3장 중도절단 및 우도함수: SAS

2020년 가을학기

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SAS를 이용한 중도절단자료의 경우 최대우도추정

```
proc lifereg data= survdata ;
 model time*censor(0)= /dist=weibull;
run;
```

Analysis of Maximum Likelihood Parameter Estimates

Parameter	DF	Estimate	Standard Error	95% Confidence Limits		Chi-Square	Pr > ChiSq
Intercept	1	0.0167	0.0257	-0.0338	0.0671	0.42	0.5173
Scale	1	0.3341	0.0190	0.2989	0.3734		
Weibull Scale	1	1.0168	0.0262	0.9668	1.0694		
Weibull Shape	1	2.9931	0.1698	2.6782	3.3451		

- intercept $\hat{\beta}_0 = 0.0167$ scale $\hat{\sigma} = 0.3341$
- SAS의 와이블 모형: $S(t) = e^{-(t/\tau)^{\alpha}}$
  - Weibull scale parameter $\tau = e^{\beta_0} \Rightarrow \hat{tau} = e^{0.0167} = 1.0168$,
  - Weibull shape parameter $\alpha = \frac{1}{\sigma} \Rightarrow \hat{\alpha} = 1/0.3341 = 2.9931$
- 교재의 와이블 모형: $S(t) = e^{-(\lambda t)^{\alpha}}$
  - $\lambda = \frac{1}{\tau} \Rightarrow \hat{\lambda} = e^{-\beta_0} = e^{-0.0167} = 0.9844$
  - $\hat{\alpha} = 2.9931$
  - $\hat{S}(t) = e^{-(\hat{\lambda}t)^{\hat{\alpha}}} = e^{-(0.9844t)^{2}.9931}$

dist=option: exponential, gamma llogistic, lnormal, logistic, normal, weibull