Presentation(4.21)

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New Models

FLA1AR (Functional Limitation)

-Logit Regression

```
modelString_lim <-"
model {
## sampling
for (i in 1:N){
y[i] ~ dbern(p[i])
logit(p[i]) <- beta[1] + beta[2]*X[i,1] + beta[3]*X[i,2] +
                beta[4]*X[i,3] + beta[5]*X[i,4] + beta[6
}
## priors
 for(j in 1:7){
    beta[j] ~ dnorm(0,0.1)
    }
}
"
```

DOINGLWA (Work Status)

-5-level Multinomial Logit Regression

```
 modelString_stat <-"
model {
## sampling
for (i in 1:N){
    y[i] ~ dcat(p[i, 1:C])
    for(c in 1:C){
      log(q[i,c]) <- beta[1,c] + beta[2,c]*X[i,1] + beta[3,
                  beta[4,c]*X[i,3] + beta[5,c]*X[i,4] + be
                  beta[7,c]*X[i,6] + beta[8,c]*X[i,7]
    }
    for(c in 1:C){
    p[i,c] <- q[i,c]/sum(q[i,1:C])
    }
}
## priors
```

Recalculating Propensity Score

Calculating Propensity Score

```
Up_lim<-calc_Up("FLA1AR", merged_data_lim)
Up_stat<-calc_Up("DOINGLWA", merged_data_stat)
Up_wrk<-calc_Up("WKDAYR", merged_data_wrk)
```

```
Up_lim
```

```
## [1] 2.381706e-05
```

```
Up_stat
```

```
## [1] 0.1003169
```

```
Up_wrk
```

```
## [1] 1.911354e-06
```

Identification Risk

Forming Synthetic and Original Data Sets

```
known.vars <- list("SEX", "RACERPI2", "AGE_P")
syn.vars <- list("FLA1AR", "DOINGLWA", "WKDAYR")
OriginalData<-select(NHIS_df, c(FLA1AR, DOINGLWA, WKDAYR, S
names(OriginalData)<-c("FLA1AR", "DOINGLWA", "WKDAYR", "SEX
n <- nrow(SyntheticData)
KeyQuantities <- CalculateKeyQuantities(OriginalData, Synth
```

Running Calculations

```
c_vector <- KeyQuantities[["c_vector"]]
T_vector <- KeyQuantities[["T_vector"]]
K_vector <- KeyQuantities[["K_vector"]]
F_vector <- KeyQuantities[["F_vector"]]
s <- KeyQuantities[["s"]]
N <- n
ThreeSummaries <- IdentificationRisk(c_vector, T_vector, K_
exp_match_rate<-ThreeSummaries[["exp_match_risk"]]
true_match_rate<-ThreeSummaries[["true_match_rate"]]
false_match_rate<-ThreeSummaries[["false_match_rate"]]
```

Results

```
exp_match_risk
```

[1] 19.425

```
true_match_rate
```

[1] 0.000433732

```
false_match_rate
```

[1] 0.9920182