Model 3: Hyp

Running the crude model

crude\_hyp =   
 multinom(hyp\_cat ~ fuel\_used\_for\_cooking\_percent\_wood\_dung + percent\_public\_source + percent\_private\_toilet + percent\_employed + percent\_without\_hs\_education + percent\_caste, data=total)

## Warning in multinom(hyp\_cat ~ fuel\_used\_for\_cooking\_percent\_wood\_dung + :  
## group 'hypertension' is empty

## # weights: 8 (7 variable)  
## initial value 92.881722   
## iter 10 value 55.452211  
## iter 20 value 55.048527  
## iter 30 value 55.045936  
## final value 55.045934   
## converged

summary(crude\_hyp)

## Call:  
## multinom(formula = hyp\_cat ~ fuel\_used\_for\_cooking\_percent\_wood\_dung +   
## percent\_public\_source + percent\_private\_toilet + percent\_employed +   
## percent\_without\_hs\_education + percent\_caste, data = total)  
##   
## Coefficients:  
## Values Std. Err.  
## (Intercept) 5.101909926 1.773378985  
## fuel\_used\_for\_cooking\_percent\_wood\_dung -4.415010741 4.719935733  
## percent\_public\_source 0.003026309 0.021274100  
## percent\_private\_toilet -0.007344612 0.006445645  
## percent\_employed -5.639913379 3.407815727  
## percent\_without\_hs\_education -1.688273045 1.529873520  
## percent\_caste 0.054180650 0.262239505  
##   
## Residual Deviance: 110.0919   
## AIC: 124.0919

crude\_model=  
 crude\_hyp %>%   
 broom::tidy() %>%   
 knitr::kable(digits = 3)  
  
crude\_or=  
 exp(coef(crude\_hyp)) %>%   
 knitr::kable(digits = 3)

crude\_model

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| y.level | term | estimate | std.error | statistic | p.value |
| hypertensive | (Intercept) | 164.335 | 1.773 | 2.877 | 0.004 |
| hypertensive | fuel\_used\_for\_cooking\_percent\_wood\_dung | 0.012 | 4.720 | -0.935 | 0.350 |
| hypertensive | percent\_public\_source | 1.003 | 0.021 | 0.142 | 0.887 |
| hypertensive | percent\_private\_toilet | 0.993 | 0.006 | -1.139 | 0.255 |
| hypertensive | percent\_employed | 0.004 | 3.408 | -1.655 | 0.098 |
| hypertensive | percent\_without\_hs\_education | 0.185 | 1.530 | -1.104 | 0.270 |
| hypertensive | percent\_caste | 1.056 | 0.262 | 0.207 | 0.836 |

crude\_or

|  |  |
| --- | --- |
|  | x |
| (Intercept) | 164.335 |
| fuel\_used\_for\_cooking\_percent\_wood\_dung | 0.012 |
| percent\_public\_source | 1.003 |
| percent\_private\_toilet | 0.993 |
| percent\_employed | 0.004 |
| percent\_without\_hs\_education | 0.185 |
| percent\_caste | 1.056 |

Running the model with age as a confounder

age\_hyp =   
 multinom(hyp\_cat ~ fuel\_used\_for\_cooking\_percent\_wood\_dung + percent\_public\_source + percent\_private\_toilet + percent\_employed + percent\_without\_hs\_education + percent\_caste + median\_age, data=total)

## Warning in multinom(hyp\_cat ~ fuel\_used\_for\_cooking\_percent\_wood\_dung + :  
## group 'hypertension' is empty

## # weights: 9 (8 variable)  
## initial value 92.881722   
## iter 10 value 50.356628  
## iter 20 value 49.971628  
## iter 30 value 49.719542  
## final value 49.716370   
## converged

summary(age\_hyp)

## Call:  
## multinom(formula = hyp\_cat ~ fuel\_used\_for\_cooking\_percent\_wood\_dung +   
## percent\_public\_source + percent\_private\_toilet + percent\_employed +   
## percent\_without\_hs\_education + percent\_caste + median\_age,   
## data = total)  
##   
## Coefficients:  
## Values Std. Err.  
## (Intercept) -6.899780993 4.165425973  
## fuel\_used\_for\_cooking\_percent\_wood\_dung -5.059162320 4.722162620  
## percent\_public\_source -0.001898054 0.021596485  
## percent\_private\_toilet -0.015371659 0.007607731  
## percent\_employed -4.008622323 4.118703102  
## percent\_without\_hs\_education 0.765296140 1.770121283  
## percent\_caste 1.280080849 1.421111556  
## median\_age 0.244570237 0.081577052  
##   
## Residual Deviance: 99.43274   
## AIC: 115.4327

age\_model=  
 age\_hyp %>%   
 broom::tidy() %>%   
 knitr::kable(digits = 3)  
  
age\_or=  
 exp(coef(age\_hyp)) %>%   
 knitr::kable(digits = 3)

age\_model

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| y.level | term | estimate | std.error | statistic | p.value |
| hypertensive | (Intercept) | 0.001 | 4.165 | -1.656 | 0.098 |
| hypertensive | fuel\_used\_for\_cooking\_percent\_wood\_dung | 0.006 | 4.722 | -1.071 | 0.284 |
| hypertensive | percent\_public\_source | 0.998 | 0.022 | -0.088 | 0.930 |
| hypertensive | percent\_private\_toilet | 0.985 | 0.008 | -2.021 | 0.043 |
| hypertensive | percent\_employed | 0.018 | 4.119 | -0.973 | 0.330 |
| hypertensive | percent\_without\_hs\_education | 2.150 | 1.770 | 0.432 | 0.665 |
| hypertensive | percent\_caste | 3.597 | 1.421 | 0.901 | 0.368 |
| hypertensive | median\_age | 1.277 | 0.082 | 2.998 | 0.003 |

age\_or

|  |  |
| --- | --- |
|  | x |
| (Intercept) | 0.001 |
| fuel\_used\_for\_cooking\_percent\_wood\_dung | 0.006 |
| percent\_public\_source | 0.998 |
| percent\_private\_toilet | 0.985 |
| percent\_employed | 0.018 |
| percent\_without\_hs\_education | 2.150 |
| percent\_caste | 3.597 |
| median\_age | 1.277 |

Running the model with sex as a confounder

sex\_hyp =   
 multinom(hyp\_cat ~ fuel\_used\_for\_cooking\_percent\_wood\_dung + percent\_public\_source + percent\_private\_toilet + percent\_employed + percent\_without\_hs\_education + percent\_caste + percent\_female, data=total)

## Warning in multinom(hyp\_cat ~ fuel\_used\_for\_cooking\_percent\_wood\_dung + :  
## group 'hypertension' is empty

## # weights: 9 (8 variable)  
## initial value 92.881722   
## iter 10 value 55.565947  
## iter 20 value 54.812420  
## iter 30 value 54.783762  
## iter 40 value 54.757213  
## iter 50 value 54.752671  
## final value 54.752588   
## converged

summary(sex\_hyp)

## Call:  
## multinom(formula = hyp\_cat ~ fuel\_used\_for\_cooking\_percent\_wood\_dung +   
## percent\_public\_source + percent\_private\_toilet + percent\_employed +   
## percent\_without\_hs\_education + percent\_caste + percent\_female,   
## data = total)  
##   
## Coefficients:  
## Values Std. Err.  
## (Intercept) 0.142377158 8.678846472  
## fuel\_used\_for\_cooking\_percent\_wood\_dung -4.553153366 4.709069822  
## percent\_public\_source 0.004564287 0.021363136  
## percent\_private\_toilet -0.006989510 0.006474621  
## percent\_employed -5.594881780 3.426139528  
## percent\_without\_hs\_education -1.424183863 1.576857586  
## percent\_caste 0.050477584 0.220230187  
## percent\_female 7.309805600 12.621368168  
##   
## Residual Deviance: 109.5052   
## AIC: 125.5052

sex\_model=  
 sex\_hyp %>%   
 broom::tidy() %>%   
 knitr::kable(digits = 3)  
  
sex\_or=  
 exp(coef(sex\_hyp)) %>%   
 knitr::kable(digits = 3)

sex\_model

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| y.level | term | estimate | std.error | statistic | p.value |
| hypertensive | (Intercept) | 1.153 | 8.679 | 0.016 | 0.987 |
| hypertensive | fuel\_used\_for\_cooking\_percent\_wood\_dung | 0.011 | 4.709 | -0.967 | 0.334 |
| hypertensive | percent\_public\_source | 1.005 | 0.021 | 0.214 | 0.831 |
| hypertensive | percent\_private\_toilet | 0.993 | 0.006 | -1.080 | 0.280 |
| hypertensive | percent\_employed | 0.004 | 3.426 | -1.633 | 0.102 |
| hypertensive | percent\_without\_hs\_education | 0.241 | 1.577 | -0.903 | 0.366 |
| hypertensive | percent\_caste | 1.052 | 0.220 | 0.229 | 0.819 |
| hypertensive | percent\_female | 1494.887 | 12.621 | 0.579 | 0.562 |

sex\_or

|  |  |
| --- | --- |
|  | x |
| (Intercept) | 1.153 |
| fuel\_used\_for\_cooking\_percent\_wood\_dung | 0.011 |
| percent\_public\_source | 1.005 |
| percent\_private\_toilet | 0.993 |
| percent\_employed | 0.004 |
| percent\_without\_hs\_education | 0.241 |
| percent\_caste | 1.052 |
| percent\_female | 1494.887 |

Running the model with marital status as a confounder

marital\_hyp =   
 multinom(hyp\_cat ~ fuel\_used\_for\_cooking\_percent\_wood\_dung + percent\_public\_source + percent\_private\_toilet + percent\_employed + percent\_without\_hs\_education + percent\_caste + percent\_marital\_status, data=total)

## Warning in multinom(hyp\_cat ~ fuel\_used\_for\_cooking\_percent\_wood\_dung + :  
## group 'hypertension' is empty

## # weights: 9 (8 variable)  
## initial value 92.881722   
## iter 10 value 55.523988  
## iter 20 value 54.567344  
## iter 30 value 54.565284  
## final value 54.565283   
## converged

summary(marital\_hyp)

## Call:  
## multinom(formula = hyp\_cat ~ fuel\_used\_for\_cooking\_percent\_wood\_dung +   
## percent\_public\_source + percent\_private\_toilet + percent\_employed +   
## percent\_without\_hs\_education + percent\_caste + percent\_marital\_status,   
## data = total)  
##   
## Coefficients:  
## Values Std. Err.  
## (Intercept) 5.171117263 1.792614057  
## fuel\_used\_for\_cooking\_percent\_wood\_dung -4.424123261 4.712571915  
## percent\_public\_source 0.002584403 0.021285025  
## percent\_private\_toilet -0.007285256 0.006487334  
## percent\_employed -6.024461984 3.460491502  
## percent\_without\_hs\_education -1.469702481 1.560237538  
## percent\_caste 0.057842556 0.303475938  
## percent\_marital\_status 0.049828694 0.155364978  
##   
## Residual Deviance: 109.1306   
## AIC: 125.1306

marital\_model=  
 marital\_hyp %>%   
 broom::tidy() %>%   
 knitr::kable(digits = 3)  
  
marital\_or=  
 exp(coef(marital\_hyp)) %>%   
 knitr::kable(digits = 3)

marital\_model

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| y.level | term | estimate | std.error | statistic | p.value |
| hypertensive | (Intercept) | 176.111 | 1.793 | 2.885 | 0.004 |
| hypertensive | fuel\_used\_for\_cooking\_percent\_wood\_dung | 0.012 | 4.713 | -0.939 | 0.348 |
| hypertensive | percent\_public\_source | 1.003 | 0.021 | 0.121 | 0.903 |
| hypertensive | percent\_private\_toilet | 0.993 | 0.006 | -1.123 | 0.261 |
| hypertensive | percent\_employed | 0.002 | 3.460 | -1.741 | 0.082 |
| hypertensive | percent\_without\_hs\_education | 0.230 | 1.560 | -0.942 | 0.346 |
| hypertensive | percent\_caste | 1.060 | 0.303 | 0.191 | 0.849 |
| hypertensive | percent\_marital\_status | 1.051 | 0.155 | 0.321 | 0.748 |

marital\_or

|  |  |
| --- | --- |
|  | x |
| (Intercept) | 176.111 |
| fuel\_used\_for\_cooking\_percent\_wood\_dung | 0.012 |
| percent\_public\_source | 1.003 |
| percent\_private\_toilet | 0.993 |
| percent\_employed | 0.002 |
| percent\_without\_hs\_education | 0.230 |
| percent\_caste | 1.060 |
| percent\_marital\_status | 1.051 |