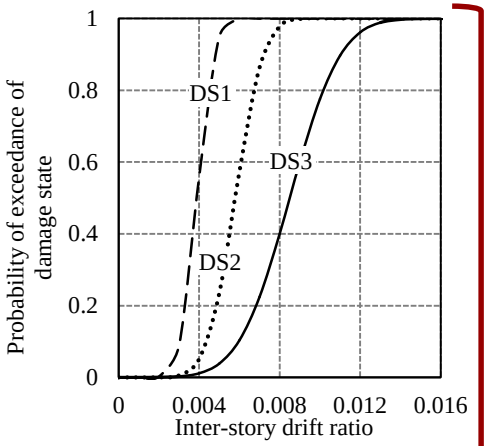
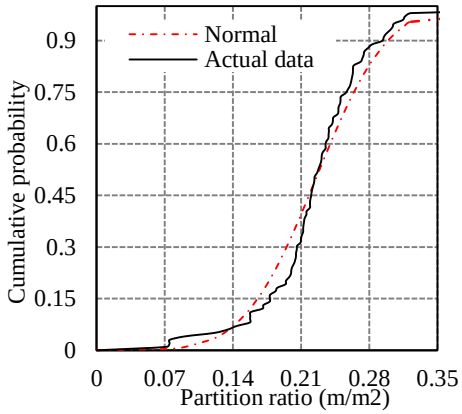
DEVELOPMENT OF CONTRIBUTION FUNCTIONS FOR CLADDING

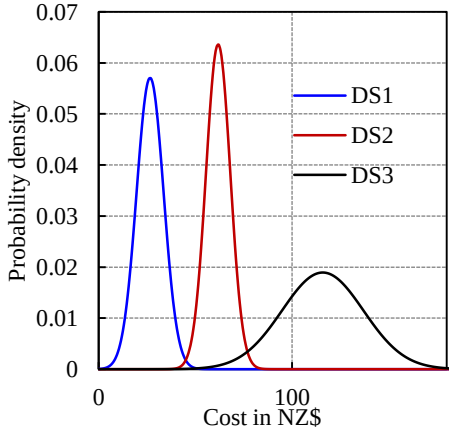
Fragility Functions



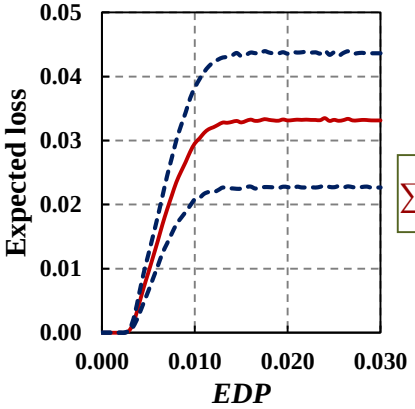
Quantity Distribution



Repair/replacement cost



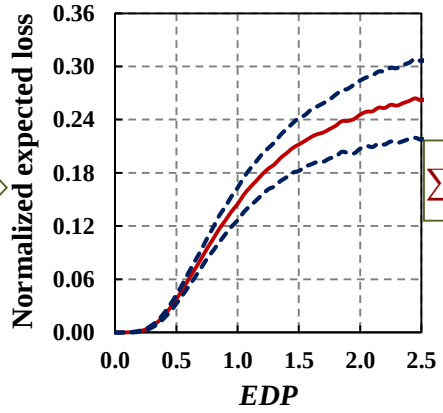
What is the expected loss for a component at a given *IDR*?



Component contribution function

$\sum com_{PG}$

What is the loss for all drift sensitive components in the story *wrt* the total cost of floor at a given *IDR*?



Performance group contribution function

$\sum floor$

Drift sensitive

Acceleration sensitive

Expected loss for the building

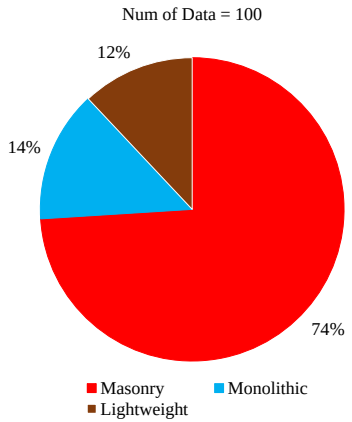
Dhakal & Saha, 2016

COMMON TYPES OF CLADDING

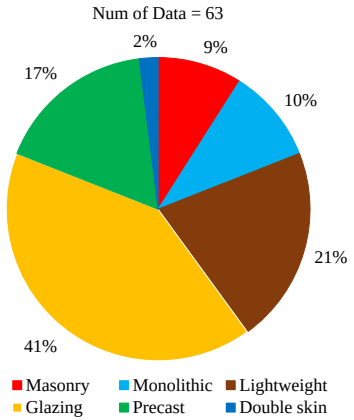
Residential -masonry veneer, monolithic, lightweight

Commercial -glazing, lightweight, precast

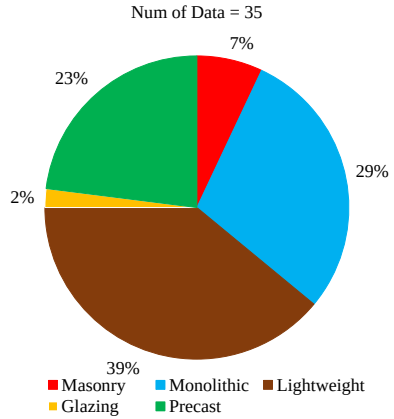
Industrial -lightweight, monolithic, precast



Residential



Commercial



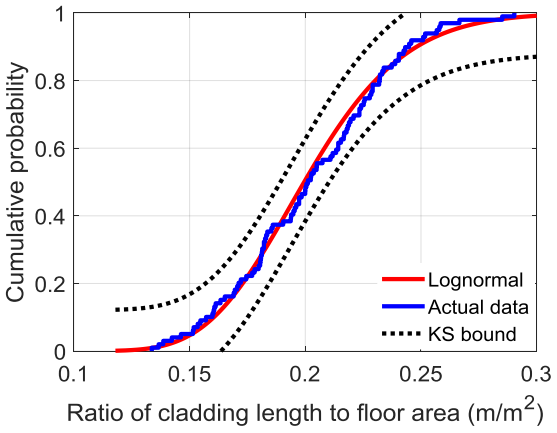
Industrial

CLADDING DISTRIBUTION

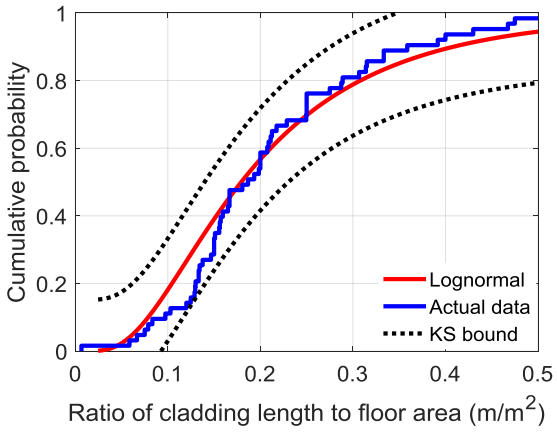
Residential - lognormal mean value 0.202, dispersion 0.044

Commercial -lognormal mean value 0.187, dispersion 0.107

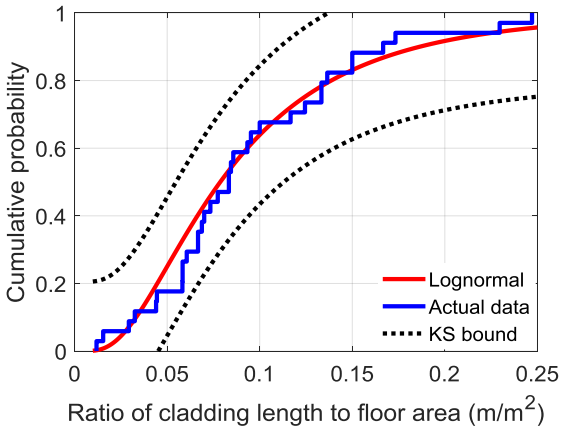
Industrial - lognormal mean value 0.083, dispersion 0.055



Residential



Commercial



Industrial

FRAGILITY FUNCTIONS

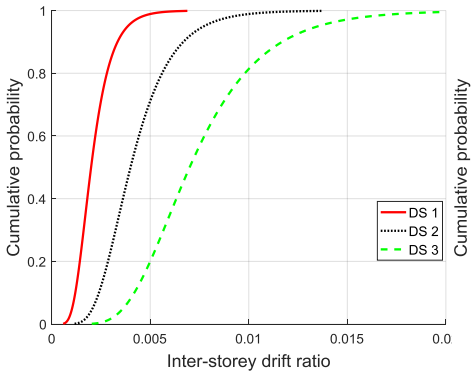
Damage level	x_m	β
DS 1	0.002	0.4
DS 2	0.004	0.4
DS 3	0.007	0.4

Damage level	x_m	β
DS 1	0.0015	0.4
DS 2	0.0035	0.4
DS 3	0.0055	0.4
DS 4	0.006	0.4

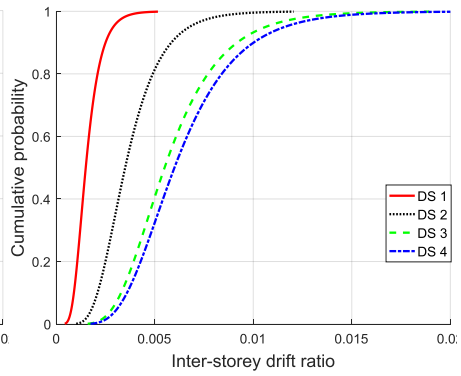
Damage level	x_m	β
DS 1	0.008	0.2
DS 2	0.009	0.2
DS 3	0.0117	0.2

Damage level	x_m	β
DS 1	0.0260	0.272
DS 2	0.0268	0.289
DS 3	0.0339	0.268

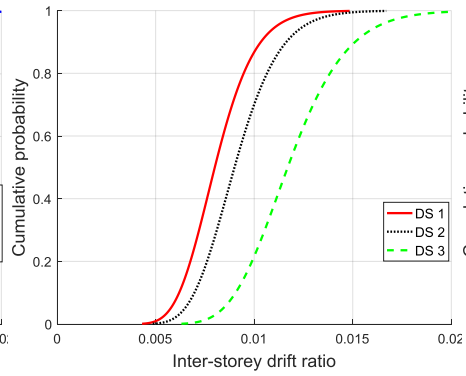
Monolithic



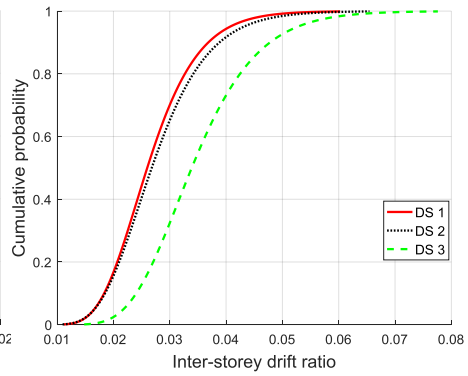
Masonry



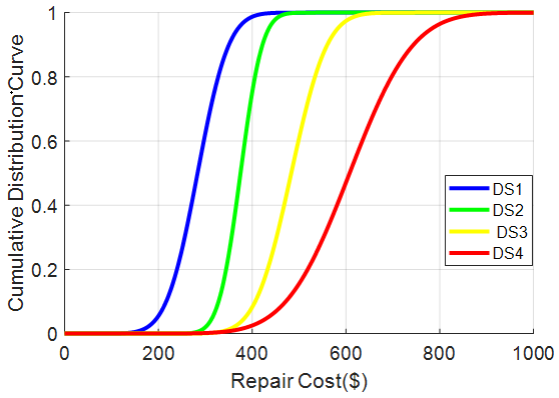
Precast



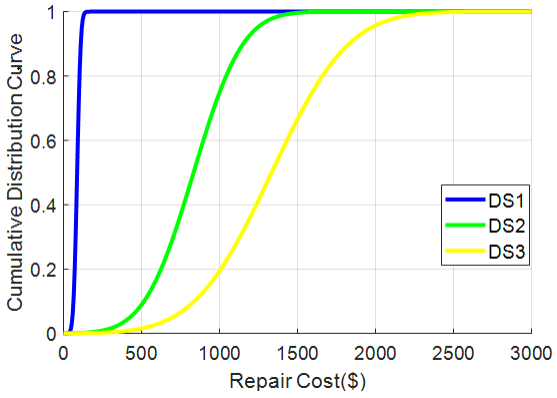
Glazing



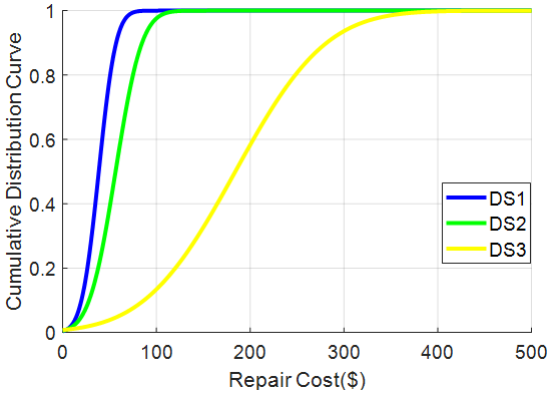
REPAIR COST



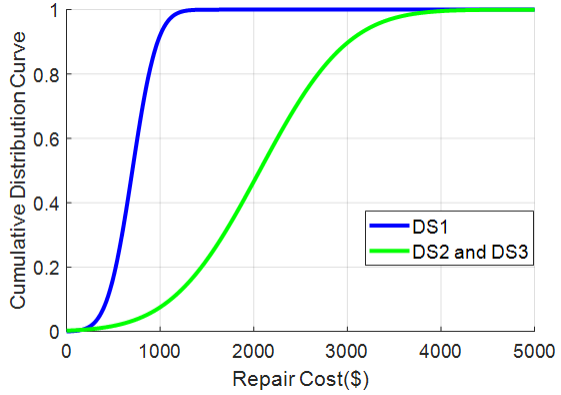
Masonry



Monolithic

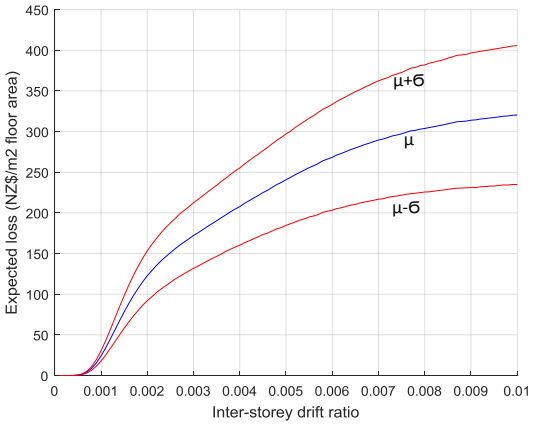


Precast

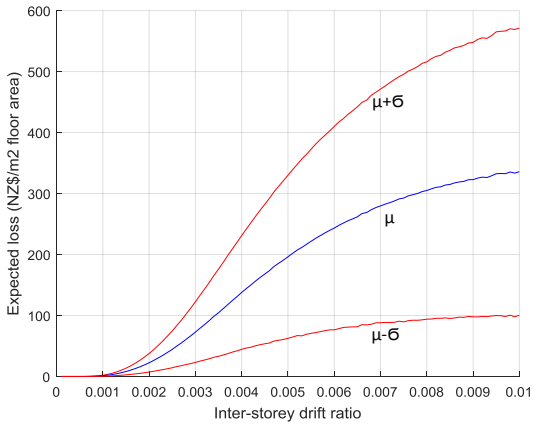


Glazing

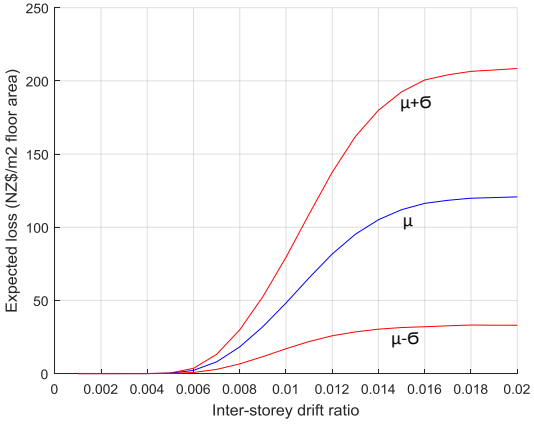
CONTRIBUTION FUNCTIONS



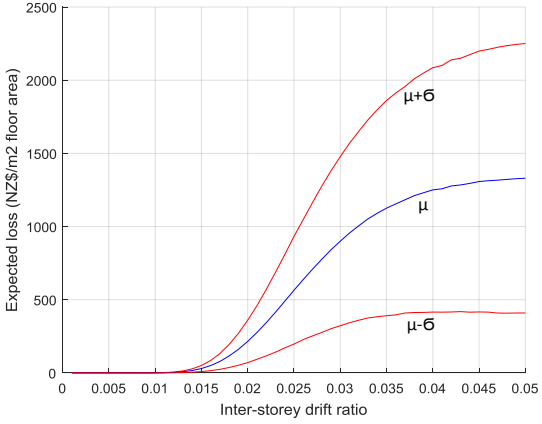
Masonry



Monolithic



Precast



Glazing