

# An Analysis of Asian-American Mental Health Stigma and Uptake

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## Introduction

This project is meant to find insight in the area of Asian-American mental health issues, specifically trying to find a relationship between discrimination and mental health stigma. While some prior research has been conducted, our project attempts to use more current data, which is important especially as social movements have brought these issues further out into the open, thus allowing more holistic data collection.

## Data Selection and Cleaning



Figure 1: A Meme that Encapsulates this Project

For our purposes, we are only selecting a few variables that are important for our theory. We also clean up a few character vectors but turning them into numeric dummy variables.

```
## set up space
rm(list = ls())
## read the csv
AAQoL <- read_csv("AAQoL.csv")

## selects the variables to use
df <- AAQoL %>%
  select(Discrimination, `Therapist/Counselor`, Psychiatrist, Disappointment, Shame, Weakness,
    Treatment, Counseling, Age, Gender, Ethnicity, `Marital Status`,
    `Education Completed`, `US Born`, Income)

df$Disappointment<-ifelse(df$Disappointment=='Yes', 1,0)
df$Shame<-ifelse(df$Shame=='Yes', 1,0)
df$Counseling<-ifelse(df$Counseling=='Yes', 1,0)
df$Weakness<-ifelse(df$Weakness=='Yes', 1,0)
df$Treatment<-ifelse(df$Treatment=='Yes', 1,0)
df$`US Born`<-ifelse(df$`US Born`=='Yes', 1,0)

df

## # A tibble: 2,609 x 15
##   Discrimination `Therapist/Coun~ Psychiatrist Disappointment Shame
##           <int>           <int>           <int>           <dbl> <dbl>
## 1             NA             NA             NA             NA    NA
## 2             NA             NA             NA             NA    NA
## 3              0              0              0              0     0
## 4              0              0              0             NA     0
## 5             NA             NA             NA             NA    NA
## 6             NA             NA             NA             NA    NA
## 7              0              0              0              0     0
## 8              0             NA             NA             NA    NA
## 9              0              0              0              0     0
## 10             0              0              0              0     0
## # ... with 2,599 more rows, and 10 more variables: Weakness <dbl>,
## #   Treatment <dbl>, Counseling <dbl>, Age <int>, Gender <chr>,
## #   Ethnicity <chr>, `Marital Status` <chr>, `Education Completed` <int>,
## #   `US Born` <dbl>, Income <chr>
```

## Data Analysis

We first find that there's no variation in psychiatrist and therapist/counselor usage within the sample. There's two possible reasons why this may be the case. First, is that there may simply be no one in the sample that used these services (this is of course a small sample size and the wording of the survey question specified within the last year). Second, and the more likely reason, is that the people who would go to these services are not reporting it due to stigma surrounding mental health.

```
# Do some exploratory analysis first
table(df$Psychiatrist)
```

```
##
##    0
## 2518
```

```
table(df$`Therapist/Counselor`)
```

```
##
##      0
## 2486
```

The second reason seems more likely. After running a few chi-square tests, which tell us whether there is an association between variables, we note that there is a statistical significance between feeling shame about depression and receiving treatment for depression. There is also some association (though not statistically significant) between feeling shame/disappointment and being willing to receive treatment in the future.

```
##
## Pearson's Chi-squared test with Yates' continuity correction
##
## data:  table(df$Shame, df$Treatment)
## X-squared = 25.842, df = 1, p-value = 3.705e-07

##
## Pearson's Chi-squared test with Yates' continuity correction
##
## data:  table(df$Disappointment, df$Treatment)
## X-squared = 34.884, df = 1, p-value = 3.5e-09

##
## Pearson's Chi-squared test with Yates' continuity correction
##
## data:  table(df$Shame, df$Counseling)
## X-squared = 1.7739, df = 1, p-value = 0.1829

##
## Pearson's Chi-squared test with Yates' continuity correction
##
## data:  table(df$Disappointment, df$Counseling)
## X-squared = 1.9383, df = 1, p-value = 0.1638
```

Regardless, this means that it is impossible to determine any marginal effects in the uptake of mental health resources by Asian-Americans, which means we now focus our attention to the stigma of mental health in the Asian-American community and discrimination's effect on it. Once again, we check to see if there's an association between discrimination and other stigma factors such as shame, disappointment, and weakness.

```
##
## Pearson's Chi-squared test with Yates' continuity correction
##
## data:  table(df$Discrimination, df$Shame)
## X-squared = 0.0097233, df = 1, p-value = 0.9215

##
## Pearson's Chi-squared test with Yates' continuity correction
##
## data:  table(df$Discrimination, df$Disappointment)
## X-squared = 6.8714, df = 1, p-value = 0.008759

##
## Pearson's Chi-squared test with Yates' continuity correction
##
## data:  table(df$Discrimination, df$Weakness)
## X-squared = 1.816, df = 1, p-value = 0.1778
```

From that analysis, it seems as if there is an effect on some of these stigma factors from discrimination. We now run a probit model to determine the marginal effects.

```
##
## Call:
## glm(formula = Disappointment ~ Discrimination + Age + Gender +
##      Ethnicity + `Education Completed` + `US Born` + Income, family = binomial(link = "probit"),
##      data = df)
##
## Deviance Residuals:
##      Min       1Q   Median       3Q      Max
## -0.9947  -0.6843  -0.5964  -0.4852   2.3015
##
## Coefficients:
##              Estimate Std. Error z value Pr(>|z|)
## (Intercept)    -0.895022   0.291199  -3.074 0.002115 **
## Discrimination     0.231338   0.070172   3.297 0.000978 ***
## Age              0.005304   0.002083   2.547 0.010874 *
## GenderMale       0.066670   0.066888   0.997 0.318893
## EthnicityChinese -0.138568   0.098321  -1.409 0.158733
## EthnicityFilipino -0.459678   0.141725  -3.243 0.001181 **
## EthnicityKorean   0.005256   0.102528   0.051 0.959115
## EthnicityOther    -0.014993   0.153459  -0.098 0.922168
## EthnicityVietnamese -0.171852   0.110068  -1.561 0.118445
## `Education Completed` -0.005098   0.015643  -0.326 0.744508
## `US Born`         0.070727   0.117851   0.600 0.548413
## Income$10,000 - $19,999 -0.039467   0.147417  -0.268 0.788914
## Income$20,000 - $29,999 -0.148670   0.153124  -0.971 0.331593
## Income$30,000 - $39,999 -0.077961   0.147011  -0.530 0.595901
## Income$40,000 - $49,999 -0.216284   0.155955  -1.387 0.165490
## Income$50,000 - $59,999  0.022299   0.148172   0.150 0.880374
## Income$60,000 - $69,999 -0.192058   0.154769  -1.241 0.214631
## Income$70,000 and over -0.246035   0.113204  -2.173 0.029752 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##      Null deviance: 1975.8  on 2045  degrees of freedom
## Residual deviance: 1930.8  on 2028  degrees of freedom
## (563 observations deleted due to missingness)
## AIC: 1966.8
##
## Number of Fisher Scoring iterations: 4
##
## Call:
## probitmfx(formula = Disappointment ~ Discrimination + Age + Gender +
##      Ethnicity + `Education Completed` + `US Born` + Income, data = df)
##
## Marginal Effects:
##              dF/dx   Std. Err.      z    P>|z|
## Discrimination   0.06348283  0.01990333   3.1896 0.001425 **
## Age              0.00140209  0.00055013   2.5486 0.010814 *
## GenderMale       0.01766594  0.01776124   0.9946 0.319914
## EthnicityChinese -0.03543216  0.02428187  -1.4592 0.144509
## EthnicityFilipino -0.10126772  0.02507837  -4.0381 5.39e-05 ***
## EthnicityKorean   0.00139142  0.02718159   0.0512 0.959174
```

```

## EthnicityOther          -0.00393939  0.04007390 -0.0983 0.921692
## EthnicityVietnamese    -0.04325830  0.02630577 -1.6444 0.100085
## `Education Completed`  -0.00134756  0.00413499 -0.3259 0.744507
## `US Born`              0.01917530  0.03274300  0.5856 0.558124
## Income$10,000 - $19,999 -0.01027611  0.03779759 -0.2719 0.785720
## Income$20,000 - $29,999 -0.03705419  0.03584402 -1.0338 0.301247
## Income$30,000 - $39,999 -0.02000059  0.03656587 -0.5470 0.584396
## Income$40,000 - $49,999 -0.05238531  0.03431960 -1.5264 0.126911
## Income$50,000 - $59,999  0.00594508  0.03983831  0.1492 0.881372
## Income$60,000 - $69,999 -0.04698935  0.03481631 -1.3496 0.177133
## Income$70,000 and over -0.06390588  0.02885499 -2.2147 0.026779 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## dF/dx is for discrete change for the following variables:
##
## [1] "Discrimination"          "GenderMale"
## [3] "EthnicityChinese"        "EthnicityFilipino"
## [5] "EthnicityKorean"         "EthnicityOther"
## [7] "EthnicityVietnamese"     "`US Born`"
## [9] "Income$10,000 - $19,999" "Income$20,000 - $29,999"
## [11] "Income$30,000 - $39,999" "Income$40,000 - $49,999"
## [13] "Income$50,000 - $59,999" "Income$60,000 - $69,999"
## [15] "Income$70,000 and over"

## Call:
## probitmfx(formula = Shame ~ Discrimination + Age + Gender + Ethnicity +
## `Education Completed` + `US Born` + Income, data = df)
##
## Marginal Effects:
##
##              dF/dx   Std. Err.      z    P>|z|
## Discrimination    0.01761062  0.01368457  1.2869 0.1981304
## Age               0.00159864  0.00036368  4.3957 1.104e-05 ***
## GenderMale        0.00764352  0.01210845  0.6313 0.5278738
## EthnicityChinese  -0.08432961  0.01127362 -7.4803 7.417e-14 ***
## EthnicityFilipino -0.04043987  0.01472924 -2.7456 0.0060410 **
## EthnicityKorean   -0.04344550  0.01308689 -3.3198 0.0009009 ***
## EthnicityOther     0.00799952  0.02574860  0.3107 0.7560456
## EthnicityVietnamese -0.05573210  0.01253287 -4.4469 8.713e-06 ***
## `Education Completed` -0.00352163  0.00262960 -1.3392 0.1804966
## `US Born`         0.01740408  0.02464796  0.7061 0.4801220
## Income$10,000 - $19,999 0.02519466  0.02982135  0.8449 0.3981929
## Income$20,000 - $29,999 -0.01308738  0.02410411 -0.5430 0.5871626
## Income$30,000 - $39,999 0.01930767  0.02856548  0.6759 0.4990982
## Income$40,000 - $49,999 0.00210662  0.02648171  0.0795 0.9365953
## Income$50,000 - $59,999 -0.00792599  0.02435111 -0.3255 0.7448119
## Income$60,000 - $69,999 -0.03922049  0.01895562 -2.0691 0.0385396 *
## Income$70,000 and over -0.04036525  0.01911760 -2.1114 0.0347364 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## dF/dx is for discrete change for the following variables:
##
## [1] "Discrimination"          "GenderMale"

```

```

## [3] "EthnicityChinese"      "EthnicityFilipino"
## [5] "EthnicityKorean"       "EthnicityOther"
## [7] "EthnicityVietnamese"   "`US Born`"
## [9] "Income$10,000 - $19,999" "Income$20,000 - $29,999"
## [11] "Income$30,000 - $39,999" "Income$40,000 - $49,999"
## [13] "Income$50,000 - $59,999" "Income$60,000 - $69,999"
## [15] "Income$70,000 and over"

## Call:
## probitmfx(formula = Weakness ~ Discrimination + Age + Gender +
##           Ethnicity + `Education Completed` + `US Born` + Income, data = df)
##
## Marginal Effects:
##
##              dF/dx   Std. Err.      z    P>|z|
## Discrimination    0.00822279  0.02411793  0.3409 0.7331481
## Age              0.00394326  0.00070521  5.5916 2.250e-08 ***
## GenderMale       0.04961707  0.02242558  2.2125 0.0269307 *
## EthnicityChinese -0.11467284  0.03053807 -3.7551 0.0001733 ***
## EthnicityFilipino -0.11388661  0.03822825 -2.9791 0.0028908 **
## EthnicityKorean  -0.04091979  0.03384354 -1.2091 0.2266294
## EthnicityOther   -0.10157497  0.04720093 -2.1520 0.0313998 *
## EthnicityVietnamese -0.15286082  0.03262500 -4.6854 2.794e-06 ***
## `Education Completed` -0.01137904  0.00536210 -2.1221 0.0338274 *
## `US Born`        -0.12383976  0.03695679 -3.3509 0.0008054 ***
## Income$10,000 - $19,999 0.04691444  0.05172413  0.9070 0.3644000
## Income$20,000 - $29,999 -0.09258444  0.04730595 -1.9571 0.0503308 .
## Income$30,000 - $39,999 0.02350328  0.05088308  0.4619 0.6441477
## Income$40,000 - $49,999 -0.02369250  0.05093994 -0.4651 0.6418552
## Income$50,000 - $59,999 -0.03151513  0.05002202 -0.6300 0.5286780
## Income$60,000 - $69,999 -0.13289375  0.04518660 -2.9410 0.0032716 **
## Income$70,000 and over -0.08710134  0.03783037 -2.3024 0.0213116 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## dF/dx is for discrete change for the following variables:
##
## [1] "Discrimination"      "GenderMale"
## [3] "EthnicityChinese"    "EthnicityFilipino"
## [5] "EthnicityKorean"     "EthnicityOther"
## [7] "EthnicityVietnamese" "`US Born`"
## [9] "Income$10,000 - $19,999" "Income$20,000 - $29,999"
## [11] "Income$30,000 - $39,999" "Income$40,000 - $49,999"
## [13] "Income$50,000 - $59,999" "Income$60,000 - $69,999"
## [15] "Income$70,000 and over"

```

```

% Table created by stargazer v.5.2.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu
% Date and time: Mon, Apr 20, 2020 - 17:51:18

```

```

% Table created by stargazer v.5.2.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu
% Date and time: Mon, Apr 20, 2020 - 18:00:07

```

```

% Table created by stargazer v.5.2.2 by Marek Hlavac, Harvard University. E-mail: hlavac at fas.harvard.edu
% Date and time: Mon, Apr 20, 2020 - 18:03:17

```

Table 1: Effect of Discrimination on Feelings of Disappointment

	<i>Dependent variable:</i>
	Disappointment
Discrimination	0.231*** (0.070)
Age	0.005** (0.002)
Male	0.067 (0.067)
Chinese	-0.139 (0.098)
Filipino	-0.460*** (0.142)
Korean	0.005 (0.103)
Other Ethnicity	-0.015 (0.153)
Vietnamese	-0.172 (0.110)
‘Education Completed’	-0.005 (0.016)
‘US Born’	0.071 (0.118)
Constant	-0.895*** (0.291)
Observations	2,046
Log Likelihood	-965.418
Akaike Inf. Crit.	1,966.836

*Note:*

\*p&lt;0.1; \*\*p&lt;0.05; \*\*\*p&lt;0.01

Table 2: Effect of Discrimination on Feelings of Shame

	<i>Dependent variable:</i>
	Shame
Discrimination	0.017 (0.014)
Age	0.002*** (0.0004)
Male	0.006 (0.013)
Chinese	−0.115*** (0.019)
Filipino	−0.067*** (0.025)
Korean	−0.066*** (0.020)
Other Ethnicity	0.007 (0.030)
Vietnamese	−0.086*** (0.021)
‘Education Completed’	−0.005 (0.003)
‘US Born’	0.022 (0.023)
Observations	2,052
Log Likelihood	−304.615
Akaike Inf. Crit.	645.230
<i>Note:</i> *p<0.1; **p<0.05; ***p<0.01	



Table 3: Effect of Discrimination on Feelings of Weakness

	<i>Dependent variable:</i>
	Weakness
Discrimination	0.007 (0.023)
Age	0.004*** (0.001)
Male	0.047** (0.021)
Chinese	-0.116*** (0.032)
Filipino	-0.121*** (0.041)
Korean	-0.042 (0.034)
Other Ethnicity	-0.109** (0.051)
Vietnamese	-0.160*** (0.036)
‘Education Completed’	-0.011** (0.005)
‘US Born’	-0.108*** (0.038)
Constant	0.506*** (0.095)
Observations	2,054
Log Likelihood	-1,357.333
Akaike Inf. Crit.	2,750.666

*Note:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

## Results and Further Steps

Our results indicate that there seems to be some correlative relationship between discrimination and feelings of disappointment surrounding mental health issues (approximately a 6 percent marginal increase); however, discrimination was not significantly correlated with the other stigma battery questions that we pulled from the dataset. These regressions also confirm our priors that age plays a major role in the mental health stigma amongst Asian-Americans, with an additional 10 years being associated with 1.5 percent increases in feelings of shame and 3 percent increases in feelings of weakness.

Overall, our method seems to work. We just need to rethink and re-develop our theory going into the final stretch of this project. Our narrative so far for why discrimination might influence feelings of stigma in the Asian-American individuals may not actually be true from the data. This is because the discrimination being described from the survey is about external discrimination; however, most cases of mental health stigma arises from within-community value judgements.