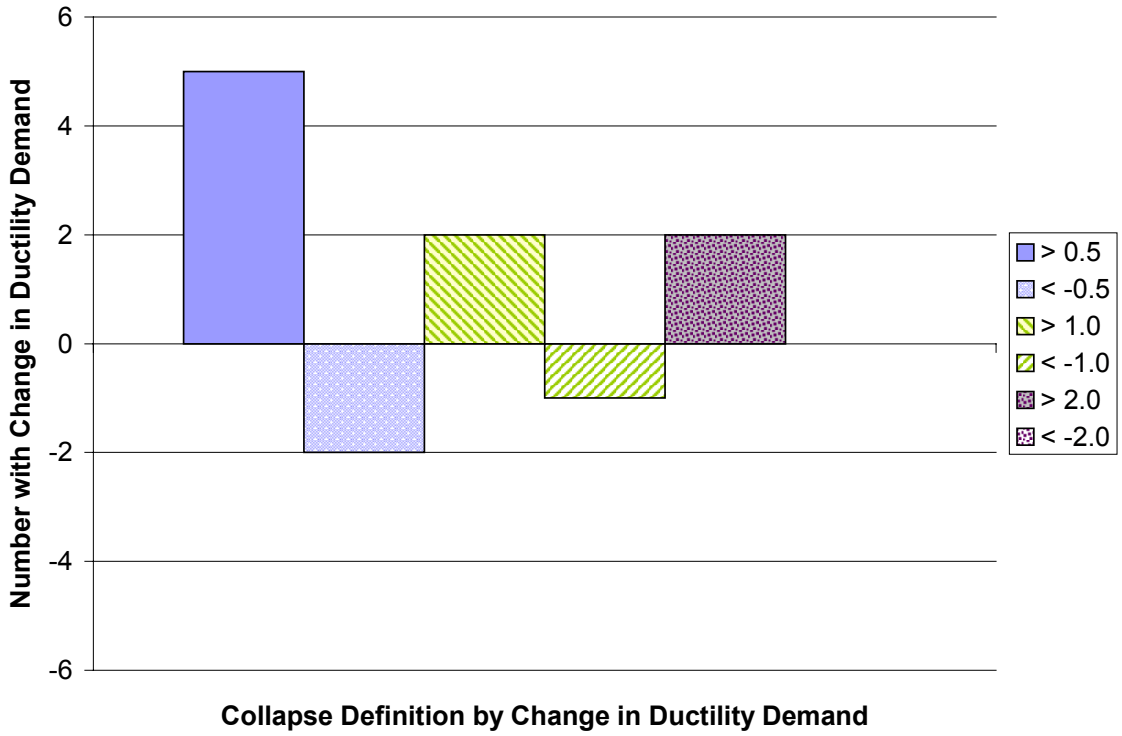


Figure C1.4.2.2b – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 2 with a Lateral Scale of 0.2 g and a Vertical Multiplier of 2.0.

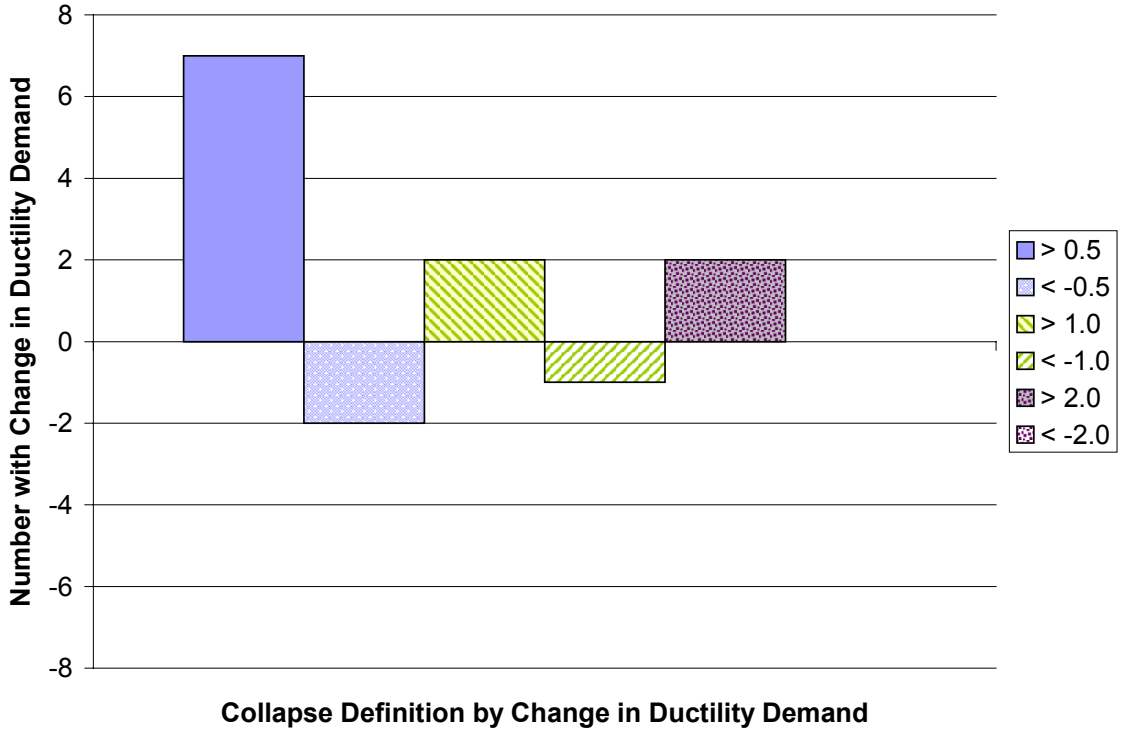


Figure C1.4.2.2c – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 2 with a Lateral Scale of 0.2 g and a Vertical Multiplier of 2.5.

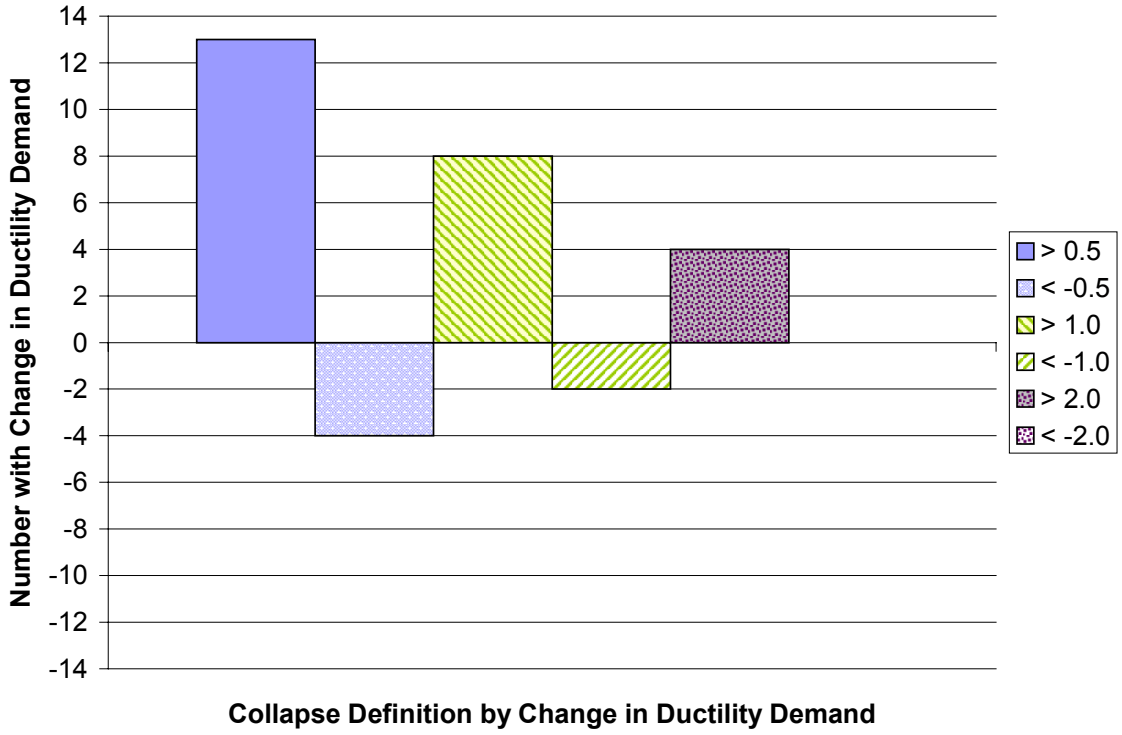


Figure C1.4.2.3a – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 2 with a Lateral Scale of 0.3 g and a Vertical Multiplier of 1.5.

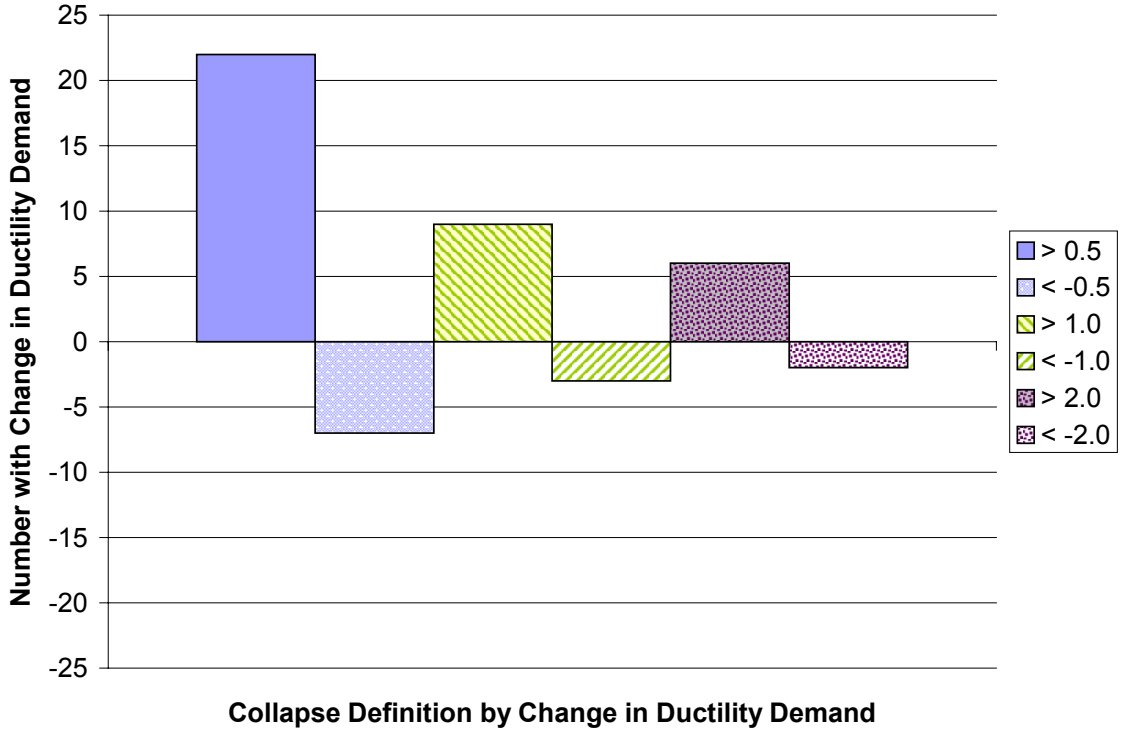


Figure C1.4.2.4c – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 2 with a Lateral Scale of 0.4 g and a Vertical Multiplier of 2.5.

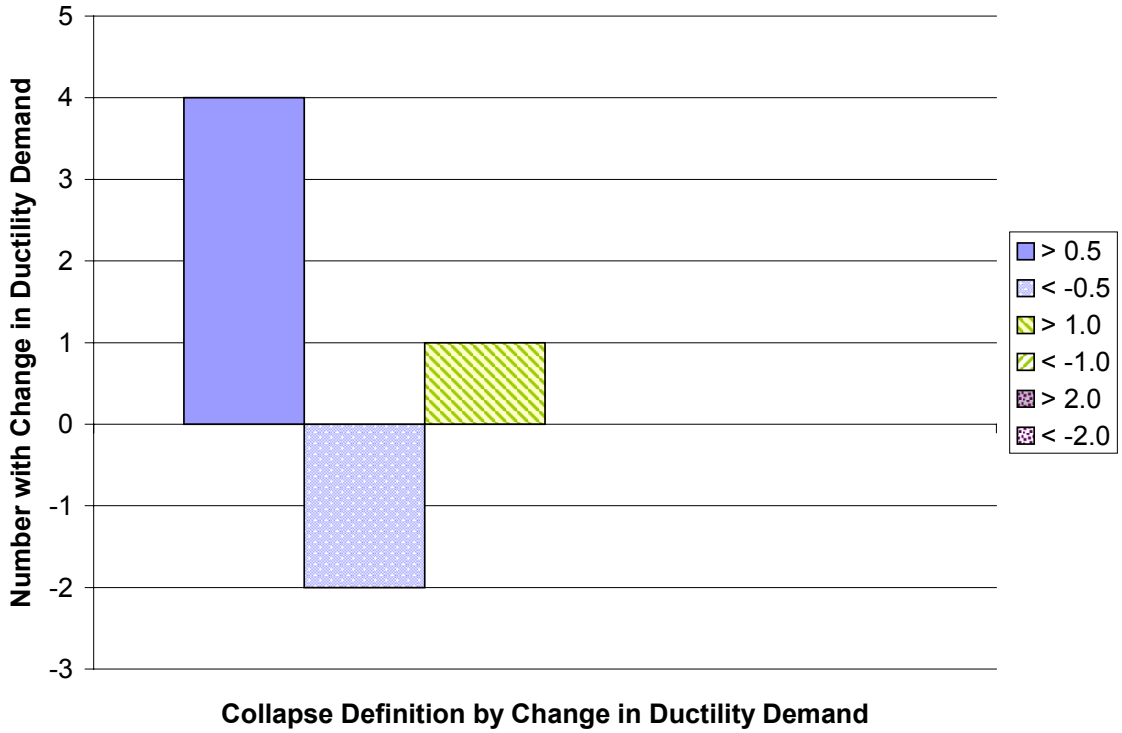


Figure C1.4.3.1a – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 3 with a Lateral Scale of 0.1 g and a Vertical Multiplier of 1.5.

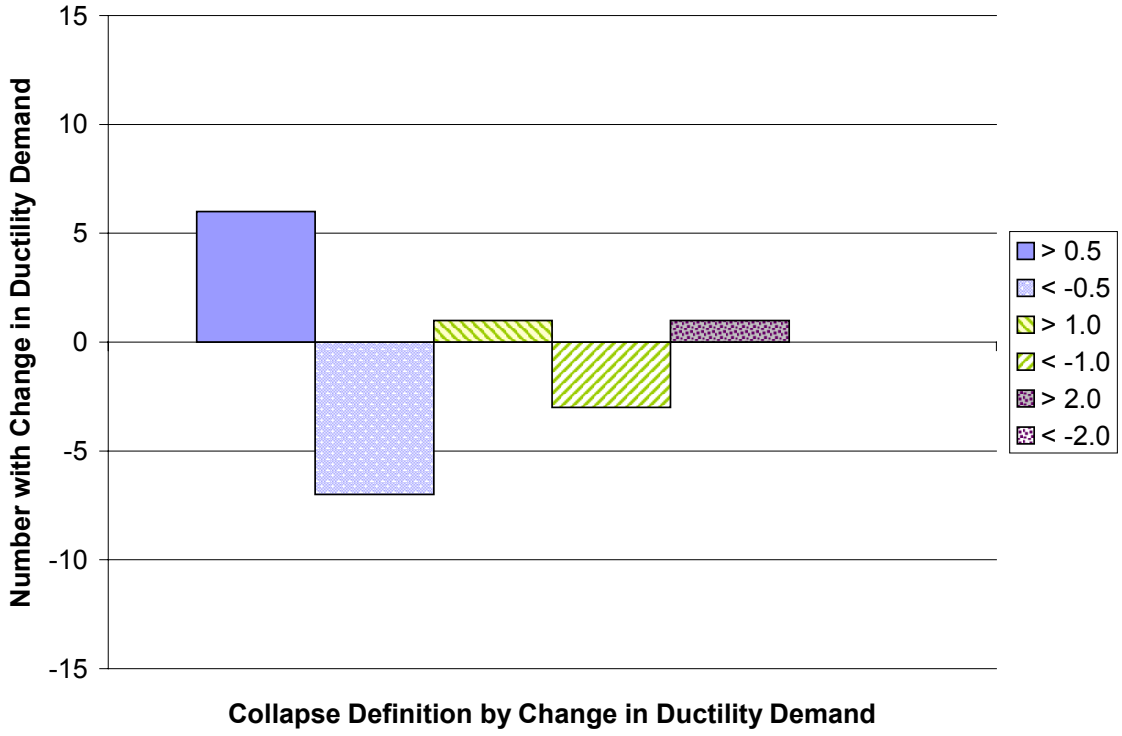


Figure C1.4.3.2a – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 3 with a Lateral Scale of 0.2 g and a Vertical Multiplier of 1.5.

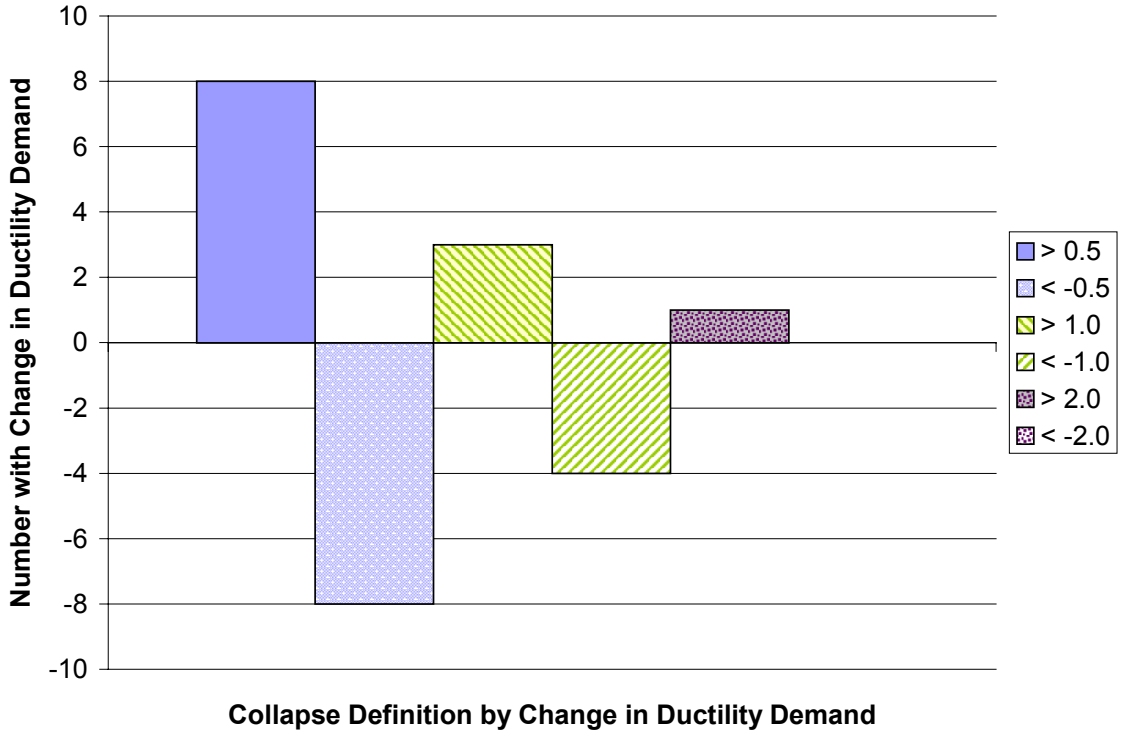


Figure C1.4.3.2b – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 3 with a Lateral Scale of 0.2 g and a Vertical Multiplier of 2.0.

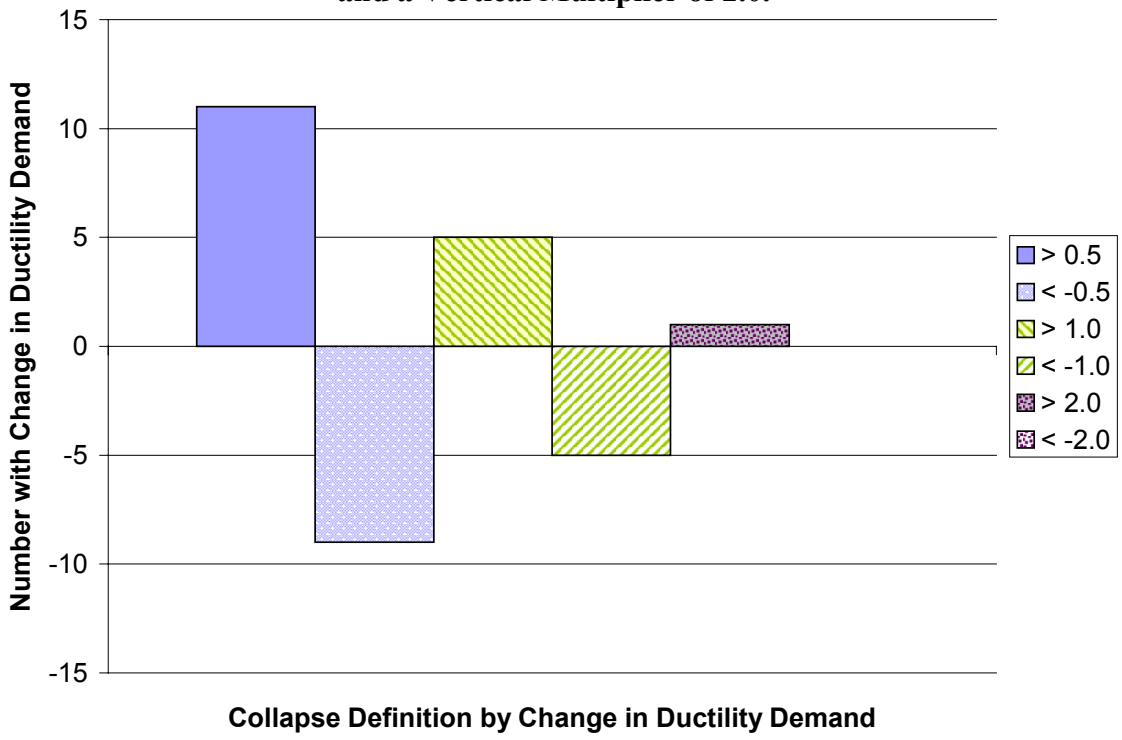


Figure C1.4.3.2c – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 3 with a Lateral Scale of 0.2 g and a Vertical Multiplier of 2.5.

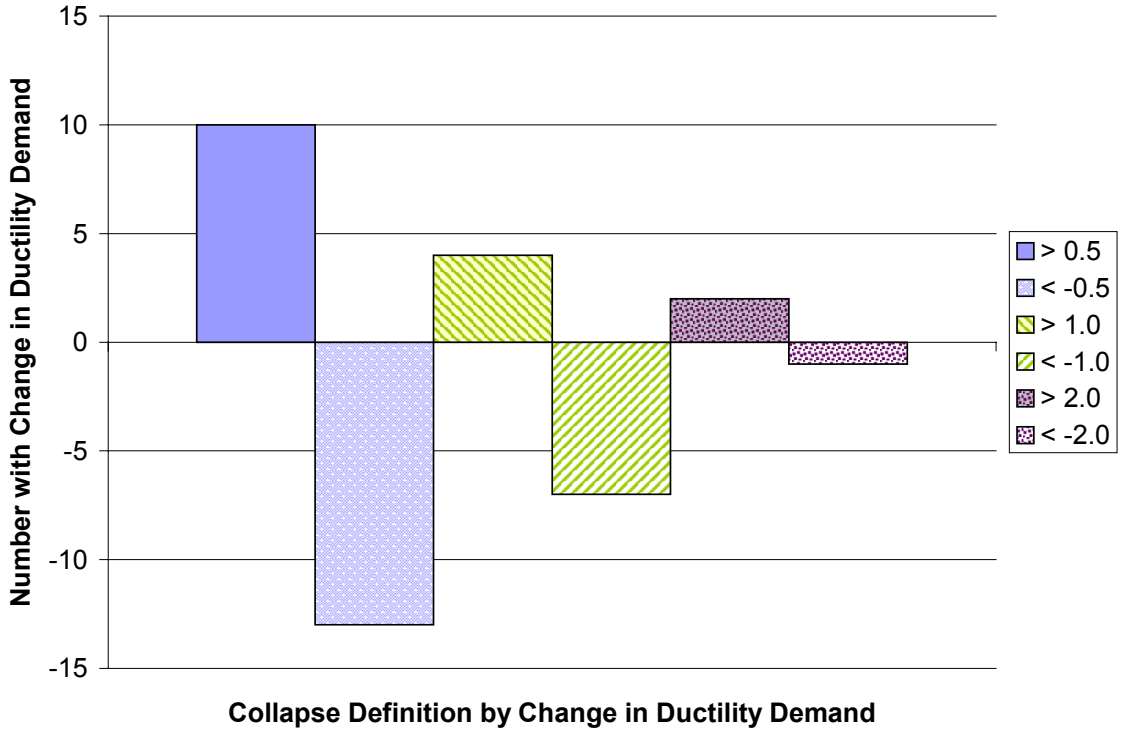


Figure C1.4.3.3a – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 3 with a Lateral Scale of 0.3 g and a Vertical Multiplier of 1.5.

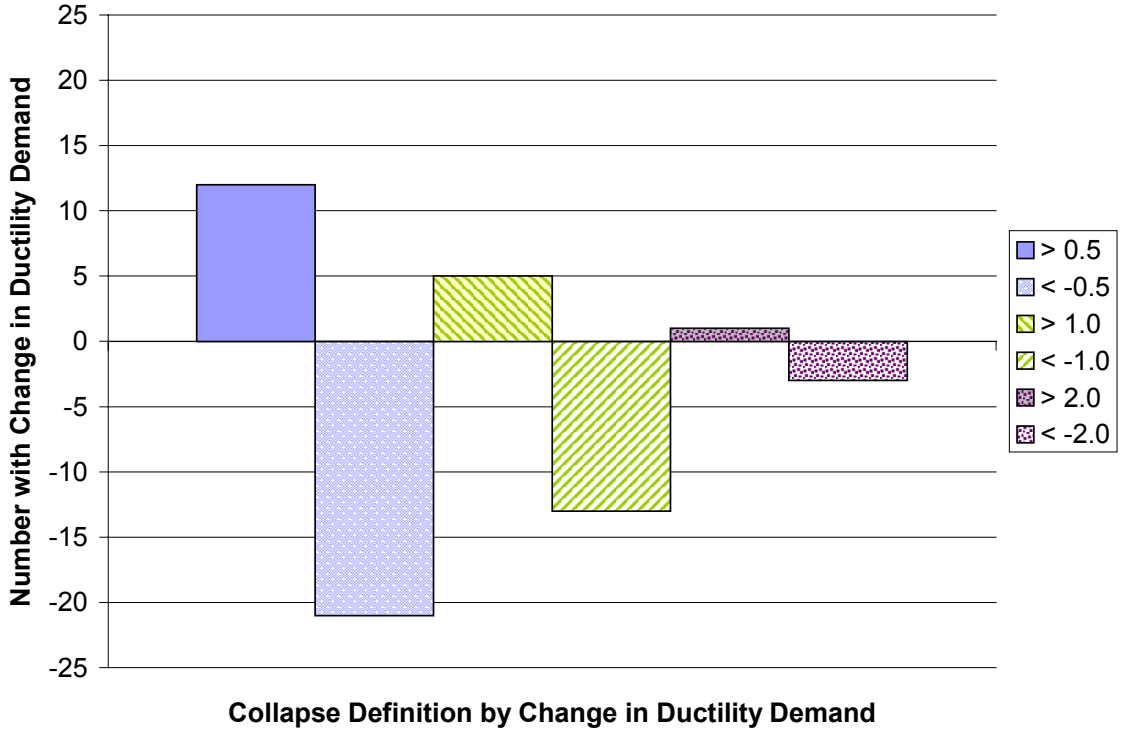


Figure C1.4.3.4c – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 3 with a Lateral Scale of 0.4 g and a Vertical Multiplier of 2.5.

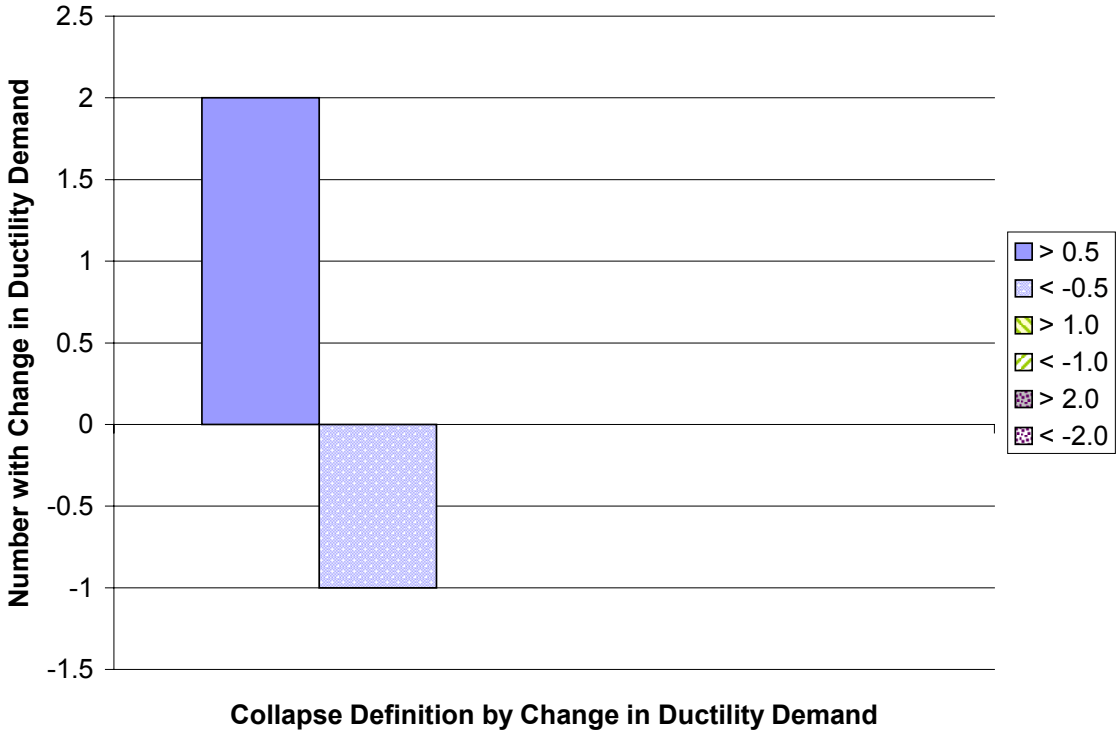


Figure C1.4.4.1a – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 4 with a Lateral Scale of 0.1 g and a Vertical Multiplier of 1.5.

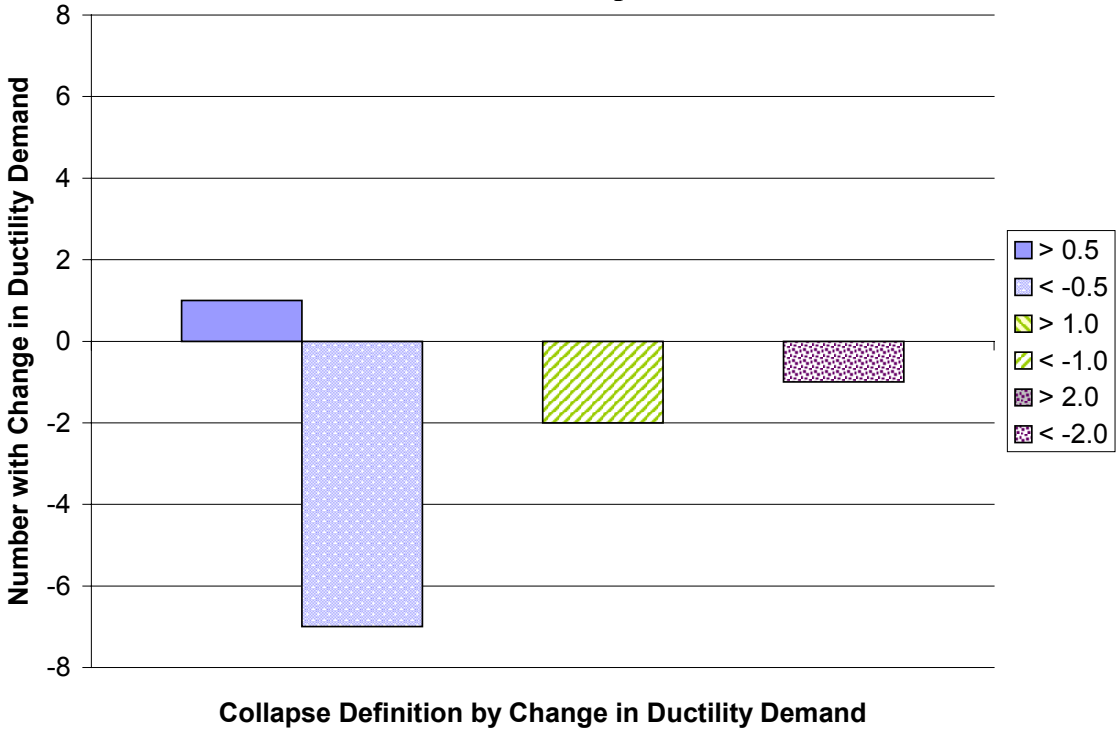


Figure C1.4.4.2a – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 4 with a Lateral Scale of 0.2 g and a Vertical Multiplier of 1.5.

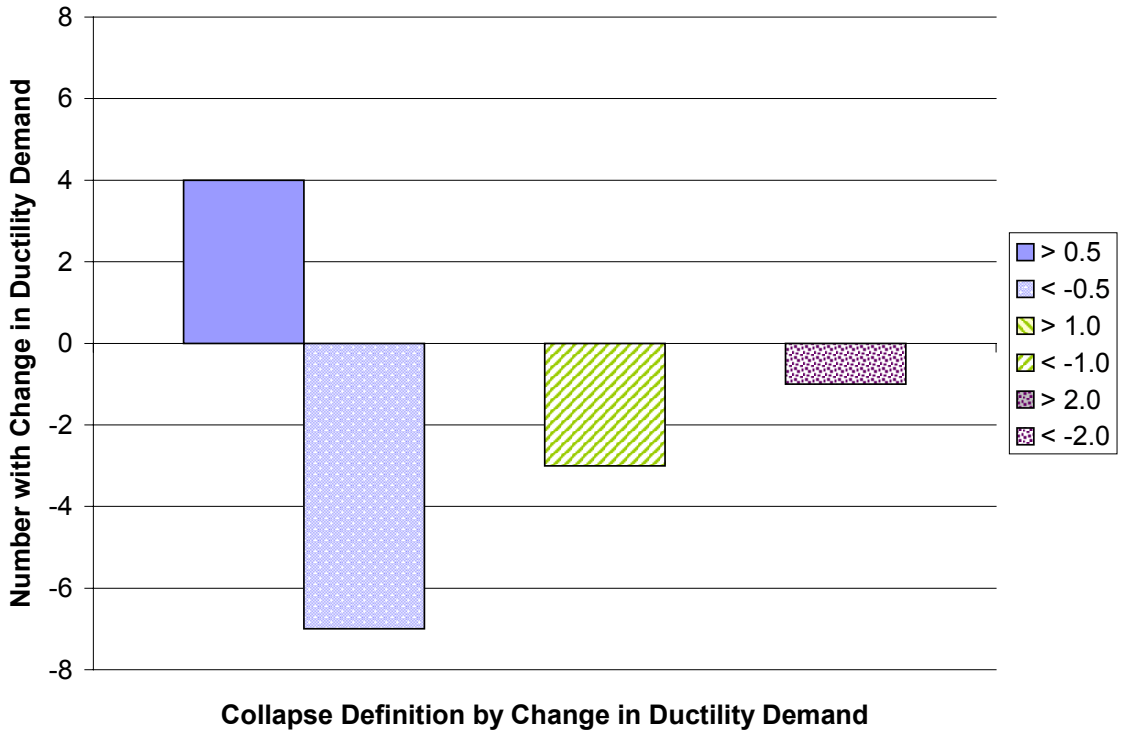


Figure C1.4.4.2b – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 4 with a Lateral Scale of 0.2 g and a Vertical Multiplier of 2.0.

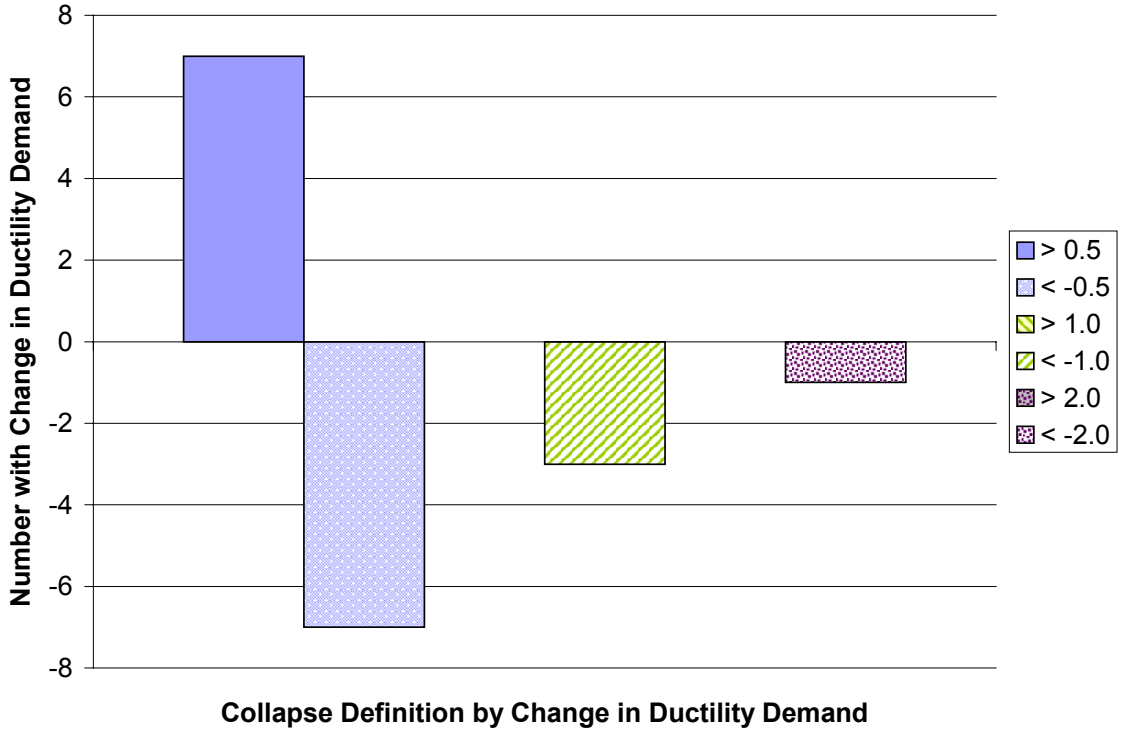


Figure C1.4.4.2c – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 4 with a Lateral Scale of 0.2 g and a Vertical Multiplier of 2.5.

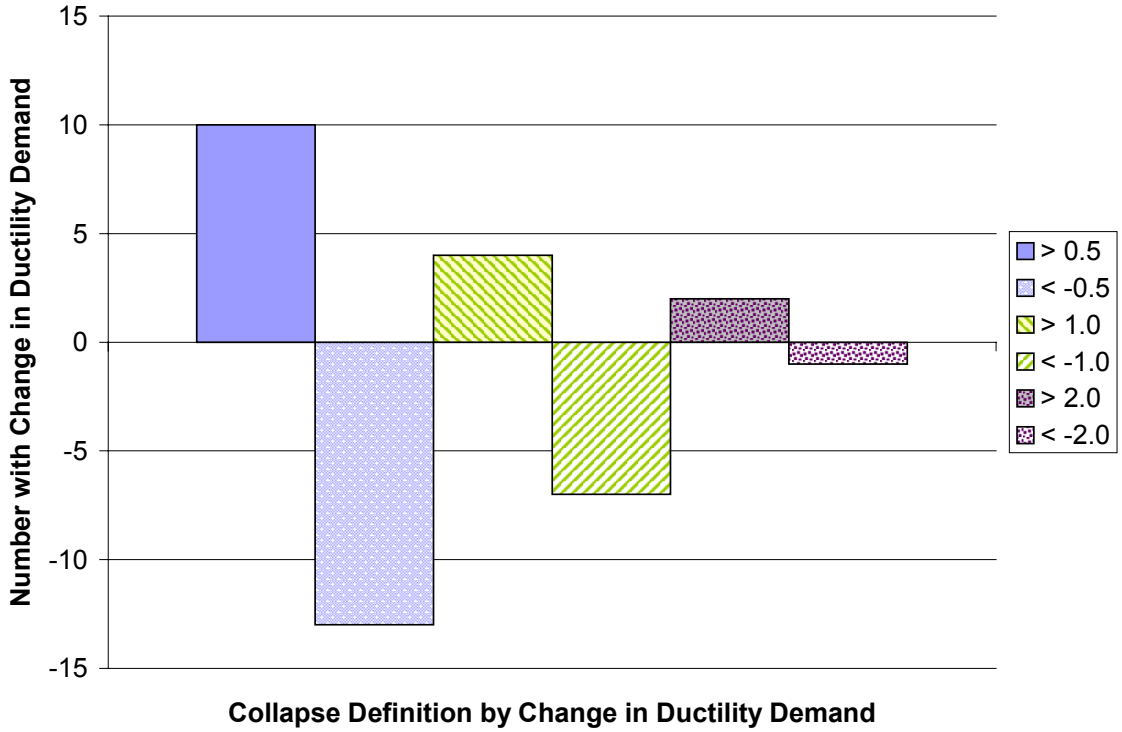


Figure C1.4.4.3a – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 4 with a Lateral Scale of 0.3 g and a Vertical Multiplier of 1.5.

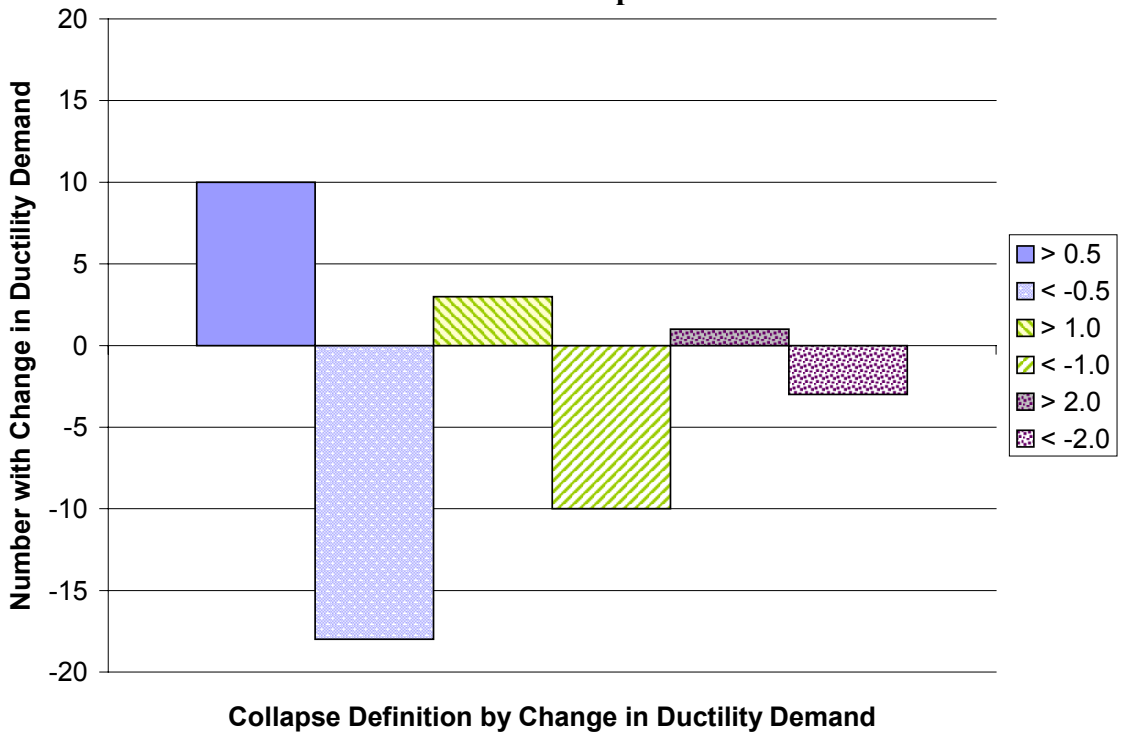


Figure C1.4.4.4c – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 4 with a Lateral Scale of 0.4 g and a Vertical Multiplier of 2.5.

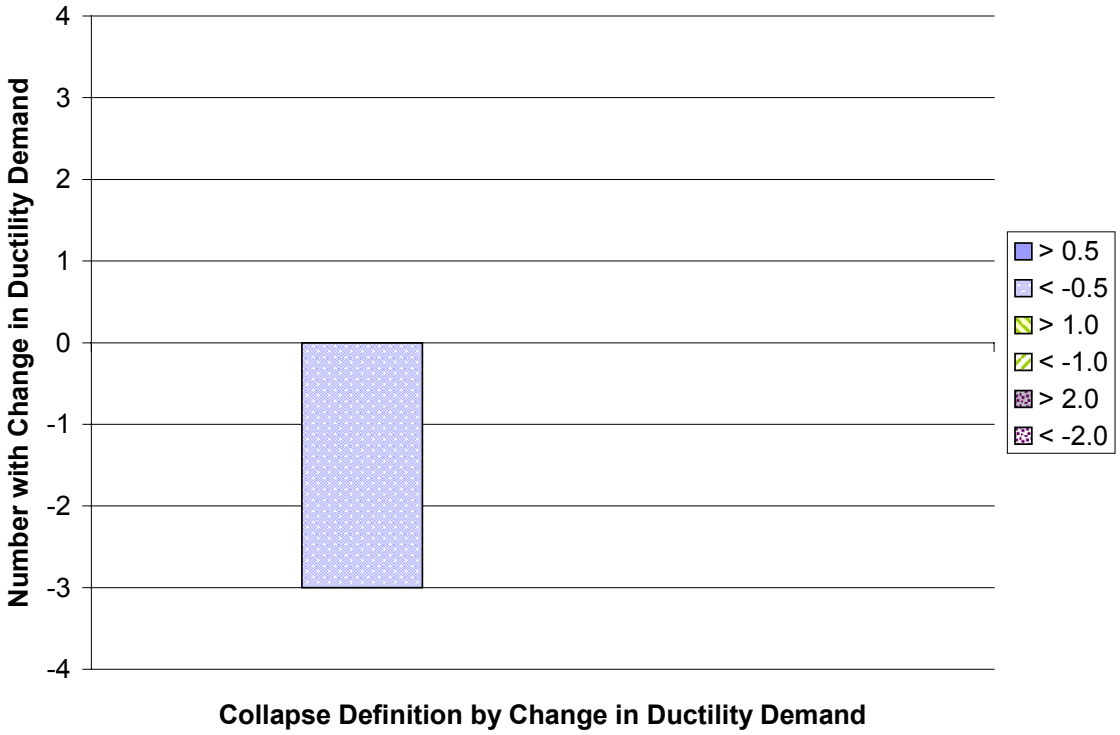


Figure C1.4.5.1a – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 5 with a Lateral Scale of 0.1 g and a Vertical Multiplier of 1.5.

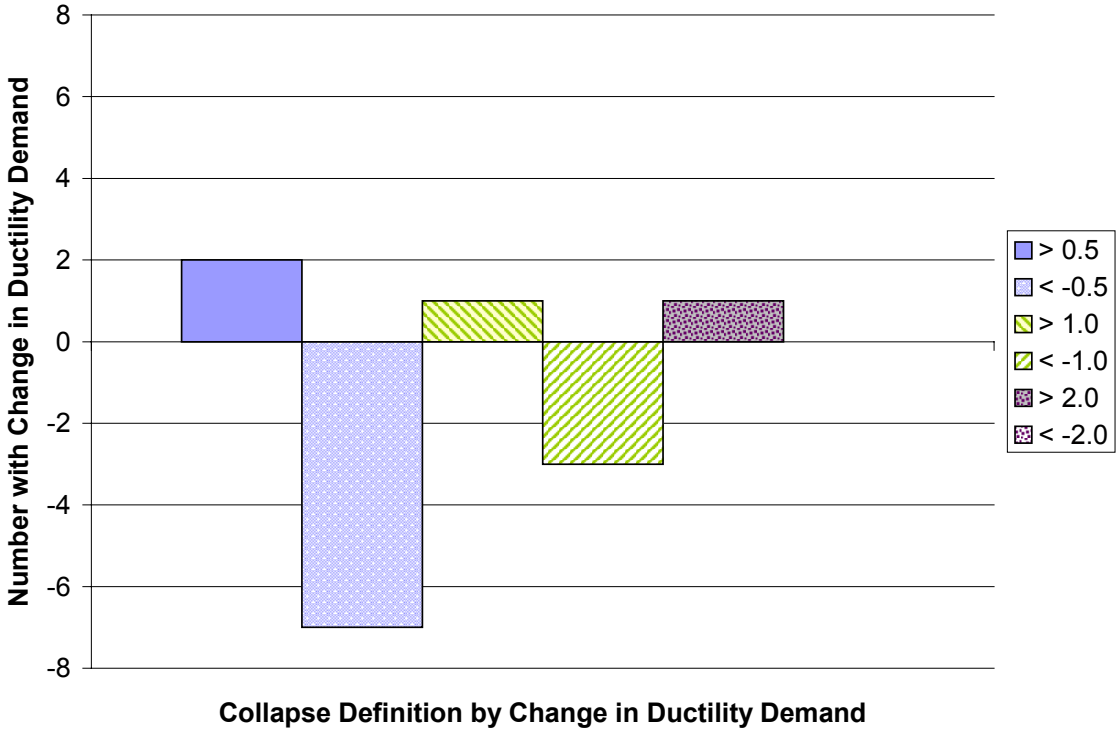


Figure C1.4.5.2a – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 5 with a Lateral Scale of 0.2 g and a Vertical Multiplier of 1.5.

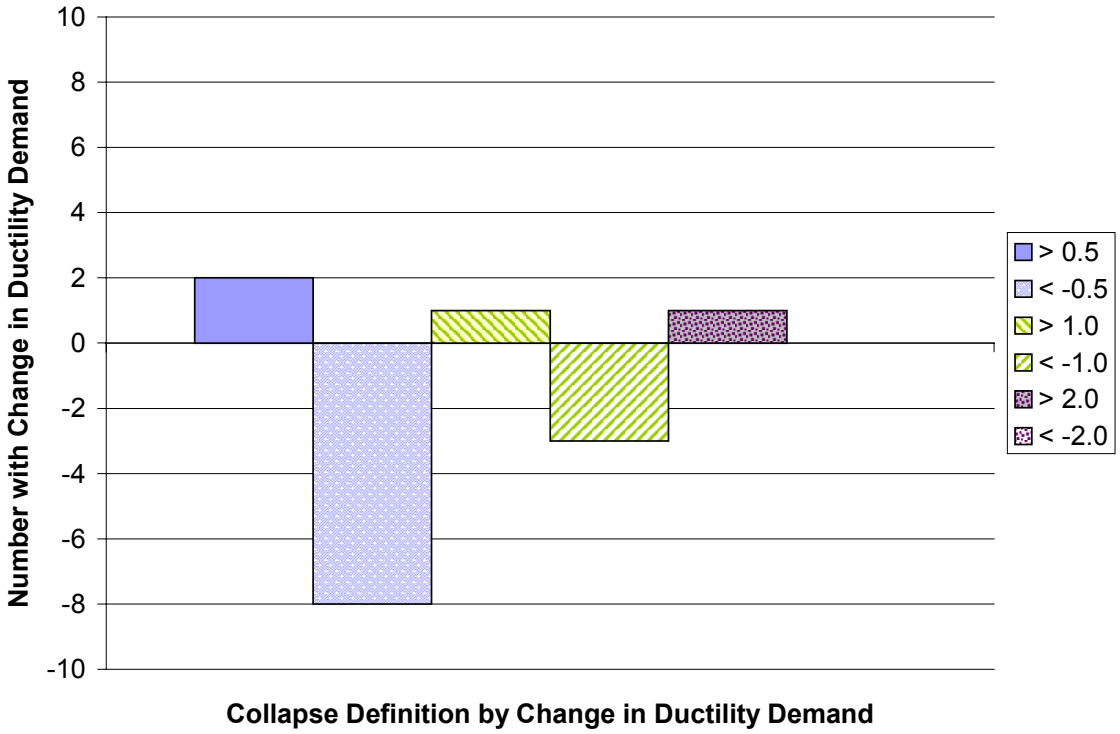


Figure C1.4.5.2b – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 5 with a Lateral Scale of 0.2 g and a Vertical Multiplier of 2.0.

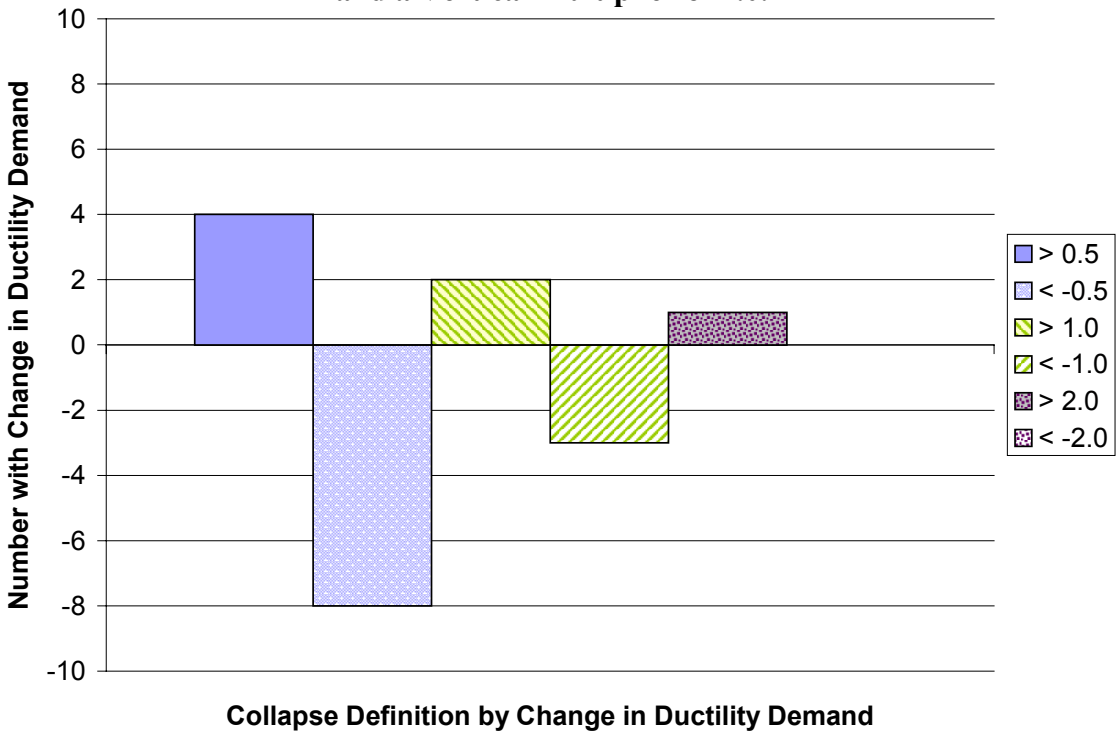


Figure C1.4.5.2c – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 5 with a Lateral Scale of 0.2 g and a Vertical Multiplier of 2.5.

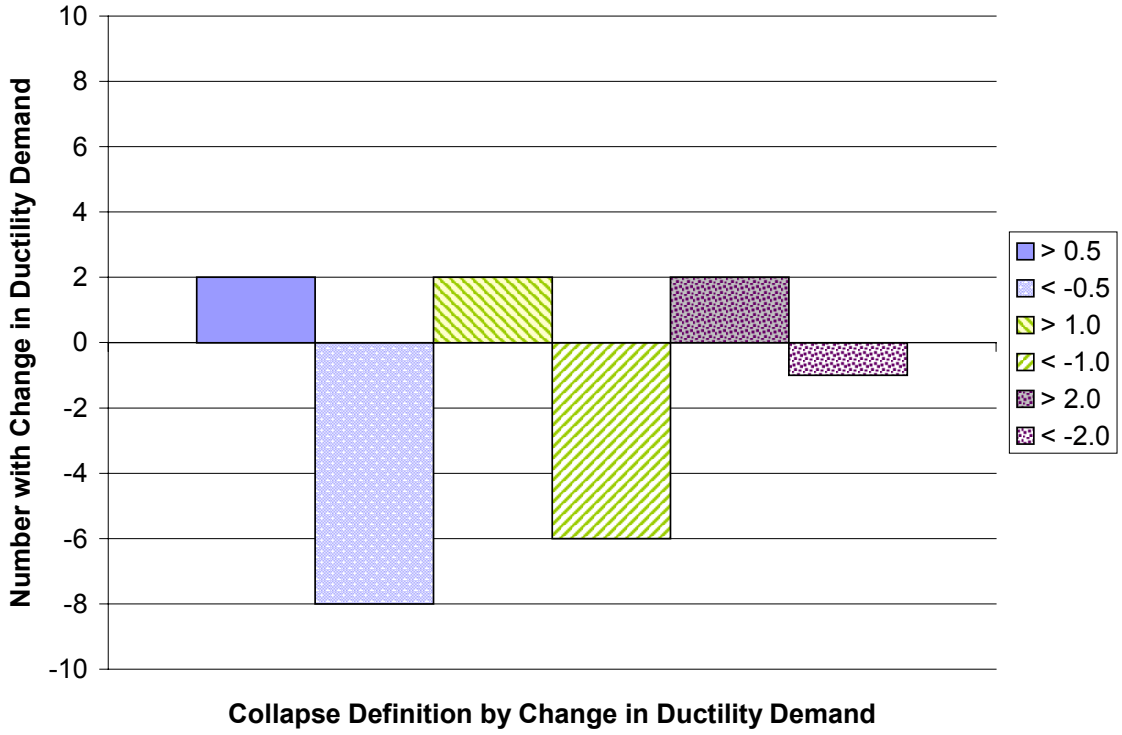


Figure C1.4.5.3a – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 5 with a Lateral Scale of 0.3 g and a Vertical Multiplier of 1.5.

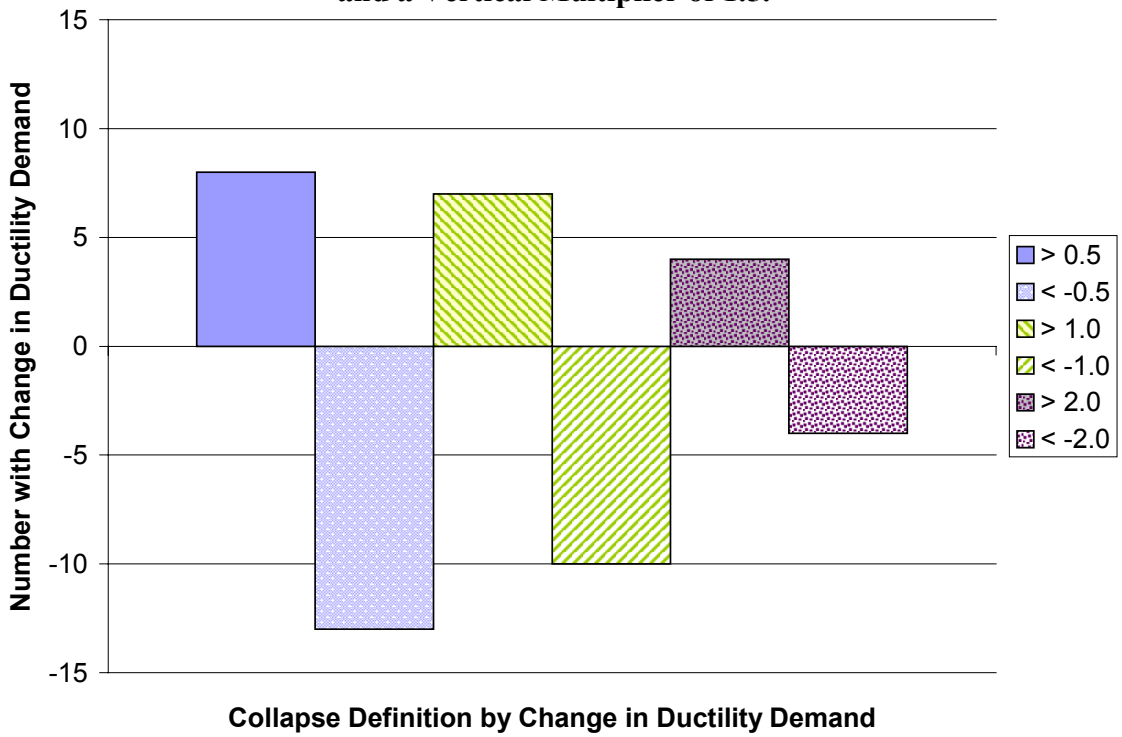


Figure C1.4.5.4c – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 5 with a Lateral Scale of 0.4 g and a Vertical Multiplier of 2.5.

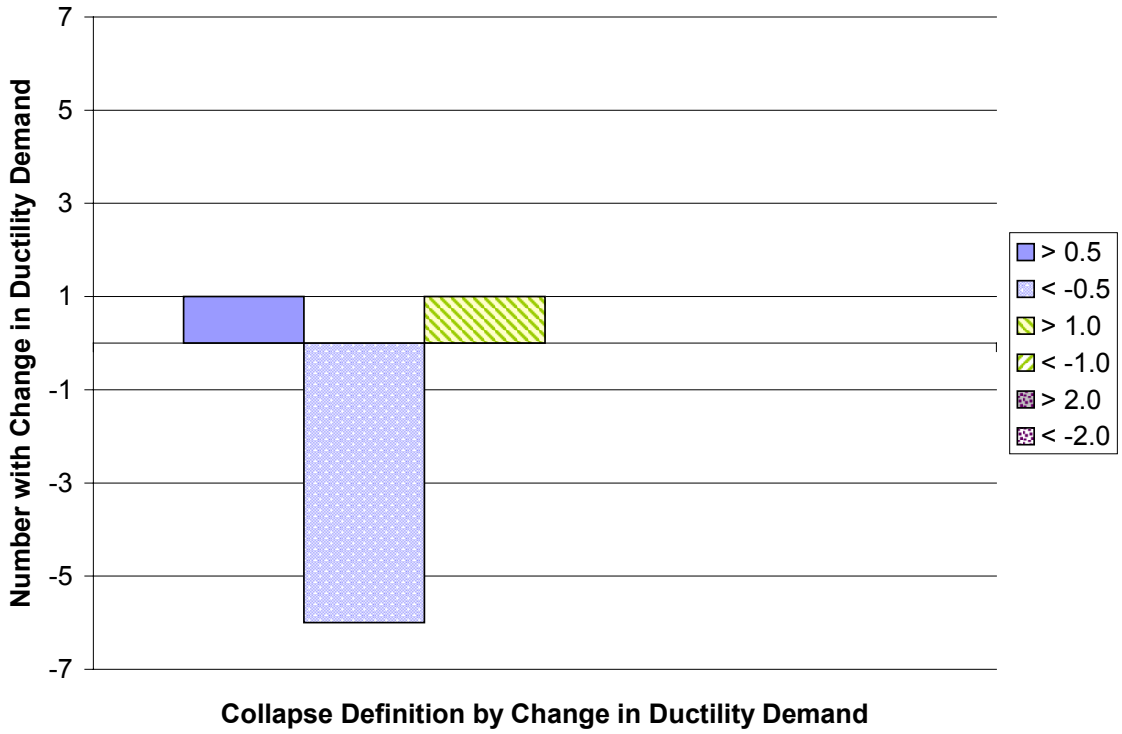


Figure C1.4.6.1a – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 6 with a Lateral Scale of 0.1 g and a Vertical Multiplier of 1.5.

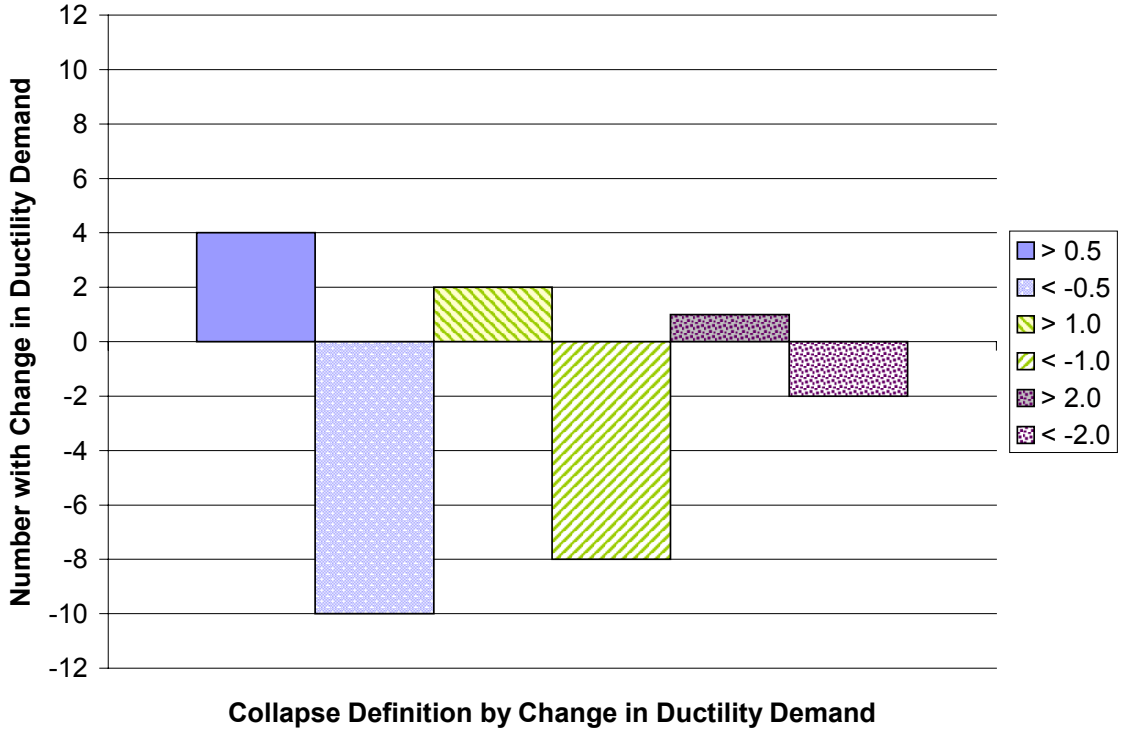


Figure C1.4.6.2a – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 6 with a Lateral Scale of 0.2 g and a Vertical Multiplier of 1.5.

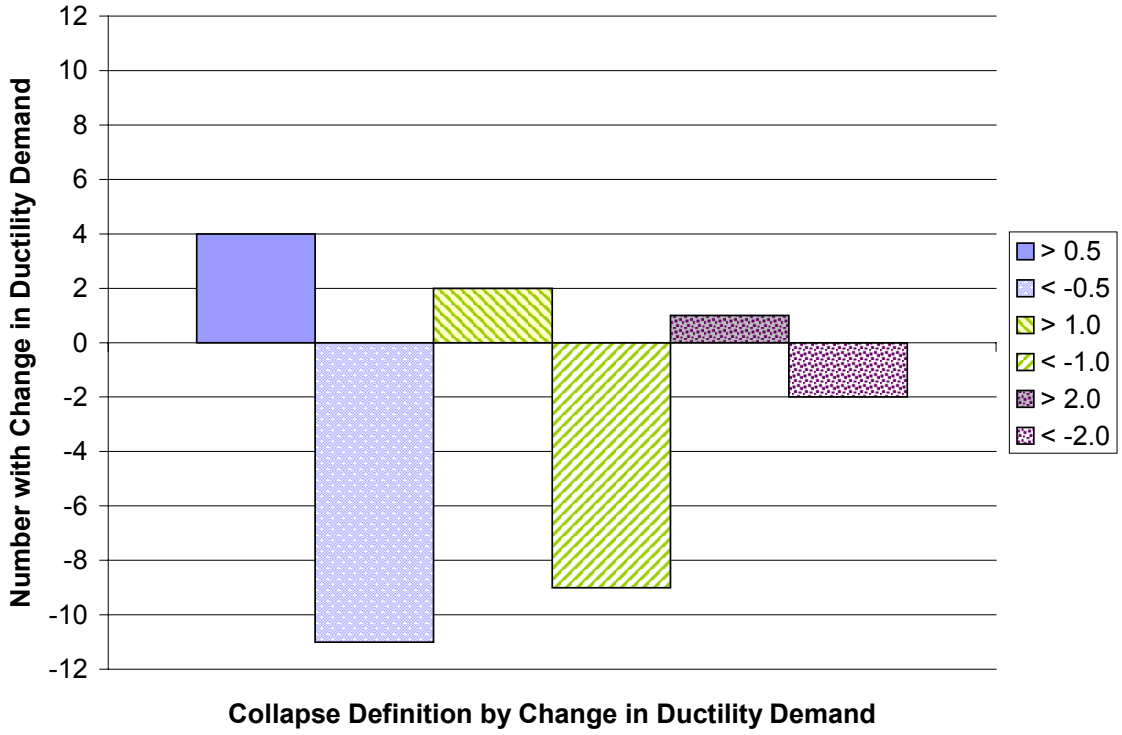


Figure C1.4.6.2b – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 6 with a Lateral Scale of 0.2 g and a Vertical Multiplier of 2.0.

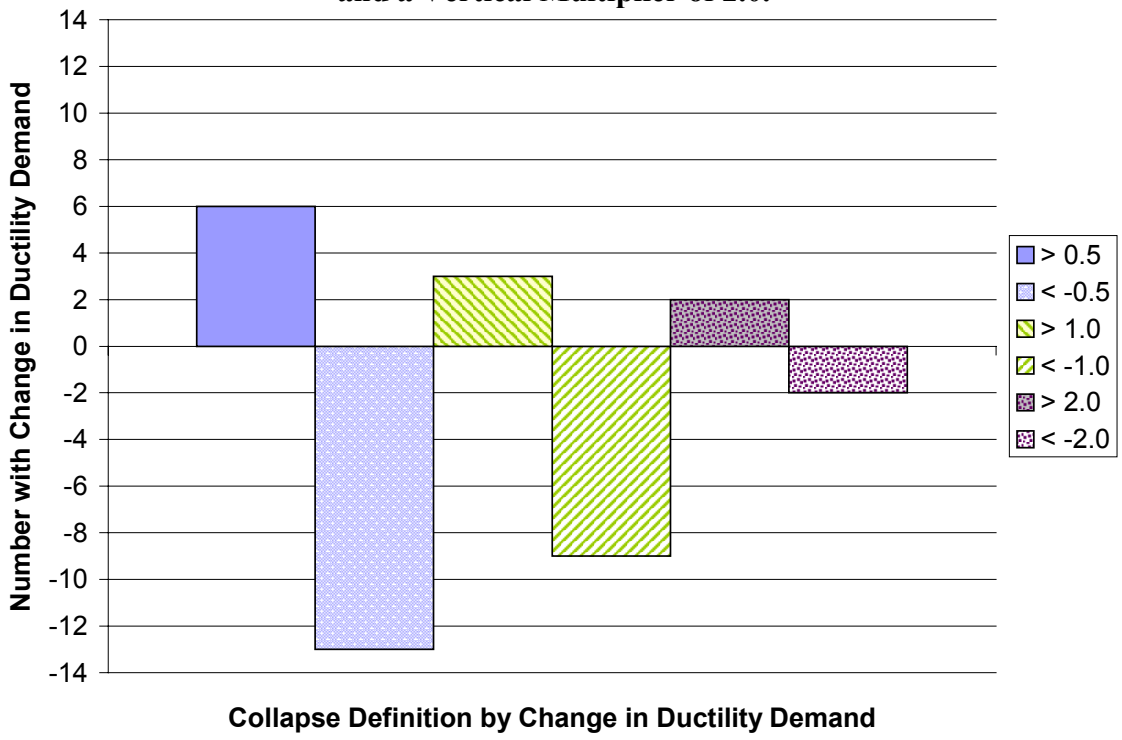


Figure C1.4.6.2c – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 6 with a Lateral Scale of 0.2 g and a Vertical Multiplier of 2.5.

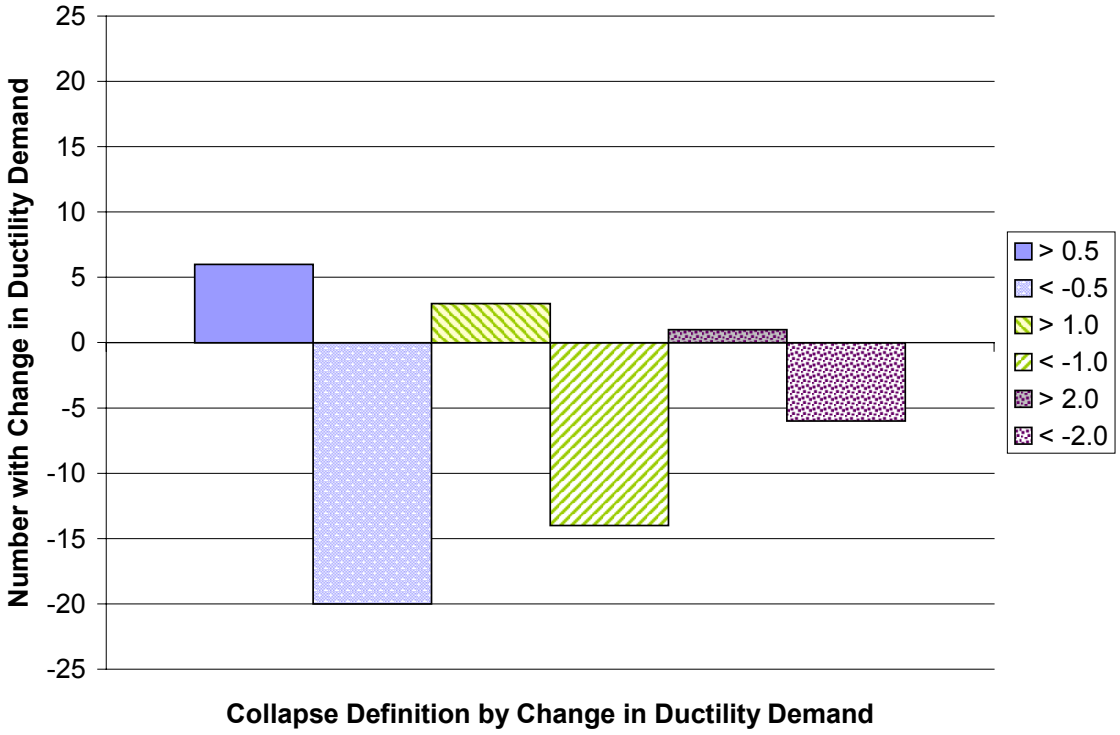


Figure C1.4.6.3a – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 6 with a Lateral Scale of 0.3 g and a Vertical Multiplier of 1.5.

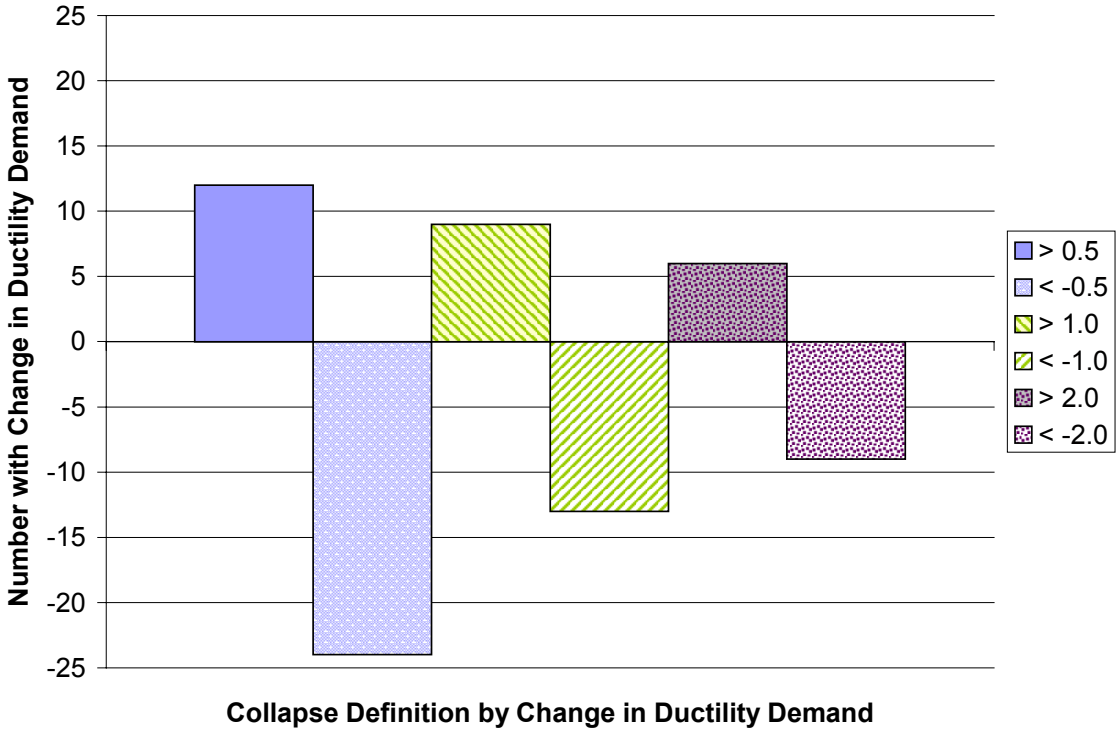


Figure C1.4.6.4c – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 6 with a Lateral Scale of 0.4 g and a Vertical Multiplier of 2.5.

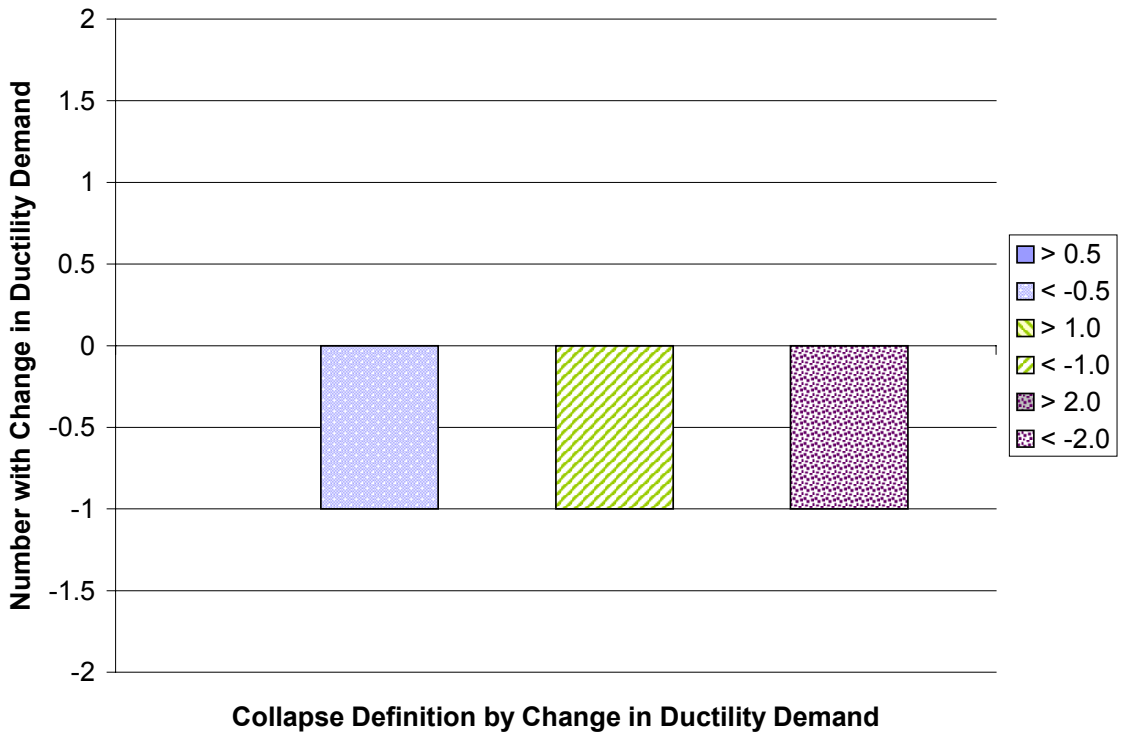


Figure C1.4.7.1a – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 7 with a Lateral Scale of 0.1 g and a Vertical Multiplier of 1.5.

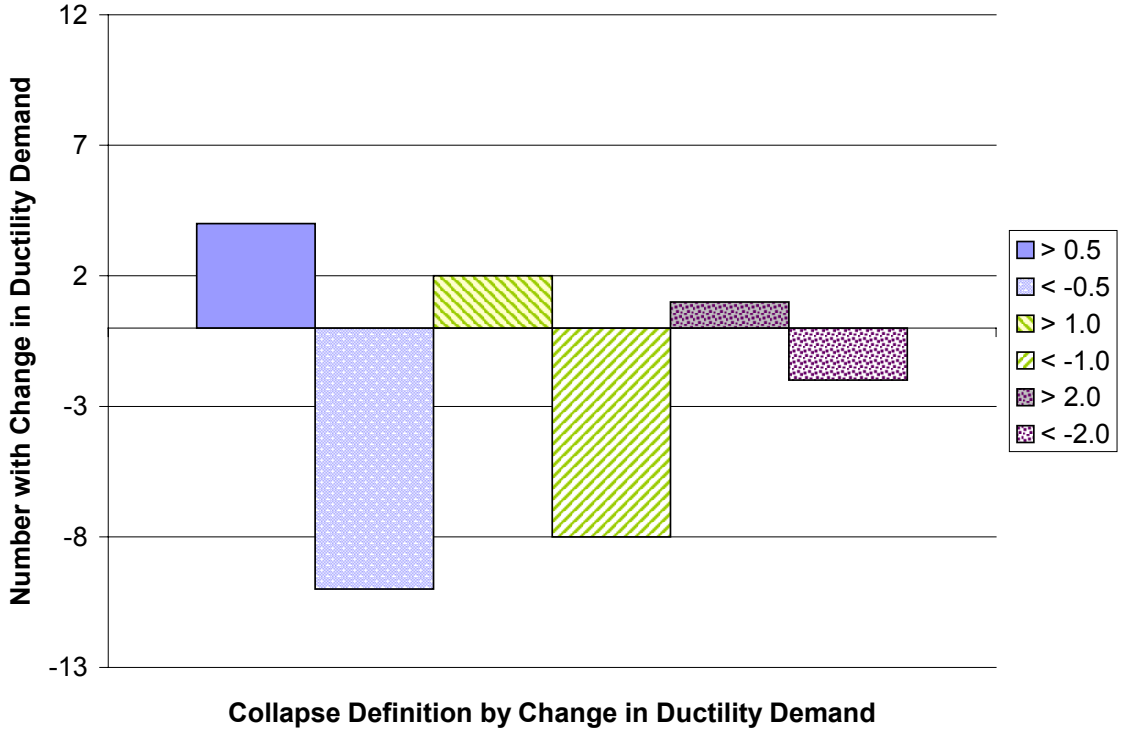


Figure C1.4.7.2a – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 7 with a Lateral Scale of 0.2 g and a Vertical Multiplier of 1.5.

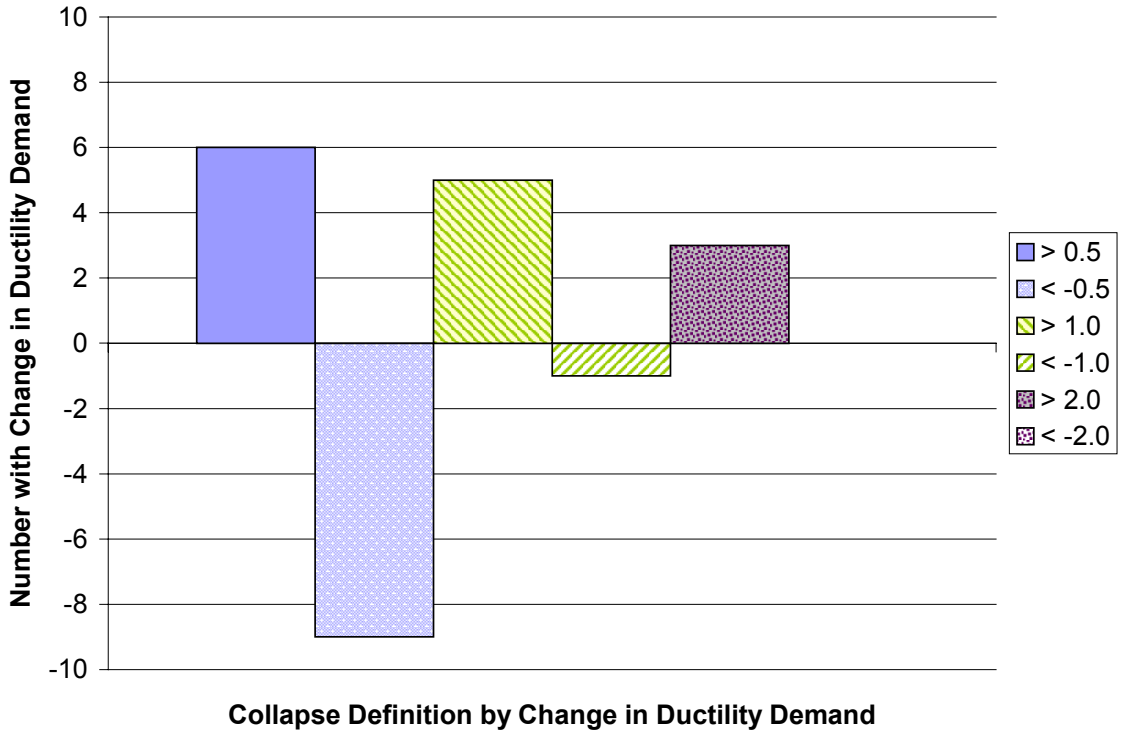


Figure C1.4.7.2b – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 7 with a Lateral Scale of 0.2 g and a Vertical Multiplier of 2.0.

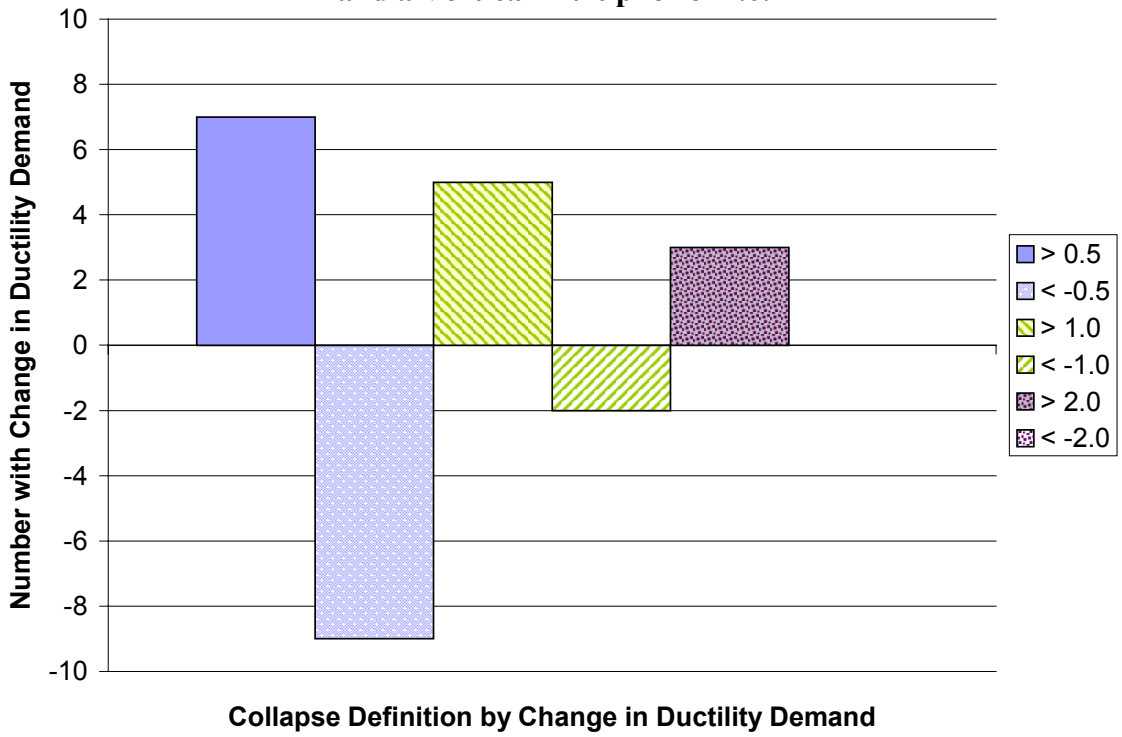


Figure C1.4.7.2c – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 7 with a Lateral Scale of 0.2 g and a Vertical Multiplier of 2.5.

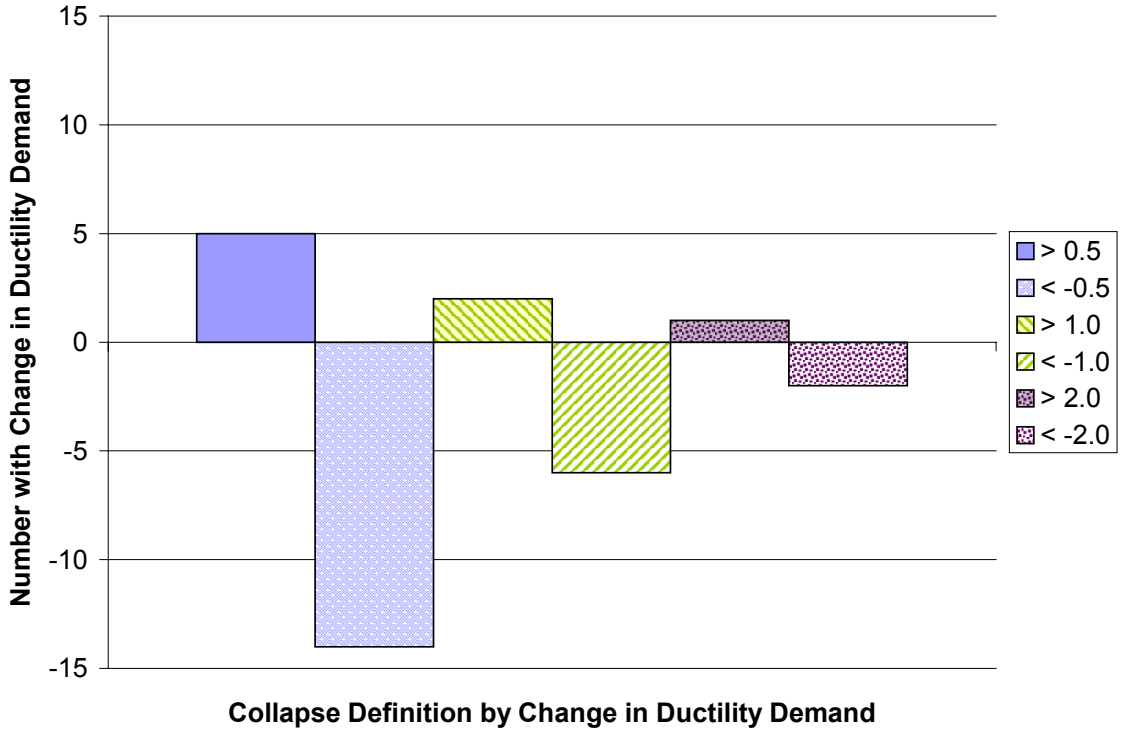


Figure C1.4.7.3a – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 7 with a Lateral Scale of 0.3 g and a Vertical Multiplier of 1.5.

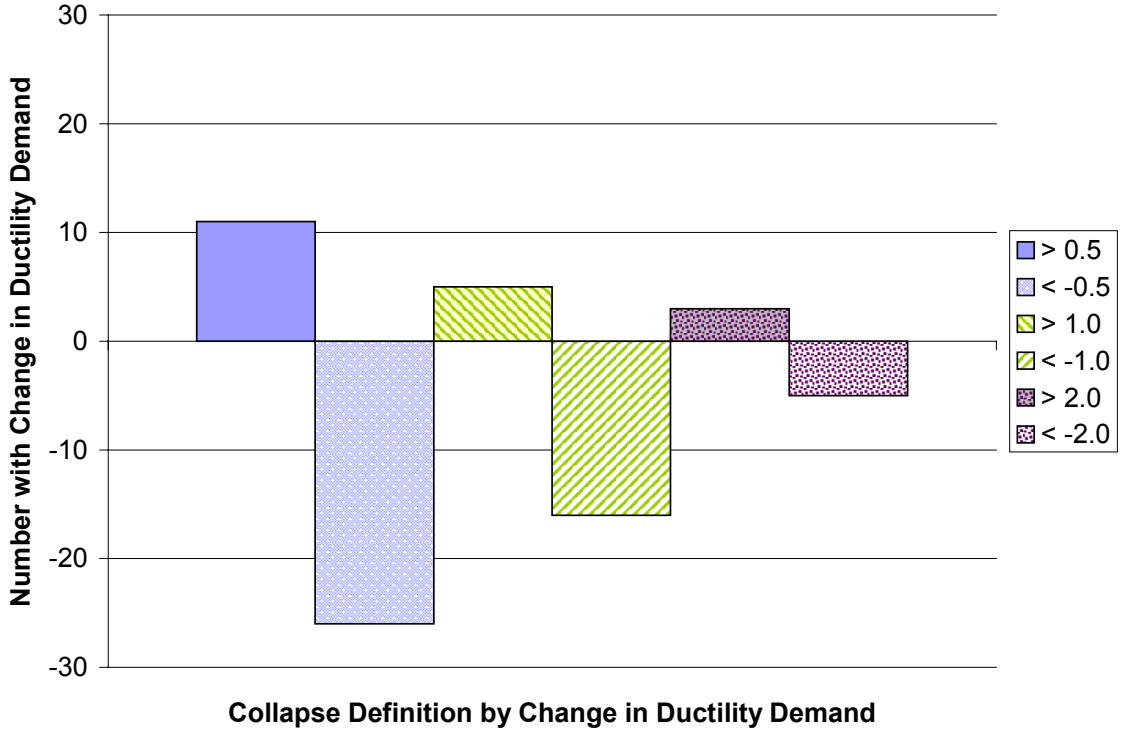


Figure C1.4.7.4c – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 7 with a Lateral Scale of 0.4 g and a Vertical Multiplier of 2.5.

Figure C1.4.8.1a – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 8 with a Lateral Scale of 0.1 g and a Vertical Multiplier of 1.5.

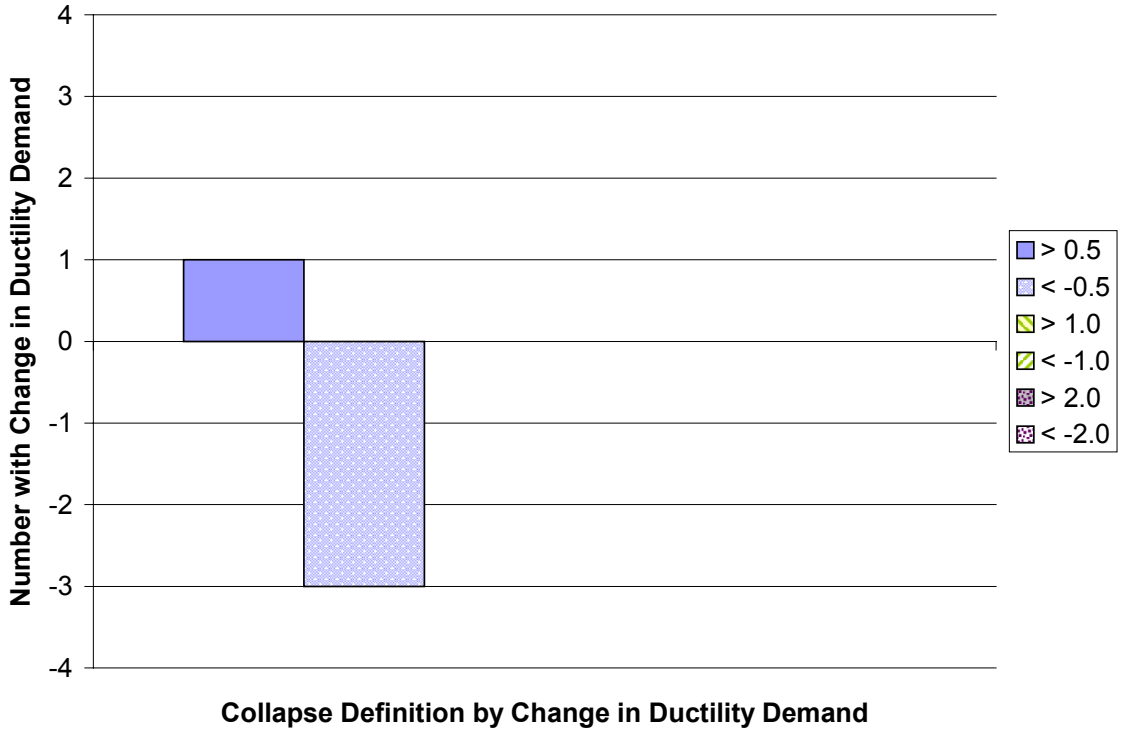


Figure C1.4.8.2a – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 8 with a Lateral Scale of 0.2 g and a Vertical Multiplier of 1.5.

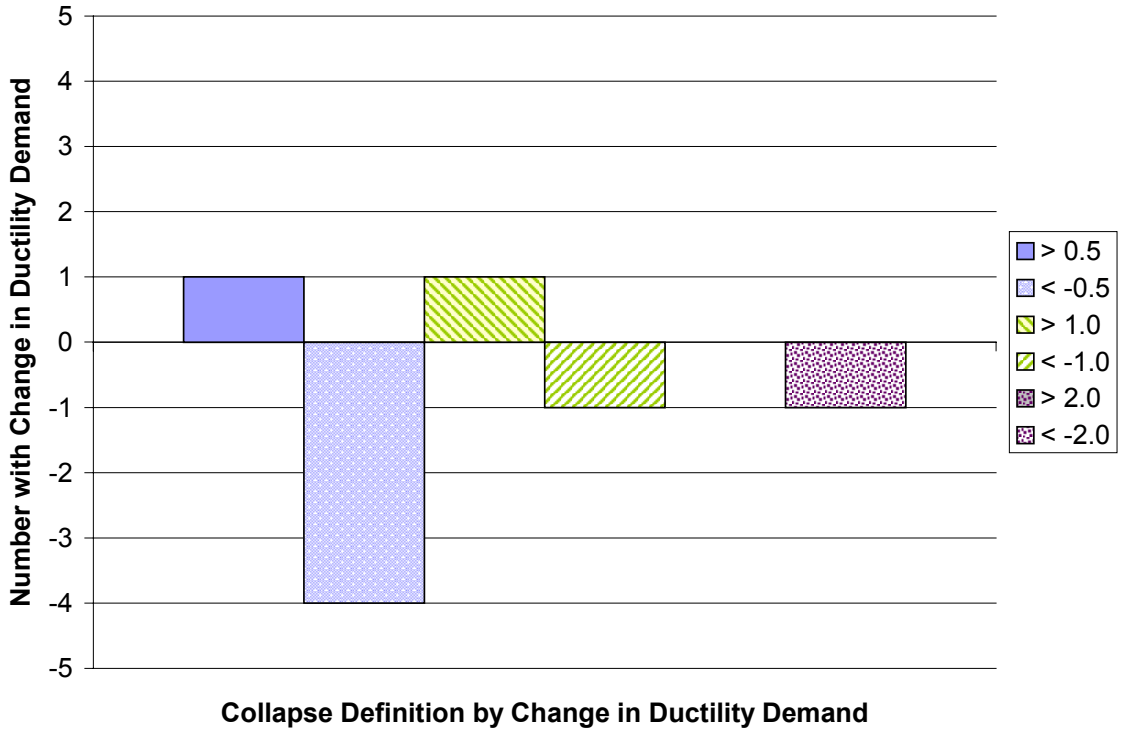


Figure C1.4.8.2b – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 8 with a Lateral Scale of 0.2 g and a Vertical Multiplier of 2.0.

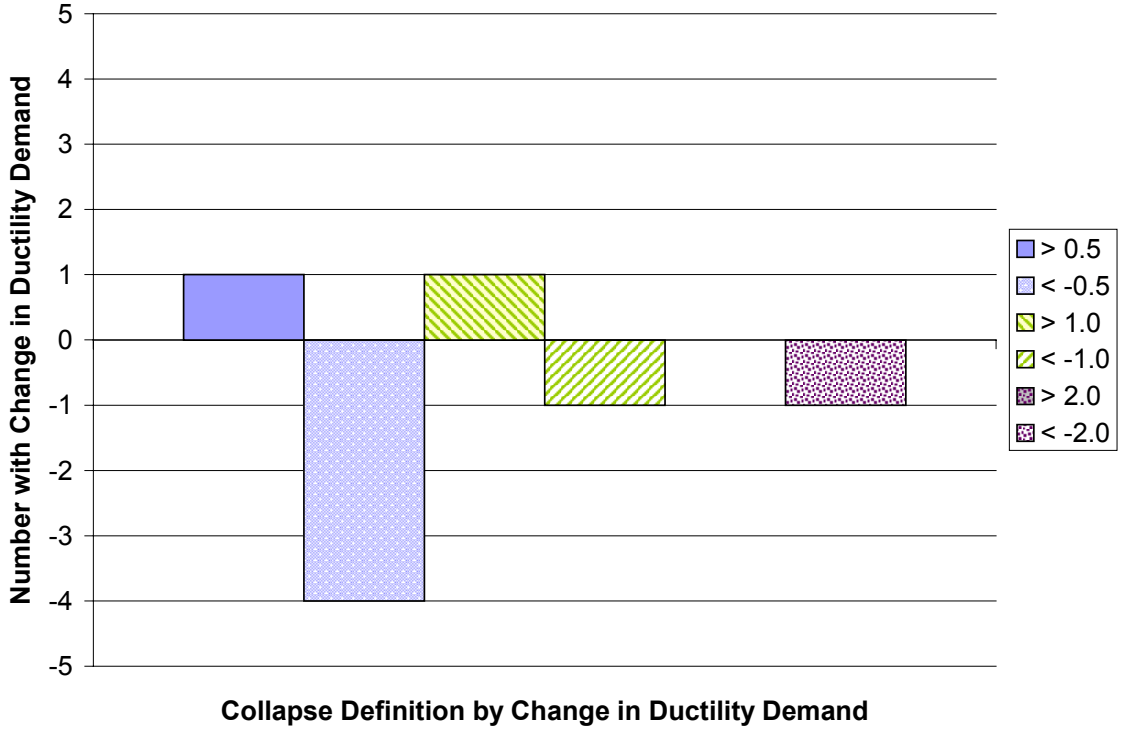


Figure C1.4.8.2c – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 8 with a Lateral Scale of 0.2 g and a Vertical Multiplier of 2.5.

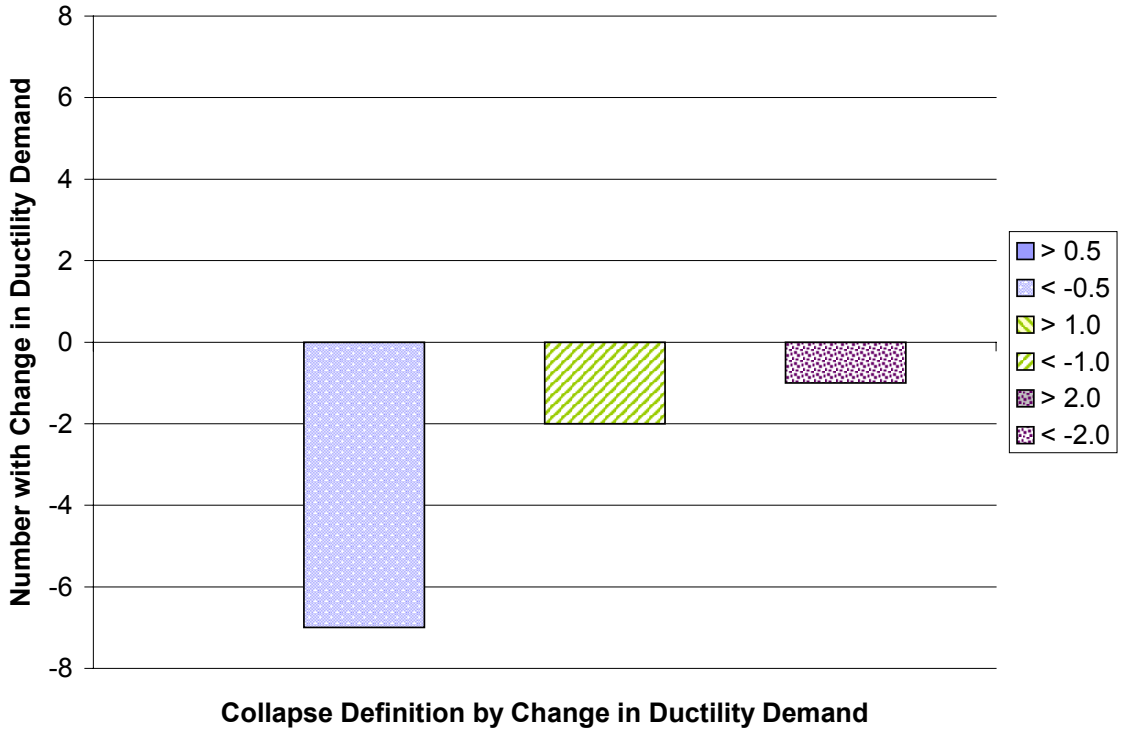


Figure C1.4.8.3a – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 8 with a Lateral Scale of 0.3 g and a Vertical Multiplier of 1.5.

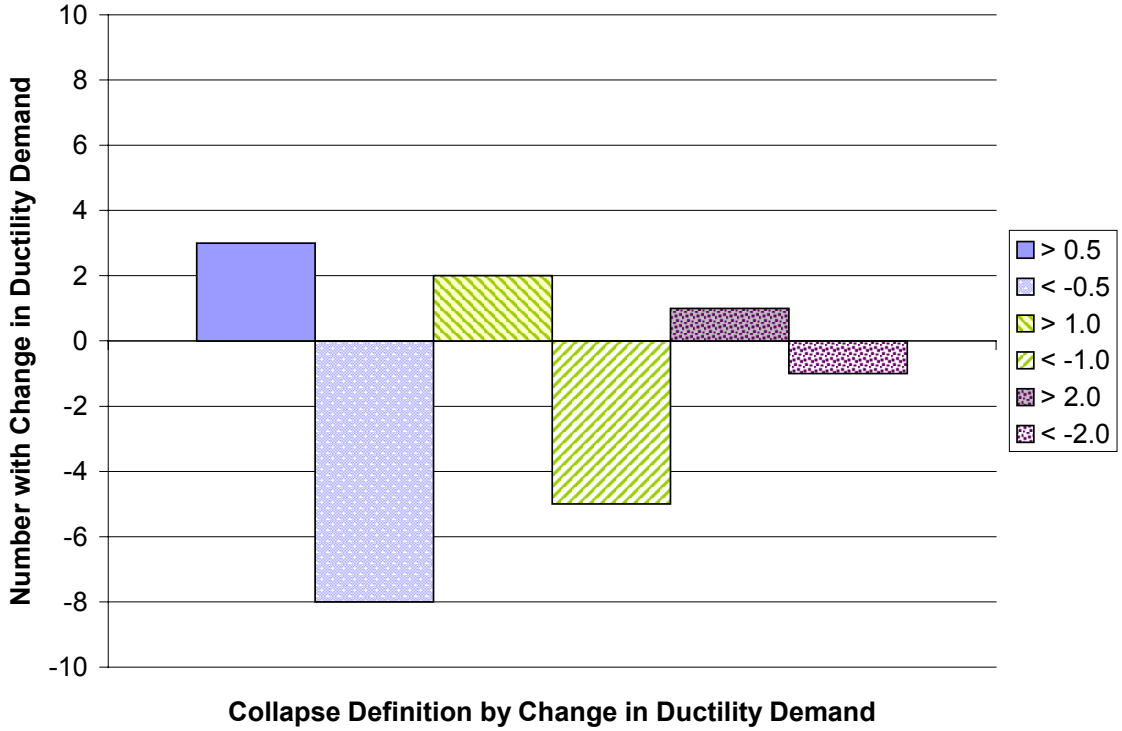


Figure C1.4.8.4c – Collapses and Saves Due to the Inclusion of Vertical Accelerations for the Set of Models Subjected to EQ 8 with a Lateral Scale of 0.4 g and a Vertical Multiplier of 2.5.