List of Figures

2.1 REET under PT-II CBRs to under complete sample. 49

2.2 Risks for the estimators of parameter α for fixed $n = 30, p = 0.5, \alpha = 1, \beta = 2, \lambda = 2$ with small prior variance, $\beta = 0.5$; for panels (a) and (b) δ = 1.5; for panels (c) and (d) δ = - 1.5. 57

2.3 Risks for the estimators of parameter α for fixed $n = 30, p = 0.5, \alpha = 1, \beta = 2, \lambda = 2$ with moderate prior variance, $\beta = 1$; for panels (a) and (b) δ = 1.5; for panels (c) and (d) δ = - 1.5. 58

2.4 Risks for the estimators of parameter α for fixed $n = 30, p = 0.5, \alpha = 1, \beta = 2, \lambda = 2$ with high prior variance, $\beta = 5$; for panels (a) and (b) δ = 1.5; for panels (c) and (d) δ = - 1.5. 58

2.5 The CI and HPD intervals for α when prior variance is $0.5, 1$ and 5 with left panel: $\delta = 1.5$; right panel: $\delta = -1.5$, respectively. 59

2.6 Risks for the estimators of parameter β for fixed $n = 30, p = 0.5, \alpha = 1, \beta = 2, \lambda = 2$ with small prior variance, $\beta = 0.5$; for panels (a) and (b) δ = 1.5; for panels (c) and (d) δ = - 1.5. 60

2.7 Risks for the estimators of parameter β for fixed $n = 30, p = 0.5, \alpha = 1, \beta = 2, \lambda = 2$ with moderate prior variance, $\beta = 1$; for panels (a) and (b) δ = 1.5; for panels (c) and (d) δ = - 1.5. 60

2.8 Risks for the estimators of parameter β for fixed $n = 30, p = 0.5, \alpha = 1, \beta = 2, \lambda = 2$ with high prior variance, $\beta = 5$; for panels (a) and (b) δ = 1.5; for panels (c) and (d) δ = - 1.5. 61

2.9 Risks for the estimators of parameter λ for fixed $n = 30, p = 0.5, \alpha = 1, \beta = 2, \lambda = 2$ with small prior variance, $\beta = 0.5$; for panels (a) and (b) δ = 1.5; for panels (c) and (d) δ = - 1.5. 61

2.10 Risks for the estimators of parameter λ for fixed $n = 30, p = 0.5, \alpha = 1, \beta = 2, \lambda = 2$ with moderate prior variance, $\beta = 1$; for panels (a) and (b) δ = 1.5; for panels (c) and (d) δ = - 1.5. 62

2.11 Risks for the estimators of parameter λ for fixed $n = 30, p = 0.5, \alpha = 1, \beta = 2, \lambda = 2$ with high prior variance, $\beta = 5$; for panels (a) and (b) δ = 1.5; for panels (c) and (d) δ = - 1.5. 62

2.12 The CI and HPD intervals for β when prior variance is $0.5, 1$ and 5 with left panel: $\delta = 1.5$; right panel: $\delta = -1.5$, respectively. 63

2.13 The CI and HPD interval for λ when prior variance is $0.5, 1$ and 5 with left panel: $\delta = 1.5$; right panel: $\delta = -1.5$, respectively. 64

2.14 Top row: WP, Middle row: EP, Last row: WD shows the P-P and Q-Q plot for bladder cancer data set. 65

2.15 Top row: WP, Middle row: EP, Last row: WD shows the PDF and CDF Plot of bladder cancer data set. 66

2.16 The Contour and -log-L plot of α, β and λ for bladder cancer data set. 67

3.1 The Survival time of multiple myeloma patients data, Left panel: TTT plot; Right panel: PDF plot 92

3.2 The survival time of multiple myeloma patients data, Left panel: CDF plot and Q-Q plot, Right panel: P-P plot and KMP plot 92

3.3 K-S plot, hazard plot and Likelihood plots, Contour plot, Contour3D plot shows the ML estimates of λ and θ based on the survival time of multiple myeloma patients data. 93

3.4 In the left column is PDF plot and right column is CDF plot for different scheme of the survival time of multipal myeloma patients data. 129

3.5 In the left column is P-P plot and right column is Q-Q plot for different scheme of the survival time of multipal myeloma patients data. 130

3.6 Left panel is TTT plot and right panel is KM plot for different scheme of the survival time of multipal myeloma patients data. 131

3.7 Left column is K-S plot and and right column is hazard plot for different scheme of the survival time of multipal myeloma patients data. 132

4.1 PDFs: left panel, CDFs: right panel of KD for different values of α and λ. . . . 140

4.2 HF of KD for different values of α and λ. 140

4.3 Informative prior $\pi(\lambda)$ and the posterior $\pi(\lambda|x,\beta)$: left panel, Informative prior $\pi(\lambda)$ and the posterior $\pi(\lambda|x,\hat{\beta})$: right panel of λ. 146

4.4 TTT plot for an ulcer patient with different ages $\left((10^{-2})*age\right)$ for the primary disease. 156

4.5 The PDF and CDF plots via the KD, EED and WD, for an ulcer patient with different ages $\left((10^{-2})*age\right)$ for the primary disease. Left panel: PDF; right panel: CDF. 156

4.6 The sample Q-Q plots via the KD, EED and WD, for an ulcer patient with different ages $\left((10^{-2}) * age\right)$ for the primary disease. Left panel: KD; middle panel: EED; right panel:WD. 157

4.7 The hazard plots via the KD, EED and WD, for an ulcer patient with different ages $\left((10^{-2}) * age\right)$ for the primary disease. Left panel: KD; middle panel: EED; right panel:WD. 157

4.8 Box plot for PT-II CBR under different censoring schemes $S_{n:m}$ for an ulcer patient with different ages $\left((10^{-2}) * age\right)$ for the primary disease. 161

5.1 Plot of LDS for S with respect different θ for fixed in (a) $w = 30,\ N = 50$, and (b) $w = 45,\ N = 50$. 168

5.2 Observed and Expected relative frequency histogram plot of Poisson Lindley Model. 174

5.3 Trace plot of parameter S with (a) Jeffery's prior and (b) Bernardo's reference prior. 176

5.4 Auto Correlation Plot (ACF) of parameter S with (a) Jeffery's prior and (b) Bernardo's reference prior. 176

5.5 Posterior histogram plot of parameter S with (a) Jeffery's prior and (b) Bernardo's reference prior. 177

5.6 Expected frequency plot of S with (a) Jeffrey's prior and (b) Bernardo's reference prior. 179