HW3

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2018년 10월 29일

# Table 9.2.모형 (4)에서의 설명 변수중 Unemployment rate를 빼고 재분석 합니다. logit모형을 적합시키고 모형에서 오즈비 추정의 차이. 단, 다른 변수들은 모두 평균을 사용합니다.   
  
pi\_rat<-s46/100 # P/I ratio  
hse\_inc<-s45/100 # housing expense-to-income ratio  
ltv<-s6/s50 # loan-to-value ratio  
ccred<-s43 # consumer credit score  
mcred<-s42 # mortgage credit score  
pubrec<-s44 # public bad credit record  
denpmi<-s53 # denied mortgage insurance  
selfemp<-s27a # self-employed  
single<-ifelse(s23a=="U",1,0)  
hischl<-ifelse(school>=12,1,0) # high school diploma  
probunmp<-uria # probunmp(unemployment rate)  
condo<-ifelse(s51==1,1,0) # condominium  
black<-ifelse(s13==3,1,0)   
deny<-ifelse(s7==3,1,0)  
ltv\_med<-ifelse(ltv>=0.85 & ltv<0.95,1,0); ltv\_high<-ifelse(ltv>=0.95,1,0)  
blk\_pi<-black\*pi\_rat; blk\_hse<-black\*hse\_inc  
  
mortdeny.data<-data.frame(pi\_rat=pi\_rat,hse\_inc=hse\_inc,ltv=ltv,ccred=ccred,mcred=mcred,pubrec=pubrec, denpmi=denpmi,selfemp=selfemp,single=single,hischl=hischl,probunmp=probunmp,condo=condo,black=black,deny=deny,ltv\_high=ltv\_high,blk\_pi=blk\_pi,blk\_hse=blk\_hse)   
colMeans(mortdeny.data); apply(mortdeny.data,2,mean)

## pi\_rat hse\_inc ltv ccred mcred pubrec   
## 0.33081357 0.25534612 0.73777591 2.11638655 1.72100840 0.07352941   
## denpmi selfemp single hischl probunmp condo   
## 0.02016807 0.11638655 0.36176471 0.98361345 3.77449585 0.28823529   
## black deny ltv\_high blk\_pi blk\_hse   
## 0.14243697 0.11974790 0.03403361 0.04999382 0.03792618

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Logit.model <- glm(deny~pi\_rat+ black+ hse\_inc+ ltv\_med+ ltv\_high+ ccred+ mcred+ pubrec+ denpmi+ selfemp+ single+ hischl, family=binomial(link="logit"), data=mortdeny.data)  
odds<-coeftest(Logit.model)[3,1]; odds; exp(odds)

## [1] 0.6587446

## [1] 1.932365

odds\_sd<-coeftest(Logit.model)[3,2]  
odds\_L<-odds-1.96\*odds\_sd; odds\_U<-odds+1.96\*odds\_sd  
odds\_CI<-c(odds\_L,odds\_U); odds\_CI; exp(odds\_CI)

## [1] 0.3067108 1.0107783

## [1] 1.358948 2.747739