

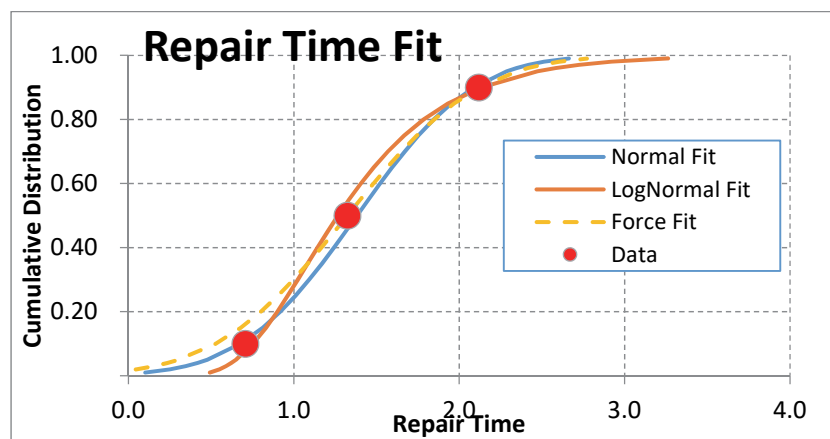
The September 2016 update of FEMA P-58-3 includes the following revisions and new information:

- A new version of *Performance Assessment Calculation Tool* (PACT 3.0) is provided with executable and installation files.
- The *Fragility Database* (xls file) and the *Fragility Specification* (pdf file) have been updated to reflect:
  - **Revised repair time consequence.** The repair time consequences were revised to reflect a change from crew rate (3-person crew working 8-hour workday) to person-days, resulting in a reduction factor of 3/8 over the previous repair time estimates. The repair time consequence was updated for all fragilities.
  - **Revision of repair time consequence algorithm.** The time consequence distribution type has been revised to be set to equal the distribution type established from best fit analysis of the p10, p50, and p90 repair cost data. Additionally, the repair time consequence shape parameters (coefficient of variation or beta) are revised as follows:

$$\beta_{TIME} = \sqrt{(\beta_{COST})^2 + (0.25)^2} \quad (\text{Lognormal Distribution})$$

$$COV_{TIME} = \sqrt{(COV_{COST})^2 + (0.25)^2} \quad (\text{Normal Distribution})$$

The following provides example illustration of the repair time consequence fit. The solid lines represent best fit distributions whereas the dashed line represents the fit established by application of the cost distribution type and the altered shape parameter ( $\beta$  or COV).



- **Revision of fragilities for suspended ceilings and partition walls.** Revised fragilities were developed for acoustical tile or lay-in panel suspended ceilings and interior cold-formed steel framed gypsum partition walls based on new research and evaluation of previous data. The information is summarized in two new background documents, FEMA P-58-3 BD-3.9.31 and BD-3.9.32.

- Additionally, the following types of fragility updates are documented in FEMA P-58 BD 3.7.19:
  - Updates to damage states and repair consequences of gravity beam shear tabs, steel base plates, and steel column splices (NISTIR No. B1031) and precast concrete cladding panels (B2011.201a);
  - Updates to repair costs (NISTIR Nos. B3041, C1011, C3032, D3041, D4011);
  - Miscellaneous revisions (NISTIR Nos. B1031, B1042, B1044, B1061, B2011, C1011, C3021, C3032)
  - Editorial changes including revised numbering and deletion of selected fragilities. Please note that due to these changes, a building model developed with a previous version of PACT may cause an error. A line-by-line comparison of the fragility database issued in September 2016 versus previous versions is documented in *FEMAP-58\_LinebyLineComparisonofFragilityDB.xls*.
- *Consequence Estimation Tool* has been compiled into one spreadsheet combining structural and nonstructural components.
- *Technical Background Documentation* has been updated to include:
  - FEMA P-58-3 BD 3.7.17, *Development of Fundamental Period Adjustment Factors for Buildings in Low-to-Moderate Seismic Excitation*
  - FEMA P-58-3 BD 3.7.18, *Study of Nonstructural and Non-Modeled Structural Stiffness*
  - FEMA P-58-3 BD 3.7.19, *PACT 3.0 Updates to Fragilities*
- *Nonstructural Fragility Background Documentation* has been updated to include:
  - FEMA P-58-3 BD 3.9.31, *Acoustical Tile or Lay-in Panel Suspended Ceilings*
  - FEMA P-58-3 BD 3.9.32, *Interior Cold-Formed Steel Framed Gypsum Partition Walls*