

# Supplement Materials

November 14, 2018

## 1 Data Collection

### 1.1 Pre Florence Hurricane

- Start Date: September 10, 2018 11:40 AM PDT
- End Date: September 11, 2018 11:29 AM PDT
- Qualification: HIT Approval Rate for all Requester's HITs greater than 95. Location is one of US-NC, US-SC
- Payment: 1.25 dollars
- Title: Hurricane Florence Questionnaire (~ 15 minutes)
- Total collect: 404
- Remark: Use pre questionnaire version.

### 1.2 Post Florence Hurricane

- Start Date: September 21, 2018 8:10 AM PDT
- End Date: September 29, 2018 2:57 PM PDT
- Qualification: HIT Approval Rate for all Requester's HITs greater than 95. Location is one of US-NC, US-SC
- Payment: 1.00 dollars
- Title: Hurricane Florence Questionnaire (~ 12 minutes)
- Total collect: 747
- Remark: Use post questionnaire version. Two typos which got fixed during the collection process when realized. 1) Using remain instead of stay. 2) Wrong Hurricane's name (Lane instead of Florence) in two demographic questions: one is about house structure before the Hurricane hit and another is the zip code before the hurricane hit.

### **1.3 Post Michael Hurricane - GA**

- Start Date: October 18, 2018 7:09 AM PDT
- End Date: October 22, 2018 10:58 AM PDT
- Qualification: HIT Approval Rate for all Requester's HITs greater than 95. Location is one of US-GA
- Payment: 1.25 dollars
- Title: Hurricane Michael Survey (~15 minutes)
- Total collect: 300
- Remark: Use post questionnaire version. Slight modification of post Florence. See the questionnaire for the difference.

### **1.4 Post Michael Hurricane - FL**

- Start Date: October 18, 2018 8:25 AM PDT
- End Date: October 22, 2018 8:30 AM PDT
- Qualification: HIT Approval Rate for all Requester's HITs greater than 95. Location is one of US-FL
- Payment: 1.25 dollars
- Title: Questionnaire for people in the Florida panhandle in the path of Hurricane Michael (~15 minutes)
- Total collect: 400
- Remark: Use post questionnaire version. Slight modification of post Florence. See the questionnaire for the difference.

## 2 Summary of the datasets (before exclusion)

### 2.1 Pre Florence

Variable Name	Statistics
Evac Decision	Extremely unlikely: 93, Moderately unlikely: 94, Slightly unlikely: 48, Neither likely or unlikely: 34, Slightly likely: 48, Moderately likely: 41, Extremely likely: 93, Not Heard: 3
Age	Mean: 36.91, SD: 11.11
Gender	Female: 233, Male: 169, Other: 2
Education	High School: 57, Some College: 98, College Grad: 197, Grad School: 52
Income	<20k: 73, 20k - 40k: 110, 40k - 60k: 99, 60k - 80k: 58, 80k - 100k: 34, 100k - 150k: 25, >150k: 5
House structure	Detached single family: 269, Duplex/triplex: 28, Condo/apartment: 67, Mobile/trailer home: 35, Other: 5
Years in Resident	Less than 1 years: 63, 1 - 3 years: 106, 3 - 5 years: 61, 5 - 10 years: 78, More than 10 years: 96
Distance to coast	<1 mile: 8, 1 - 4 miles: 14, 4 - 10 miles: 26, 10 - 30 miles: 25, 30 - 50 miles: 18, >50 miles: 313
Number of Vehicle	None: 14, One: 160, More than one: 230
Has pet	Yes: 269, No: 135
Family size	Mean: 2.94, SD: 1.32
Has child [0,5]	0: 322, 1: 57, 2: 24, 3: 1
Has child [6,12]	0: 309, 1: 69, 2: 25, 4: 1
Has child [13,18]	0: 347, 1: 42, 2: 13, 3: 1
has Elder (65 up)	0: 367, 1: 30, 2: 7
Need Medicine	Yes: 95, No: 309
Need Help Moving	Yes: 30, No: 374
Manda Evac Notice	Yes: 31, No: 373
Volun Evac Notice	Yes: 46, No: 358
Flood cost Eqv	Mean: 606.02, SD: 680.17
Elec cost Eqv	Mean: 598.83 SD: 3047.783
Traveling cost	Mean: 246.56, SD: 387.07
Safe place cost	Mean: 561.65, SD: 489.32
Safety Probability	Extremely unlikely: 25, Moderately unlikely: 81, Slightly unlikely: 60, Neither likely or unlikely: 59, Slightly likely: 88, Moderately likely: 56, Extremely likely: 32
Flood depth	Not flooded: 257, <1 foot: 88, 2 - 3 feet: 36, 4 - 5 feet: 14, >5 feet: 14
Elec lost duration	Not lose: 51, <1 week: 275, 1 - 2 weeks: 65, 3 - 4 weeks: 9, >1 month: 1
Normal return	<1 week: 150, 1 - 2 weeks: 148, 3 - 4 weeks: 62, >1 month: 41
Prev Exp Decision	No Exp.: 69, Evacuated: 45, Stayed: 290
Duration on HITs	Mean: 534.37, SD: 352.09

Table 1: Pre Florence Summary: A Table summarizes variables in the Pre Florence dataset that are used in the analysis. Total responses is 404. Eqv = equivalent for question on how much would you pay to not experience being in flooded house or without electricity.

## 2.2 Post Florence

Variable Name	Statistics
Evac Decision	Yes: 118, No: 629
Age	Mean: 36.82, SD: 11.74
Gender	Female: 463, Male: 281, Other: 3
Education	High School: 91, Some College: 234, College Grad: 311, Grad School: 111
Income	<20k: 138, 20k-40k: 230, 40k-60k: 161, 60k-80k: 111, 80k-100k: 48, 100k-150k: 50, >150k: 9
House structure	Detached single family: 473, Duplex/triplex: 39, Condo/apartment: 155, Mobile/trailer home: 70, Other: 10
Years in Resident	Less than 1 years: 102, 1 - 3 years: 224, 3 - 5 years: 109, 5 - 10 years: 143, More than 10 years: 169
Distance to coast	<1 mile: 18, 1 - 4 miles: 28, 4 - 10 miles: 56, 10 - 30 miles: 42, 30 - 50 miles: 54, >50 miles: 549
Number of Vehicle	None: 30, One: 280, More than one: 437
Has pet	Yes: 497, No: 250
Family size	Mean: 4.25, SD: 36.51
Has child [0,5]	0: 575, 1: 110, 2: 53, 3: 8, 9: 1
Has child [6,12]	0: 603, 1: 98, 2: 34, 3: 10, 4: 2
Has child [13,18]	0: 34, 1: 42, 2: 13, 3: 1
has Elder (65 up)	0: 644, 1: 70, 2: 26, 3: 7
Need Medicine	Yes: 156, No: 591
Need Help Moving	Yes: 48, No: 699
Manda Evac Notice	Yes: 120, No: 627
Volun Evac Notice	Yes: 134, No: 613
Traveling cost (E)	Mean: 187.23, SD: 271.63
Safe place cost (E)	Mean: 54.40, SD: 125.38
Traveling cost (S)	Mean: 357.93, SD: 2015.04
Safe place cost (S)	Mean: 800.47, SD: 2063.42
Safety Probability	Extremely unlikely: 44, Moderately unlikely: 118, Slightly unlikely: 102, Neither likely or unlikely: 102, Slightly likely: 195, Moderately likely: 138, Extremely likely: 48
Flood depth	Not flooded: 484, <1 foot: 173, 2 - 3 feet: 69, 4 - 5 feet: 14, >5 feet: 7
Elec lost duration	Not lose: 53, <1 week: 504, 1 - 2 weeks: 171, 3 - 4 weeks: 18, >1 month: 1
Normal return	<1 week: 325, 1 - 2 weeks: 267, 3 - 4 weeks: 110, >1 month: 45
Prev Exp Decision	No Exp.: 180, Evacuated: 86, Stayed: 481
Duration on HITs	Mean: 764.15, SD: 5386.68

Table 2: Post Florence Summary: A Table summarizes variables in the Post Florence dataset that are used in the analysis. (E) = evacuated participants, (S) = stayed participants.

## 2.3 Post Michael

Variable Name	Statistics
Evac Decision	Yes: 112, No: 457
Age	Mean: 35.78, SD: 11.44
Gender	Female: 332, Male: 235, Other: 2
Education	High School: 68, Some College: 199, College Grad: 233, Grad School: 69
Income	<20k: 115, 20k-40k: 171, 40k-60k: 137, 60k-80k: 72, 80k-100k: 36, 100k-150k: 27, >150k: 11
House structure	Detached single family: 355, Duplex/triplex: 31, Condo/apartment: 140, Mobile/trailer home: 37, Other: 6
Years in Resident	Less than 1 years: 112, 1 - 3 years: 180, 3 - 5 years: 95, 5 - 10 years: 78, More than 10 years: 169
Distance to coast	<1 mile: 27, 1 - 4 miles: 49, 4 - 10 miles: 78, 10 - 30 miles: 88, 30 - 50 miles: 64, >50 miles: 263
Number of Vehicle	None: 18, One: 288, More than one: 263
Has pet	Yes: 372, No: 197
Family size	Mean: 2.89, SD: 1.45
Has child [0,5]	0: 436, 1: 93, 2: 34, 3: 6
Has child [6,12]	0: 467, 1: 73, 2: 22, 3: 7
Has child [13,18]	0: 483, 1: 66, 2: 16, 3: 4
has Elder (65 up)	0: 528, 1: 35, 2: 5, 3: 1
Need Medicine	Yes: 92, No: 477
Need Help Moving	Yes: 39, No: 530
Manda Evac Notice	Yes: 57, No: 512
Volun Evac Notice	Yes: 130, No: 439
Flood cost	Mean: 566.5, SD: 647.26
Electricity cost	Mean: 444.8, SD: 651.9
Traveling cost (E)	Mean: 316.84, SD: 682.35
Safe place cost (E)	Mean: 63.26, SD: 149.12
Traveling cost (S)	Mean: 406.46, SD: 662.03
Safe place cost (S)	Mean: 205.46, SD: 596.27
Safety Probability	Extremely unlikely: 49, Moderately unlikely: 96, Slightly unlikely: 89, Neither likely or unlikely: 83, Slightly likely: 126, Moderately likely: 88, Extremely likely: 38
Flood depth	Not flooded: 394, <1 foot: 99, 1 - 3 feet: 51, 3 - 5 feet: 17, >5 feet: 8
Elec lost duration	Not lose: 107, <1 week: 317, 1 - 2 weeks: 103, 2 - 3 weeks: 28, 3 - 4 weeks: 8, >1 month: 6
Normal return	<1 week: 281, 1 - 2 weeks: 120, 2 - 3 weeks: 71, 3 - 4 weeks: 38, >1 month: 59
Prev Exp Decision	No Exp.: 123, Evacuated: 104, Stayed: 342
Duration on HITs	Mean: 652.34, SD: 3171.8

Table 3: Post Michael Summary: A Table summarizes variables in the Post Michael dataset that are used in the analysis. (E) = evacuated participants, (S) = stayed participants.

### 3 Correlation Table (before exclusion)

Name	Flood C	Elec C	Travel C	Place C	Safe P	Flood D	Elec D	Norm D	Evac?
Age	0.08	0.15	-0.14	0.15	-0.06	-0.1	-0.02	0.07	-0.03
Gender	0.07	0.06	0.03	0.04	0.01	-0.04	-0.06	-0.03	-0.02
Edu	0.12	0.04	0.01	0.08	0.01	-0.03	-0.05	0.05	0.09
Income	0.25	0.01	0.11	0.18	0.08	0	-0.03	0.01	0.13
House struc	0.02	-0.01	0.04	-0.02	-0.02	-0.01	-0.14	-0.11	0.01
Years in Res	0.04	0.07	0.01	0.05	-0.03	-0.04	-0.01	-0.05	0.01
Dist to coast	-0.12	-0.01	-0.06	0.04	-0.26	-0.25	-0.13	-0.14	-0.28
Num vehicle	0.06	-0.05	-0.03	0.05	-0.06	-0.06	0.02	0.01	-0.02
Has pet	0.01	0.04	-0.03	0.06	-0.02	-0.01	0.1	0.03	-0.01
Family size	0.08	-0.01	0.11	0.01	0.06	0.09	0.06	0	0.01
Child [0,5]	0.06	-0.01	0.01	0.01	0.11	0.03	0.02	-0.03	-0.03
Child [6,12]	0.05	-0.02	-0.01	-0.02	-0.02	0.06	-0.04	0.02	-0.02
Child [13,18]	0.03	-0.01	0.12	0.05	0.04	0.03	0.09	0.05	0.08
Elder 65 up	-0.03	0.12	-0.04	0.01	-0.05	-0.01	0.03	0	-0.06
Need med	-0.03	-0.02	0.05	0.06	0.08	0.05	0	-0.01	0.07
Need move	-0.1	-0.03	-0.01	-0.06	0.04	0.02	-0.05	-0.03	0.08
Manda evac	0.18	0.2	-0.03	-0.03	0.23	0.24	0.11	0.18	0.25
Volun evac	0.18	0.02	0.09	0.07	0.19	0.24	0.09	0.13	0.14
Prev Exp D	-0.1	-0.06	-0.11	0.05	0	-0.15	0.05	0.1	-0.07
Flood C	1	0.16	0.12	0.31	0.06	0.08	-0.02	0.01	0.06
Elec C	0.16	1	0.02	0.1	0.1	0.11	0.06	0.09	0.11
Travel C	0.12	0.02	1	0.26	0.11	0.15	0.13	-0.02	0.07
Place C	0.31	0.1	0.26	1	0.1	0.08	0.09	0.08	0.01
Safety P	0.06	0.1	0.11	0.1	1	0.37	0.41	0.44	0.61
Flood D	0.08	0.11	0.15	0.08	0.37	1	0.31	0.29	0.31
Elec dur	-0.02	0.06	0.13	0.09	0.41	0.31	1	0.52	0.3
Normal dur	0.01	0.09	-0.02	0.08	0.44	0.29	0.52	1	0.31

Table 4: Pre Florence Correlation: Table of correlation between observable features and latent features plus evacuation decision of Pre Florence dataset. c = cost, p = prob, d = depth/duration.

<b>Name</b>	Travel C	Place C	Safe P	Flood D	Elec D	Norm D	Evac?
Age	-0.03	-0.02	-0.02	-0.08	-0.03	0	-0.03
Gender	-0.02	0	-0.1	-0.06	-0.05	-0.08	-0.07
Edu	0.01	0.04	-0.02	-0.06	0.03	0	0.03
Income	0.03	0.06	-0.05	-0.11	-0.01	-0.04	-0.02
House struc	0.08	0.06	-0.02	0.01	-0.09	-0.05	0.06
Years in Res	0.07	0.07	-0.01	-0.03	0.04	0	-0.06
Dist to coast	-0.03	0.03	-0.24	-0.28	-0.21	-0.28	-0.46
Num vehicle	-0.08	-0.04	0	-0.12	0.09	0.04	-0.1
Has pet	-0.05	0	0	-0.03	0.08	0.08	-0.07
Family size	-0.01	-0.01	0.04	0.02	0.05	0.05	0.08
Child [0,5]	-0.02	-0.01	0.02	0.01	0.03	0	0
Child [6,12]	0.01	0	0.1	0.03	0.03	0.03	0.04
Child [13,18]	0	-0.01	-0.01	-0.04	0.02	0.03	-0.07
Elder 65 up	-0.01	-0.01	0.03	0.03	0.01	0	0
Need med	-0.01	-0.01	0.09	0.04	0.09	0.09	0.12
Need move	-0.02	-0.03	0.04	0.11	0.06	0.02	0.13
Manda evac	-0.02	-0.07	0.24	0.25	0.19	0.2	0.45
Volun evac	-0.01	-0.06	0.21	0.28	0.09	0.2	0.23
Prev Exp D	-0.07	-0.04	0.03	-0.08	0.05	0.09	-0.04
Travel C	1	0.95	0.06	0.02	-0.01	0.02	-0.03
Place C	0.95	1	0.02	-0.04	-0.04	0	-0.14
Safety P	0.06	0.02	1	0.43	0.35	0.38	0.39
Flood D	0.02	-0.04	0.43	1	0.37	0.34	0.39
Elec dur	-0.01	-0.04	0.35	0.37	1	0.51	0.28
Normal dur	0.02	0	0.38	0.34	0.51	1	0.3

Table 5: Post Florence Correlation: Table of correlation between observable features and latent features plus evacuation decision of Post Florence dataset. c = cost, p = prob, d = depth/duration.

<b>Name</b>	Flood C	Elec C	Travel C	Place C	Safe P	Flood D	Elec D	Norm D	Evac?
Age	-0.03	-0.07	0.05	-0.01	-0.04	-0.11	-0.03	0.04	-0.07
Gender	0.02	0.01	0.08	0.02	0.07	0.07	0.02	0.07	0.08
Edu	0.08	0.07	0.04	0.01	0.04	-0.02	0.02	0.05	0
Income	0.19	0.13	0.15	0.09	-0.01	0.02	-0.02	-0.01	0.06
House struc	0.05	0.05	0.04	0.03	-0.05	0.03	-0.04	0	-0.05
Years in Res	0.03	-0.01	0.04	-0.01	-0.06	-0.04	-0.07	-0.04	-0.09
Dist to coast	-0.1	-0.08	-0.05	-0.01	-0.22	-0.3	-0.24	-0.27	-0.28
Num vehicle	0.04	0.03	0.01	0.02	-0.06	-0.03	-0.01	-0.08	-0.13
Has pet	-0.03	-0.04	-0.03	0	-0.02	0.01	-0.01	-0.06	-0.07
Family size	0.09	0.13	0.08	0.08	0.04	0.08	0.02	-0.02	0
Child [0,5]	0.01	0.01	0.02	0	-0.05	0.05	0.02	-0.06	-0.02
Child [6,12]	0.06	0.06	0.03	-0.02	0.05	0.01	-0.04	-0.06	0.02
Child [13,18]	0.07	0.08	0.05	0.1	0.02	0.03	0	0.06	-0.03
Elder 65 up	0.04	0.06	0.08	0.07	-0.02	-0.07	-0.06	-0.05	-0.07
Need med	0.06	0.07	0.08	0.15	0.07	0.03	0.05	0.05	-0.01
Need move	0.15	0.17	0.15	0.25	0.15	0.11	0.1	0.1	0.08
Manda evac	0.06	0.06	-0.01	-0.05	0.28	0.26	0.32	0.28	0.48
Volun evac	-0.06	-0.05	-0.01	-0.04	0.26	0.18	0.23	0.23	0.26
Prev Exp D	-0.01	-0.05	-0.01	0.03	-0.11	-0.19	-0.1	-0.05	-0.31
Flood C	1	0.79	0.47	0.55	0.09	0.09	0.06	0.1	0
Elec C	0.79	1	0.47	0.55	0.12	0.06	0.05	0.07	0.06
Travel C	0.47	0.47	1	0.69	0.07	0.07	0.09	0.08	-0.05
Place C	0.55	0.55	0.69	1	0.04	0.01	0.04	0.03	-0.1
Safety P	0.09	0.12	0.07	0.04	1	0.44	0.51	0.44	0.47
Flood D	0.09	0.06	0.07	0.01	0.44	1	0.5	0.42	0.42
Elec dur	0.06	0.05	0.09	0.04	0.51	0.5	1	0.63	0.41
Normal dur	0.1	0.07	0.08	0.03	0.44	0.42	0.63	1	0.37

Table 6: Post Michael Correlation: Table of correlation between observable features and latent features plus evacuation decision of Post Michael dataset. c = cost, p = prob, d = depth/duration.



## 4 Correlation Table (after exclusion)

Name	Flood C	Elec C	Travel C	Place C	Safe P	Flood D	Elec D	Norm D	Evac?
Age	0.18	0.09	0.03	0.17	-0.08	-0.09	-0.03	0.07	-0.04
Gender	0.12	0.05	-0.07	0.05	-0.02	-0.07	-0.12	-0.07	-0.05
Edu	0.15	0.08	0.02	0.07	0	-0.01	-0.08	0.03	0.09
Income	0.32	0.26	0.1	0.21	0.07	0.01	-0.05	-0.01	0.14
House struc	0.04	0.06	-0.02	-0.03	-0.04	-0.03	-0.16	-0.13	-0.03
Years in Res	0.15	0.06	0.03	0.1	-0.07	-0.06	-0.04	-0.08	-0.03
Dist to coast	0.02	-0.04	0.05	0.1	-0.26	-0.25	-0.1	-0.17	-0.25
Num vehicle	0.1	0.05	-0.01	0.07	-0.03	-0.01	0.06	0	0.02
Has pet	0.12	0.06	-0.03	0.06	-0.06	-0.02	0.03	0.01	-0.03
Family size	-0.03	0.01	0.08	0.02	0.07	0.06	0.07	0	0
Child [0,5]	-0.02	0.06	0.05	0.06	0.13	0.02	0.02	-0.04	-0.02
Child [6,12]	0.02	0.03	0.09	0.03	0.01	0.05	0	0.06	0.01
Child [13,18]	0.1	0.04	0.03	0.05	0.04	0.04	0.1	0.05	0.06
Elder 65 up	-0.05	-0.02	-0.05	0	-0.05	0	0.03	0	-0.07
Need med	-0.12	-0.04	0.02	0.01	0.08	0.06	-0.04	0	0.08
Need move	-0.13	-0.06	0.01	-0.09	0.04	0.05	-0.09	-0.03	0.08
Manda evac	0.03	0	-0.02	-0.06	0.18	0.21	0.07	0.14	0.19
Volun evac	-0.01	-0.03	0.03	-0.02	0.17	0.23	0.05	0.13	0.11
Prev Exp D	-0.01	-0.06	-0.08	0.05	-0.01	-0.1	0.05	0.09	-0.06
Flood C	1	0.55	0.12	0.39	-0.01	-0.03	-0.04	0.03	0.01
Elec C	0.55	1	0.13	0.34	0.06	0.06	-0.05	-0.02	0.07
Travel C	0.12	0.13	1	0.23	0.05	0.12	0.03	0.03	-0.03
Place C	0.39	0.34	0.23	1	0.04	0.04	-0.01	0.08	-0.05
Safety P	-0.01	0.06	0.05	0.04	1	0.37	0.39	0.44	0.58
Flood D	-0.03	0.06	0.12	0.04	0.37	1	0.32	0.3	0.29
Elec dur	-0.04	-0.05	0.03	-0.01	0.39	0.32	1	0.53	0.27
Normal dur	0.03	-0.02	0.03	0.08	0.44	0.3	0.53	1	0.29

Table 7: Pre Florence Correlation: Table of correlation between observable features and latent features plus evacuation decision of Pre Florence dataset. c = cost, p = prob, d = depth/duration.

<b>Name</b>	Travel C	Place C	Safe P	Flood D	Elec D	Norm D	Evac?
Age	0	0.07	-0.02	-0.09	-0.01	0.01	-0.03
Gender	-0.01	0.06	-0.1	-0.08	-0.05	-0.09	-0.09
Edu	-0.01	0.08	-0.03	-0.07	0.02	0	0.02
Income	0.06	0.12	-0.05	-0.14	0	-0.04	-0.02
House struc	-0.06	-0.08	-0.02	0.03	-0.11	-0.07	0.05
Years in Res	0.03	0.06	-0.03	-0.06	0.03	0	-0.06
Dist to coast	0.03	0.24	-0.25	-0.29	-0.22	-0.3	-0.46
Num vehicle	0.05	0.15	0	-0.11	0.07	0.03	-0.09
Has pet	0	0.15	0.01	-0.04	0.07	0.09	-0.08
Family size	0.09	0.01	0.08	0.06	0.06	0.04	-0.03
Child [0,5]	-0.02	0.03	-0.01	0	-0.01	-0.05	-0.04
Child [6,12]	0.09	-0.02	0.12	0.04	0.03	0.03	0.06
Child [13,18]	0.07	0.05	0	-0.04	0.03	0.03	-0.08
Elder 65 up	0.01	0	0.03	0.03	0.01	0	-0.02"
Need med	0	0.04	0.08	0.03	0.07	0.07	0.09
Need move	-0.07	-0.05	0.04	0.08	0.05	0.02	0.09
Manda evac	0	-0.19	0.23	0.25	0.16	0.19	0.44
Volun evac	0.03	-0.18	0.2	0.29	0.07	0.19	0.233
Prev Exp D	-0.02	0.2	-0.08	-0.19	-0.04	0	-0.26
Travel C	1	0.33	0.03	0.06	0.07	0.09	-0.11
Place C	0.33	1	-0.2	-0.22	-0.11	-0.1	-0.48
Safety P	0.03	-0.2	1	0.44	0.32	0.37	0.39
Flood D	0.06	-0.22	0.44	1	0.38	0.35	0.41
Elec dur	0.07	-0.11	0.32	0.38	1	0.49	0.25
Normal dur	0.09	-0.1	0.37	0.35	0.49	1	0.3

Table 8: Post Florence Correlation: Table of correlation between observable features and latent features plus evacuation decision of Post Florence dataset. c = cost, p = prob, d = depth/duration.

<b>Name</b>	Flood C	Elec C	Travel C	Place C	Safe P	Flood D	Elec D	Norm D	Evac?
Age	-0.03	-0.09	0.09	-0.07	-0.03	-0.11	-0.04	0.04	-0.07
Gender	0	0.02	0.02	-0.02	0.06	0.05	0.01	0.06	0.07
Edu	0.08	0.05	0.02	0.06	0.03	-0.03	0.02	0.06	-0.01
Income	0.2	0.09	0.11	0.11	0	0.04	-0.01	0	0.06
House struc	0.03	0.04	-0.02	0.03	-0.06	0	-0.04	0	-0.05
Years in Res	0	-0.02	0.09	0	-0.07	-0.07	-0.09	-0.06	-0.11
Dist to coast	0	-0.05	0.03	0.08	-0.22	-0.29	-0.23	-0.27	-0.28
Num vehicle	0.08	0.05	0.03	0.09	-0.06	-0.02	0	-0.07	-0.12
Has pet	0.04	-0.01	-0.05	-0.04	-0.01	0.04	0.02	-0.03	-0.03
Family size	0.06	0.1	0.09	0.05	0.03	0.08	0.02	-0.03	0
Child [0,5]	0.01	0.04	0.06	-0.01	-0.05	0.06	0.02	-0.07	-0.02
Child [6,12]	0.08	0.07	0.05	0	0.05	0.01	-0.04	-0.05	0.01
Child [13,18]	0.02	0.03	0.04	0.04	0.04	0.05	0.01	0.06	-0.02
Elder 65 up	0.01	0.05	0.04	-0.04	-0.03	-0.09	-0.07	-0.05	-0.07
Need med	-0.04	0	-0.01	0.03	0.05	0.01	0.05	0.03	0
Need move	0.02	0.07	0.01	0.05	0.15	0.11	0.11	0.1	0.11
Manda evac	0.03	0.01	-0.07	-0.08	0.27	0.25	0.31	0.27	0.47
Volun evac	-0.07	-0.02	0.05	-0.02	0.26	0.16	0.24	0.23	0.26
Prev Exp D	0.08	-0.01	0.01	0.04	-0.11	-0.21	-0.09	-0.05	-0.3
Flood C	1	0.69	0.03	0.2	0.06	0.03	0.03	0.07	-0.02
Elec C	0.69	1	0.07	0.24	0.07	0.1	0.02	0.07	0.03
Travel C	0.03	0.07	1	0.15	-0.01	0.02	0.09	0.11	-0.14
Place C	0.2	0.24	0.15	1	-0.09	-0.08	-0.05	-0.05	-0.24
Safety P	0.06	0.07	-0.01	-0.09	1	0.44	0.51	0.45	0.47
Flood D	0.03	0.1	0.02	-0.08	0.44	1	0.51	0.42	0.43
Elec dur	0.03	0.02	0.09	-0.05	0.51	0.51	1	0.64	0.4
Normal dur	0.07	0.07	0.11	-0.05	0.45	0.42	0.64	1	0.38

Table 9: Post Michael Correlation: Table of correlation between observable features and latent features plus evacuation decision of Post Michael dataset. c = cost, p = prob, d = depth/duration.

#### 4.1 Post Florence Decision Map

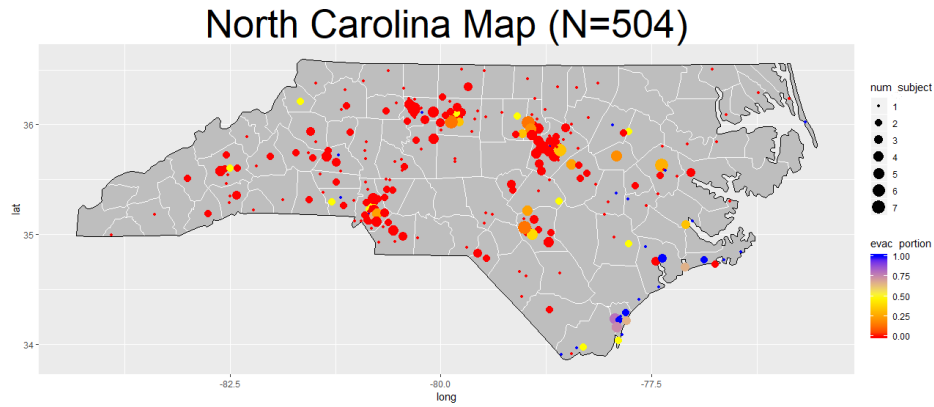


Figure 1: A map of participants' decision from NC in Post Florence Data. The Dot represents the number of participants from each location. The color represents proportion of people's decision.

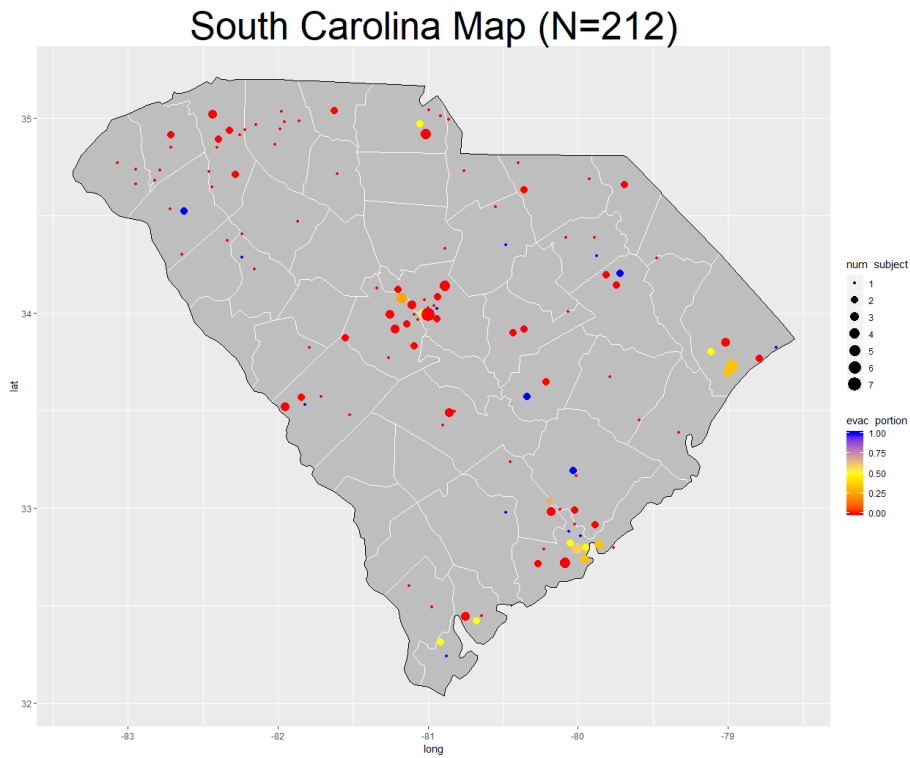


Figure 2: A map of participants' decision from SC in Post Florence Data. The Dot represents the number of participants from each location. The color represents proportion of people's decision.

## 4.2 Post Michael Decision Map

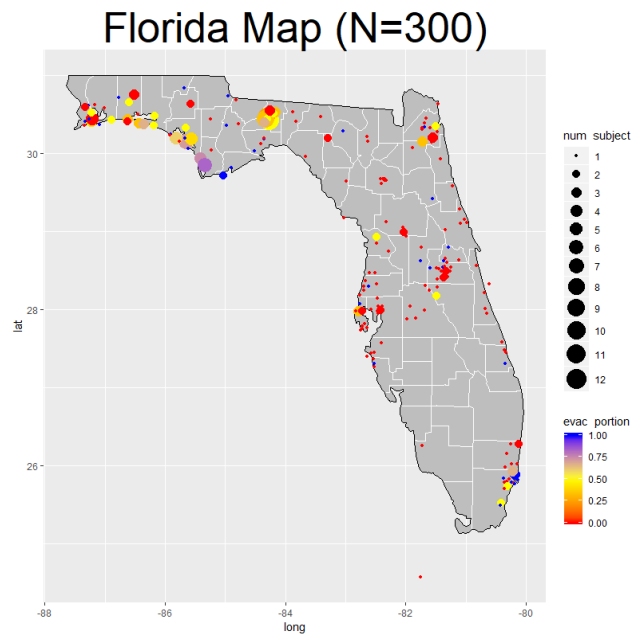


Figure 3: A map of participants' decision from FL in Post Michael Data.

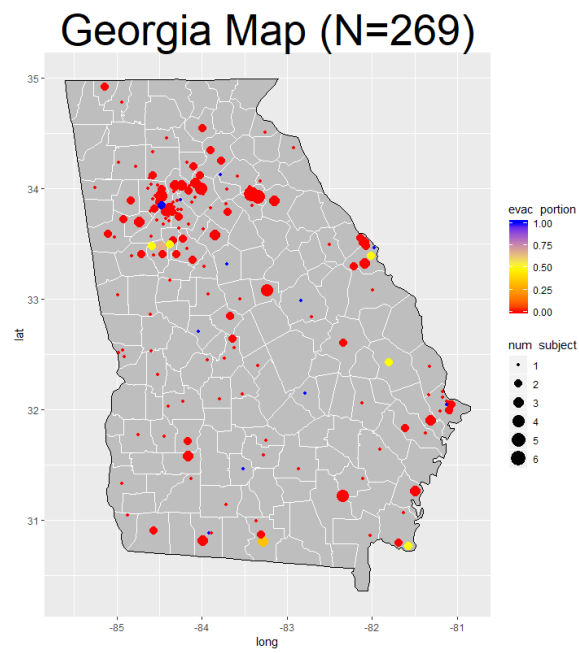


Figure 4: A map of participants' decision from GA in Post Michael Data.

## 5 Results

- For Pre Florence, the evacuation decision is determined based on evacuation probability. If the probability is greater than 0.5, we assume that the participant will evacuate.
- For Post Florence, two latent features/questions are not in the dataset which are flood cost and traveling cost. The reason is that at the beginning we believed that these two questions are inappropriate to ask participants after the hurricane. Later, we decide to ask participants anyways to see how the answers look like in terms of both the value and how well it would help the model and other methods. These two are filled in using Pre Florence data. There are two methods that we present in this supplementary material. One is using median of income group. Another is using regression based on observable features. These different methods are reflected in Filled Latent column.
- For Grid Search of within dataset. The range of safety cost is  $[0,1500]$  with step size of 5 and the range of noise cost is  $[0,1000]$ . The smaller noise cost is to speed up the search for 10-CV. For across data, the range of both safety and noise is  $[0,1500]$ .
- Prob columns of data transforms is the rule to transform 7 likely scale to number. There are three rules as follow:
  - Uniform (Unif): (0.125, 0.25, 0.375, 0.5, 0.625, 0.75, 0.825)
  - Normal (Norm): (0.05, 0.13, 0.32, 0.5, 0.68, 0.87, 0.95)
  - Mixed (Mix): (0.05, 0.2125, 0.375, 0.5, 0.625, 0.7875, 0.95)
- Below are the meaning of short-hand words in the results section
  - $\gamma$  is discount factor. It applies to electricity lost duration and normal condition return duration to scale down the length of the duration using geometric series formula.
  - None = No Group, Income = Income Group, Prev E. = Previous Experience Group, Evac N = Evacuation Notice Group.
  - N and L of either Grid search or Bayesian Inference stands for No transform and Log transform of utility value.
  - obs = observable features, latent = latent features, All = every features mentioned in the data section plus information from TV/Radio and Social Media.

## 5.1 Within Data results

### 5.1.1 Pre Florence: Error

Data Transform		Grid Search Model						Bayesian Inf Model						Decision Tree			Logistic Regression			
		None		Income		Prev E		None		Income		Prev E		Obs	Lat	All	Obs	Lat	All	
Filled Latent	Prob	γ	N	L	N	L	N	L	N	L	N	L	N	L	N	Lat	Obs	Lat	Obs	
None	Unif	1	25.67	24.45	26.23	25.81	26.54	26.08	23.41	24.94	21.43	23.83	23.13	26.36	34.11	21.95	26.4	23.93	20.56	21.15
			9.13	7.72	7.74	8.09	8.94	7.78	5.13	7.97	5.37	6.3	4.76	7.79	6.65	6.95	6.03	5.07	5.77	
None	Unif	.95	26.78	24.17	26.23	26.08	27.89	25.25	21.74	24.97	20.87	23.55	26.08	34.11	21.95	26.4	23.93	20.84	21.43	22.75
			8.06	7.52	7.96	7.89	8.33	7.36	5.57	8.08	4.73	6.16	6.28	8	6.65	6.86	7.66	6.12	6.95	5.53
None	Norm	1	24.91	25.28	26.78	25.01	25.74	24.7	23.41	25.22	21.71	23.83	23.41	26.36	34.11	21.95	26.4	23.93	20.01	20.32
			8.76	6.6	7.73	7.74	8.16	5.93	5.13	8.23	5.79	6.3	4.96	7.79	6.65	6.86	7.66	6.12	6.95	4.7
None	Norm	.95	24.35	25.56	25.43	25.01	23.24	25.25	22.57	25.22	21.15	23.83	23.13	26.36	34.11	21.95	26.4	23.93	21.12	20.87
			6.98	6.51	6.81	7.29	7.02	5.64	5.66	8.23	4.53	6.3	5.88	7.79	6.65	6.86	7.66	6.12	6.95	4.73
None	Mix	1	25.18	23.37	26.54	26.61	27.09	24.7	21.74	24.94	21.12	23.58	20.91	25.81	34.11	21.95	26.4	23.93	20.84	22.2
			8.09	7.16	7.01	8.52	7.45	6.22	4.74	8.88	4.93	6.04	4.65	8.2	6.65	6.86	7.66	6.12	6.95	5.4
None	Mix	.95	25.39	24.73	25.67	25.77	27.13	23.31	20.94	25.22	20.28	23.58	20.32	25.81	34.11	21.95	26.4	23.93	20.56	22.47
			7.67	6.33	6.23	7.54	7.83	5.89	6.41	8.93	3.71	6.04	4.51	8.2	6.65	6.86	7.66	6.12	6.95	5.78

Table 10: A table of the error rate for each method with different setup of 10-CV of Pre Florence dataset. The upper number is mean and the lower number is standard derivation.

### 5.1.2 Pre Florence: Recall

Data Transform		Grid Search Model						Bayesian Inf Model						Decision Tree				Logistic Regression				
Filled Latent	Prob	γ	None		Income		Prev E		None		Income		Prev E		Obs	Lat	Obs	All	Obs	Lat	Obs	All
			N	L	N	L	N	L	N	L	N	L	N	L								
None	Unif	1	0.32	0.41	0.3	0.38	0.34	0.36	0.55	0.56	0.54	0.63	0.53	0.55	0.28	0.54	0.28	0.53	0.01	0.52	0.53	0.49
			0.22	0.1	0.2	0.12	0.2	0.1	0.14	0.18	0.16	0.2	0.18	0.18	0.1	0.17	0.19	0.19	0.04	0.22	0.22	0.2
None	Unif	.95	0.33	0.43	0.32	0.37	0.32	0.38	0.55	0.56	0.55	0.63	0.53	0.56	0.28	0.54	0.28	0.53	0.01	0.5	0.52	0.47
			0.22	0.11	0.21	0.13	0.16	0.11	0.13	0.17	0.2	0.19	0.18	0.18	0.1	0.17	0.19	0.19	0.04	0.2	0.22	0.2
None	Norm	1	0.39	0.35	0.33	0.39	0.39	0.38	0.55	0.56	0.54	0.63	0.53	0.55	0.28	0.54	0.28	0.53	0.01	0.52	0.54	0.5
			0.19	0.15	0.18	0.16	0.21	0.09	0.14	0.18	0.16	0.2	0.18	0.18	0.1	0.17	0.19	0.19	0.04	0.22	0.22	0.22
None	Norm	.95	0.39	0.35	0.36	0.4	0.43	0.38	0.55	0.56	0.55	0.63	0.52	0.55	0.28	0.54	0.28	0.53	0.01	0.5	0.54	0.51
			0.2	0.15	0.19	0.18	0.19	0.09	0.13	0.17	0.2	0.18	0.18	0.18	0.1	0.17	0.19	0.19	0.04	0.2	0.21	0.22
None	Mix	1	0.39	0.43	0.32	0.37	0.36	0.38	0.52	0.57	0.54	0.63	0.53	0.56	0.28	0.54	0.28	0.53	0.01	0.49	0.51	0.48
			0.18	0.11	0.2	0.12	0.19	0.09	0.15	0.19	0.15	0.2	0.17	0.19	0.1	0.17	0.19	0.19	0.04	0.2	0.21	0.22
None	Mix	.95	0.38	0.38	0.35	0.39	0.34	0.39	0.54	0.56	0.56	0.63	0.53	0.56	0.28	0.54	0.28	0.53	0.01	0.5	0.51	0.48
			0.23	0.12	0.19	0.16	0.16	0.16	0.17	0.19	0.15	0.2	0.17	0.19	0.1	0.17	0.19	0.19	0.04	0.2	0.21	0.21

Table 11: A table of the recall for each method with different setup of 10-CV of Pre Florence dataset. The upper number is mean and the lower number is standard derivation.

### 5.1.3 Pre Florence: Precision

Data Transform		Grid Search Model						Bayesian Inf Model						Decision Tree			Logistic Regression		
		None		Income		Prev E		None		Income		Prev E		Obs	Lat	Obs	Lat	Obs	All
Filled Latent	Prob	$\gamma$	N	L	N	L	N	L	N	L	N	L	N	L	Lat	Obs	Lat	Obs	All
None	Unif	1	0.61	0.66	0.62	0.62	0.61	0.66	0.62	0.59	0.67	0.6	0.62	0.57	0.67	0.43	0.67	0.64	0.63
			0.25	0.21	0.26	0.17	0.1	0.24	0.13	0.2	0.15	0.18	0.16	0.19	0.22	0.22	0.25	0.23	0.24
None	Unif	.95	0.59	0.66	0.62	0.61	0.59	0.67	0.66	0.59	0.68	0.6	0.63	0.57	0.67	0.43	0.66	0.64	0.61
			0.24	0.22	0.27	0.17	0.09	0.23	0.16	0.2	0.12	0.18	0.17	0.19	0.22	0.22	0.25	0.24	0.23
None	Norm	1	0.64	0.64	0.61	0.62	0.61	0.66	0.62	0.59	0.67	0.6	0.61	0.57	0.67	0.43	0.68	0.66	0.6
			0.18	0.29	0.08	0.27	0.12	0.16	0.13	0.2	0.15	0.18	0.15	0.19	0.22	0.22	0.25	0.25	0.23
None	Norm	.95	0.63	0.63	0.6	0.62	0.67	0.65	0.64	0.59	0.66	0.6	0.62	0.57	0.67	0.43	0.65	0.64	0.62
			0.24	0.3	0.24	0.27	0.14	0.17	0.16	0.2	0.16	0.18	0.17	0.19	0.22	0.22	0.25	0.24	0.24
None	Mix	1	0.63	0.68	0.59	0.61	0.59	0.68	0.66	0.59	0.68	0.6	0.69	0.57	0.67	0.43	0.66	0.62	0.64
			0.16	0.21	0.25	0.17	0.11	0.22	0.19	0.2	0.14	0.19	0.12	0.19	0.22	0.22	0.26	0.25	0.24
None	Mix	.95	0.6	0.68	0.6	0.62	0.6	0.72	0.67	0.58	0.69	0.6	0.69	0.57	0.67	0.43	0.67	0.63	0.61
			0.23	0.22	0.23	0.16	0.14	0.18	0.22	0.2	0.13	0.19	0.16	0.19	0.22	0.22	0.25	0.25	0.23

Table 12: A table of the precision for each method with different setup of 10-CV of Pre Florence dataset. The upper number is mean and the lower number is standard derivation.

### 5.1.4 Pre Florence: F-score

Data Transform		Grid Search Model						Bayesian Inf Model						Decision Tree			Logistic Regression		
		None		Income		Prev E		None		Income		Prev E		Obs	Lat	Obs	Lat	Obs	All
Filled Latent	Prob	$\gamma$	N	L	N	L	N	L	N	L	N	L	N	L	Lat	Obs	Lat	Obs	All
None	Unif	1	0.4	0.5	0.38	0.47	0.42	0.45	0.57	0.57	0.58	0.6	0.56	0.55	0.58	0.33	0.57	0.57	0.54
			0.21	0.12	0.2	0.12	0.16	0.11	0.12	0.16	0.15	0.16	0.15	0.15	0.16	0.13	0.22	0.23	0.21
None	Unif	.95	0.4	0.51	0.39	0.45	0.39	0.47	0.59	0.56	0.59	0.6	0.56	0.55	0.58	0.33	0.56	0.57	0.53
			0.2	0.13	0.19	0.13	0.13	0.12	0.12	0.16	0.15	0.16	0.16	0.16	0.16	0.13	0.22	0.22	0.2
None	Norm	1	0.47	0.44	0.4	0.47	0.45	0.48	0.57	0.56	0.58	0.6	0.56	0.55	0.58	0.33	0.58	0.59	0.54
			0.17	0.18	0.16	0.18	0.17	0.1	0.12	0.17	0.15	0.16	0.15	0.15	0.16	0.13	0.22	0.22	0.22
None	Norm	.95	0.47	0.44	0.43	0.47	0.51	0.47	0.58	0.56	0.59	0.6	0.56	0.55	0.58	0.33	0.56	0.58	0.55
			0.19	0.18	0.19	0.19	0.15	0.1	0.12	0.17	0.15	0.16	0.16	0.15	0.16	0.13	0.21	0.22	0.22
None	Mix	1	0.47	0.52	0.39	0.45	0.42	0.48	0.57	0.57	0.59	0.6	0.58	0.56	0.58	0.33	0.56	0.55	0.54
			0.16	0.13	0.19	0.13	0.14	0.1	0.15	0.17	0.14	0.16	0.14	0.16	0.16	0.13	0.22	0.22	0.22
None	Mix	.95	0.44	0.47	0.42	0.47	0.42	0.49	0.59	0.56	0.61	0.6	0.59	0.56	0.58	0.33	0.57	0.56	0.53
			0.21	0.12	0.19	0.13	0.13	0.1	0.18	0.17	0.14	0.16	0.15	0.16	0.16	0.13	0.22	0.22	0.21

Table 13: A table of the F-score for each method with different setup of 10-CV of Pre Florence dataset. The upper number is mean and the lower number is standard derivation.



### 5.1.1.5 Post Florence: Error

Data Transform			Grid Search Model						Bayesian Inf Model						Decision Tree			Logistic Regression		
Filled Latent	Prob	$\gamma$	None		Income		Prev E		None		Income		Prev E		Obs	Lat	All	Obs	Lat	All
			N	L	N	L	N	L	N	L	N	L	N	L						
Group	Unif	1	10.39 3.74	9.69 4.4	10.25 3.52	7.95 3.02	9.38 3.62	6.65 2.41	11.99 3.91	8.53 3.37	10.4 3.37	7.37 2.71	7.52 3.68	6.07 2.55	16.49 4.41	7.36 1.99	9.11 4.5	13.14 3.41	10.69 4.62	6.65 3.44
Group	Unif	.95	9.96 4.13	9.26 4.56	9.4 2.87	7.8 2.85	7.66 3.51	6.36 1.98	11.7 3.85	8.82 3.79	10.27 3.8	7.66 2.49	7.95 4.02	6.07 2.55	16.49 4.41	7.36 1.99	9.11 4.5	13.14 3.41	10.55 4.3	6.22 3
Group	Norm	1	10.11 4	9.98 4.63	10.54 3.36	8.53 2.63	9.23 4.27	6.07 2.46	11.84 3.82	8.67 3.76	10.27 3.55	7.37 2.71	7.37 3.33	6.07 2.55	16.49 4.41	7.36 1.99	9.11 4.5	13.14 3.41	10.69 4.62	6.36 3.37
Group	Norm	.95	10.39 4.32	8.82 4.42	9.68 2.77	8.38 2.38	7.23 4	6.65 2.68	11.41 3.66	10.13 3.79	10.13 3.71	7.66 2.49	7.81 3.83	6.21 2.48	16.49 4.41	7.36 1.99	9.11 4.5	13.14 3.41	10.4 4	6.22 3
Group	Mix	1	9.82 4.21	9.69 3.84	10.25 4.13	8.38 2.91	9.09 3.93	6.51 2.21	11.41 4.48	8.39 4.38	10.11 3.64	7.52 2.91	7.66 3.7	6.07 2.55	16.49 4.41	7.36 1.99	9.11 4.5	13.14 3.41	10.41 4.34	6.8 3.08
Group	Mix	.95	10.25 4.07	8.25 3.83	9.82 2.66	7.95 2.51	7.52 3.87	6.65 2.5	11.56 4.95	8.24 3.89	9.84 3.7	7.52 2.91	7.81 3.83	6.07 2.55	16.49 4.41	7.36 1.99	9.11 4.5	13.14 3.41	10.41 4.29	6.65 3.09
Reg	Unif	1	10.83 3.71	9.11 4.66	10.25 3.02	8.53 2.88	8.66 3.55	5.5 1.93	11.56 5.14	8.39 4.22	10.27 4.83	7.95 3.02	7.95 3.45	6.07 2.55	16.49 4.41	8.23 4.22	8.97 4.49	13.14 3.41	12.14 5.71	6.65 3.51
Reg	Unif	.95	9.67 3.76	9.54 4.66	9.38 2.77	8.53 2.8	7.37 3.11	5.64 2.12	11.7 4.67	8.39 4.54	10.4 4.49	7.66 2.84	7.66 3.37	6.07 2.55	16.49 4.41	8.23 4.22	8.97 4.49	13.14 3.41	11.85 6.32	6.51 3.17
Reg	Norm	1	10.11 3.88	9.54 4.67	10.82 3.36	8.38 2.83	9.09 3.14	5.64 2.12	11.41 4.78	8.39 4.22	10.27 4.83	7.51 2.73	7.95 3.32	5.92 2.33	16.49 4.41	8.23 4.22	8.97 4.49	13.14 3.41	11.85 5.78	6.65 3.51
Reg	Norm	.95	9.96 4.67	9.54 4.66	8.95 2.89	8.38 2.91	7.08 2.95	5.93 2.33	11.7 4.67	8.25 4.34	10.4 4.49	7.8 3.16	7.66 3.37	6.07 2.55	16.49 4.41	8.23 4.22	8.97 4.49	13.14 3.41	11.85 6.01	6.36 3.16
Reg	Mix	1	10.54 3.75	7.81 4.07	9.96 3.01	8.09 2.77	8.95 3.12	5.64 2.12	10.98 5.37	8.1 4.29	10.56 4.71	7.8 2.77	7.81 3.31	6.07 2.55	16.49 4.41	8.23 4.22	8.97 4.49	13.14 3.41	11.57 6.1	6.8 3.22
Reg	Mix	.95	9.82 3.42	9.4 4.46	9.24 2.84	8.53 2.96	6.94 3.42	5.93 2.33	11.12 4.35	8.1 4.51	10.55 4.56	7.66 2.84	7.66 3.51	6.07 2.55	16.49 4.41	8.23 4.22	8.97 4.49	13.14 3.41	11.71 6.38	6.51 3.17

Table 14: A table of the error rate for each method with different setup of 10-CV of Post Florence dataset. The upper number is mean and the lower number is standard derivation.

### 5.1.6 Post Florence: Recall

Data Transform		Grid Search Model						Bayesian Inf Model						Decision Tree			Logistic Regression		
Filled Latent	Prob	None		Income		Prev E		None		Income		Prev E		Obs	Lat	All	Obs	Lat	All
	$\gamma$	N	L	N	L	N	L	N	L	N	L	N	L						
Group	Unif	0.72	0.56	0.65	0.7	0.69	0.71	0.36	0.59	0.47	0.67	0.6	0.74	0.3	0.66	0.62	0.33	0.5	0.56
		0.15	0.15	0.13	0.11	0.16	0.14	0.15	0.13	0.13	0.12	0.17	0.11	0.08	0.12	0.16	0.16	0.2	0.14
Group	Unif	0.7	0.58	0.64	0.7	0.7	0.73	0.39	0.59	0.49	0.66	0.61	0.74	0.3	0.66	0.62	0.33	0.52	0.55
		0.14	0.15	0.13	0.11	0.17	0.12	0.13	0.13	0.18	0.12	0.11	0.08	0.08	0.12	0.16	0.16	0.15	0.14
Group	Norm	0.71	0.56	0.65	0.7	0.69	0.73	0.37	0.59	0.48	0.68	0.6	0.74	0.3	0.66	0.62	0.33	0.5	0.56
		0.15	0.15	0.13	0.12	0.17	0.14	0.14	0.13	0.15	0.12	0.16	0.11	0.08	0.12	0.16	0.16	0.2	0.14
Group	Norm	0.69	0.57	0.64	0.7	0.71	0.72	0.4	0.59	0.5	0.66	0.61	0.74	0.3	0.66	0.62	0.33	0.53	0.55
		0.17	0.14	0.13	0.11	0.15	0.13	0.13	0.13	0.16	0.13	0.18	0.11	0.08	0.12	0.16	0.16	0.15	0.14
Group	Mix	0.7	0.57	0.68	0.69	0.71	0.72	0.44	0.65	0.48	0.69	0.6	0.74	0.3	0.66	0.62	0.33	0.52	0.56
		0.15	0.14	0.12	0.11	0.13	0.13	0.17	0.17	0.15	0.12	0.16	0.11	0.08	0.12	0.16	0.16	0.2	0.16
Group	Mix	0.69	0.59	0.61	0.7	0.69	0.72	0.46	0.63	0.51	0.69	0.62	0.74	0.3	0.66	0.62	0.33	0.52	0.56
		0.14	0.13	0.12	0.11	0.16	0.13	0.17	0.12	0.19	0.14	0.17	0.11	0.08	0.12	0.16	0.16	0.19	0.16
Reg	Unif	0.68	0.62	0.62	0.67	0.7	0.73	0.39	0.62	0.46	0.66	0.59	0.74	0.3	0.63	0.62	0.33	0.47	0.55
		0.16	0.14	0.12	0.12	0.13	0.12	0.14	0.13	0.16	0.11	0.16	0.11	0.08	0.14	0.16	0.16	0.19	0.14
Reg	Unif	0.69	0.58	0.64	0.67	0.69	0.72	0.41	0.61	0.48	0.67	0.62	0.74	0.3	0.63	0.62	0.33	0.53	0.55
		0.16	0.16	0.13	0.12	0.13	0.13	0.1	0.14	0.13	0.11	0.15	0.11	0.08	0.14	0.16	0.16	0.25	0.14
Reg	Norm	0.69	0.6	0.6	0.71	0.7	0.73	0.39	0.62	0.46	0.68	0.6	0.74	0.3	0.63	0.62	0.33	0.5	0.55
		0.16	0.15	0.13	0.1	0.13	0.12	0.14	0.13	0.16	0.1	0.16	0.11	0.08	0.14	0.16	0.16	0.21	0.14
Reg	Norm	0.67	0.58	0.66	0.7	0.7	0.72	0.41	0.62	0.48	0.66	0.62	0.74	0.3	0.63	0.62	0.33	0.5	0.55
		0.17	0.16	0.12	0.11	0.13	0.13	0.1	0.14	0.13	0.11	0.15	0.11	0.08	0.14	0.16	0.16	0.21	0.14
Reg	Mix	0.7	0.66	0.63	0.7	0.7	0.73	0.45	0.65	0.45	0.68	0.6	0.74	0.3	0.63	0.62	0.33	0.51	0.55
		0.15	0.17	0.12	0.11	0.13	0.12	0.17	0.17	0.16	0.11	0.14	0.11	0.08	0.14	0.16	0.16	0.23	0.16
Reg	Mix	0.7	0.58	0.65	0.7	0.7	0.72	0.44	0.65	0.47	0.69	0.62	0.74	0.3	0.63	0.62	0.33	0.51	0.55
		0.15	0.16	0.12	0.12	0.13	0.13	0.13	0.17	0.16	0.11	0.12	0.11	0.08	0.14	0.16	0.16	0.26	0.16

Table 15: A table of the recall for each method with different setup of 10-CV of Post Florence dataset. The upper number is mean and the lower number is standard derivation.

### 5.1.1.7 Post Florence: Precision

Data Transform		Grid Search Model						Bayesian Inf Model						Decision Tree			Logistic Regression			
		None		Income		Prev E		None		Income		Prev E		Obs	Lat	Obs	Lat	Obs	All	
Filled Latent	Prob	N	L	N	L	N	L	N	L	N	L	N	L	Obs	Lat	Obs	Lat	Obs	All	
Group	Unif	0.66	0.8	0.68	0.76	0.69	0.83	0.69	0.83	0.73	0.82	0.86	0.84	0.49	0.83	0.77	0.8	0.57	0.73	0.84
		0.17	0.14	0.14	0.14	0.17	0.14	0.22	0.13	0.18	0.13	0.11	0.1	0.24	0.18	0.13	0.12	0.24	0.15	0.15
Group	Unif	0.69	0.81	0.71	0.77	0.79	0.83	0.73	0.81	0.73	0.81	0.84	0.84	0.49	0.83	0.77	0.8	0.57	0.73	0.85
		0.17	0.14	0.12	0.12	0.1	0.13	0.24	0.15	0.18	0.14	0.16	0.1	0.24	0.18	0.13	0.12	0.24	0.14	0.15
Group	Norm	0.67	0.79	0.67	0.73	0.71	0.84	0.69	0.82	0.73	0.81	0.86	0.84	0.49	0.83	0.77	0.8	0.57	0.73	0.84
		0.16	0.16	0.14	0.14	0.17	0.12	0.22	0.14	0.18	0.12	0.11	0.1	0.24	0.18	0.13	0.12	0.24	0.15	0.15
Group	Norm	0.66	0.85	0.69	0.73	0.82	0.82	0.74	0.81	0.75	0.83	0.83	0.83	0.49	0.83	0.77	0.8	0.57	0.74	0.85
		0.17	0.12	0.12	0.14	0.12	0.09	0.24	0.15	0.14	0.14	0.15	0.1	0.24	0.18	0.13	0.12	0.24	0.13	0.15
Group	Mix	0.69	0.78	0.69	0.74	0.7	0.82	0.7	0.81	0.74	0.8	0.85	0.84	0.49	0.83	0.77	0.8	0.57	0.74	0.84
		0.14	0.15	0.14	0.13	0.16	0.13	0.18	0.12	0.19	0.12	0.12	0.1	0.24	0.18	0.13	0.12	0.24	0.14	0.15
Group	Mix	0.67	0.85	0.7	0.76	0.81	0.82	0.7	0.83	0.74	0.81	0.82	0.84	0.49	0.83	0.77	0.8	0.57	0.74	0.84
		0.17	0.13	0.12	0.12	0.13	0.13	0.23	0.13	0.18	0.11	0.15	0.1	0.24	0.18	0.13	0.12	0.24	0.14	0.15
Reg	Unif	0.65	0.79	0.67	0.75	0.74	0.89	0.75	0.82	0.78	0.79	0.82	0.84	0.49	0.81	0.78	0.8	0.57	0.68	0.73
		0.15	0.13	0.16	0.13	0.17	0.09	0.25	0.12	0.24	0.11	0.12	0.1	0.24	0.14	0.12	0.12	0.24	0.16	0.15
Reg	Unif	0.7	0.81	0.71	0.76	0.8	0.89	0.72	0.84	0.77	0.8	0.81	0.84	0.49	0.81	0.78	0.8	0.57	0.69	0.73
		0.16	0.14	0.17	0.13	0.08	0.1	0.21	0.13	0.19	0.12	0.15	0.1	0.24	0.14	0.12	0.12	0.24	0.18	0.15
Reg	Norm	0.68	0.79	0.66	0.74	0.71	0.89	0.75	0.82	0.78	0.8	0.8	0.85	0.49	0.81	0.78	0.8	0.57	0.69	0.73
		0.15	0.13	0.17	0.14	0.14	0.09	0.24	0.12	0.24	0.13	0.15	0.1	0.24	0.14	0.12	0.12	0.24	0.18	0.15
Reg	Norm	0.7	0.81	0.72	0.74	0.81	0.87	0.72	0.84	0.77	0.8	0.81	0.84	0.49	0.81	0.78	0.8	0.57	0.69	0.73
		0.15	0.15	0.12	0.1	0.09	0.1	0.21	0.13	0.19	0.13	0.15	0.1	0.24	0.14	0.12	0.12	0.24	0.18	0.15
Reg	Mix	0.66	0.83	0.68	0.75	0.71	0.89	0.75	0.83	0.76	0.78	0.82	0.84	0.49	0.81	0.78	0.8	0.57	0.72	0.73
		0.16	0.11	0.17	0.13	0.14	0.09	0.24	0.11	0.23	0.11	0.12	0.1	0.24	0.14	0.12	0.12	0.24	0.18	0.15
Reg	Mix	0.69	0.8	0.71	0.73	0.84	0.87	0.74	0.83	0.74	0.78	0.83	0.84	0.49	0.81	0.78	0.8	0.57	0.71	0.73
		0.16	0.12	0.17	0.14	0.12	0.09	0.23	0.11	0.22	0.11	0.11	0.1	0.24	0.14	0.12	0.12	0.24	0.18	0.15

Table 16: A table of the Precision for each method with different setup of 10-CV of Post Florence dataset. The upper number is mean and the lower number is standard derivation.

### 5.1.8 Post Florence: F-score

Data Transform		Grid Search Model						Bayesian Inf Model						Decision Tree			Logistic Regression		
Filled Latent	Prob	None		Income		Prev E		None		Income		Prev E		Obs	Lat	Obs	Lat	Obs	All
	$\gamma$	N	L	N	L	N	L	N	L	N	L	N	L	Lat	Lat	Lat	Lat	Lat	All
Group	Unif	0.67	0.64	0.65	0.72	0.68	0.75	0.46	0.68	0.57	0.73	0.69	0.78	0.36	0.72	0.67	0.75	0.41	0.75
		0.09	0.08	0.08	0.1	0.12	0.09	0.15	0.09	0.15	0.08	0.13	0.08	0.13	0.08	0.1	0.09	0.18	0.12
Group	Unif	0.68	0.66	0.66	0.72	0.73	0.77	0.49	0.67	0.57	0.72	0.68	0.78	0.36	0.72	0.67	0.75	0.41	0.76
		0.1	0.1	0.09	0.09	0.1	0.08	0.14	0.08	0.16	0.07	0.15	0.08	0.13	0.08	0.1	0.09	0.18	0.12
Group	Norm	0.67	0.63	0.65	0.7	0.68	0.77	0.47	0.67	0.57	0.73	0.7	0.78	0.36	0.72	0.67	0.75	0.41	0.76
		0.09	0.09	0.07	0.09	0.13	0.1	0.15	0.08	0.15	0.08	0.13	0.08	0.13	0.08	0.1	0.09	0.18	0.12
Group	Norm	0.66	0.66	0.66	0.71	0.75	0.76	0.51	0.67	0.59	0.72	0.69	0.78	0.36	0.72	0.67	0.75	0.41	0.76
		0.12	0.09	0.09	0.09	0.11	0.09	0.14	0.08	0.13	0.06	0.14	0.08	0.13	0.08	0.1	0.09	0.18	0.12
Group	Mix	0.68	0.64	0.67	0.71	0.69	0.76	0.53	0.71	0.58	0.73	0.69	0.78	0.36	0.72	0.67	0.75	0.41	0.74
		0.09	0.08	0.08	0.09	0.1	0.1	0.16	0.13	0.16	0.08	0.13	0.08	0.13	0.08	0.1	0.09	0.18	0.11
Group	Mix	0.67	0.69	0.64	0.72	0.73	0.75	0.55	0.71	0.6	0.73	0.69	0.78	0.36	0.72	0.67	0.75	0.41	0.75
		0.1	0.09	0.08	0.08	0.12	0.09	0.18	0.09	0.17	0.07	0.13	0.08	0.13	0.08	0.1	0.09	0.18	0.12
Reg	Unif	0.65	0.68	0.64	0.7	0.71	0.8	0.5	0.7	0.58	0.71	0.68	0.78	0.36	0.69	0.67	0.75	0.41	0.75
		0.08	0.1	0.11	0.09	0.11	0.08	0.16	0.11	0.18	0.08	0.13	0.08	0.13	0.1	0.09	0.09	0.18	0.12
Reg	Unif	0.68	0.65	0.66	0.7	0.74	0.79	0.52	0.7	0.58	0.72	0.7	0.78	0.36	0.69	0.67	0.75	0.41	0.76
		0.09	0.1	0.11	0.08	0.08	0.09	0.12	0.11	0.14	0.08	0.14	0.08	0.13	0.1	0.09	0.09	0.18	0.12
Reg	Norm	0.67	0.66	0.62	0.71	0.69	0.79	0.5	0.7	0.58	0.73	0.68	0.79	0.36	0.69	0.67	0.75	0.41	0.75
		0.09	0.1	0.11	0.09	0.09	0.08	0.16	0.11	0.18	0.08	0.14	0.08	0.13	0.1	0.09	0.09	0.18	0.12
Reg	Norm	0.67	0.65	0.68	0.71	0.74	0.78	0.52	0.7	0.58	0.72	0.7	0.78	0.36	0.69	0.67	0.75	0.41	0.76
		0.11	0.1	0.11	0.08	0.08	0.1	0.12	0.11	0.14	0.08	0.14	0.08	0.13	0.1	0.09	0.09	0.18	0.12
Reg	Mix	0.66	0.73	0.64	0.72	0.7	0.79	0.56	0.72	0.56	0.72	0.69	0.78	0.36	0.69	0.67	0.75	0.41	0.74
		0.09	0.13	0.11	0.08	0.09	0.08	0.19	0.13	0.17	0.08	0.12	0.08	0.13	0.1	0.09	0.09	0.18	0.12
Reg	Mix	0.67	0.66	0.67	0.71	0.75	0.78	0.54	0.72	0.57	0.73	0.7	0.78	0.36	0.69	0.67	0.75	0.41	0.76
		0.09	0.1	0.11	0.09	0.1	0.1	0.15	0.13	0.17	0.08	0.11	0.08	0.13	0.1	0.09	0.09	0.18	0.12

Table 17: A table of the F-score for each method with different setup of 10-CV of Post Florence dataset. The upper number is mean and the lower number is standard derivation.

### 5.1.9 Post Michael: Error

Data Transform			Grid Search Model						Bayesian Inf Model						Decision Tree				Logistic Regression			
Filled Latent	Prob	$\gamma$	None		Income		Prev E		None		Income		Prev E		Obs	Lat	Obs	Lat	Obs	Lat	Obs	All
			N	L	N	L	N	L	N	L	N	L	N	L								All
None	Unif	1	9.8	9.8	11.25	10.53	8.71	8.16	11.43	10.89	11.8	10.17	8.89	9.25	14.53	9.26	9.62	10.71	13.79	10.34	11.06	7.98
			3.45	2.99	4.17	2.68	3.82	2.72	5.28	2.41	4.63	2.88	3.01	2.74	4.22	3.38	2.99	3.49	4.21	4.18	3.85	3.42
None	Unif	.95	9.8	9.8	11.98	10.7	8.71	7.98	11.8	11.43	12.34	10.71	8.7	9.43	14.53	9.26	9.62	10.71	13.79	10.34	11.06	8.16
			3.56	2.86	5.02	3.86	2.69	2.11	4.71	2.69	4.68	2.5	3.15	3.02	4.22	3.38	2.99	3.49	4.21	4.18	3.85	3.42
None	Norm	1	9.98	10.16	11.44	10.53	8.71	8.34	11.43	10.89	11.98	9.98	8.71	9.25	14.53	9.26	9.62	10.71	13.79	10.34	11.06	8.16
			3.86	2.97	4.7	3.51	3.82	2.43	4.85	2.41	4.94	2.88	2.93	2.74	4.22	3.38	2.99	3.49	4.21	4.18	3.85	3.53
None	Norm	.95	9.62	9.8	11.62	10.7	8.35	8.34	11.43	11.61	12.34	10.53	8.52	9.43	14.53	9.26	9.62	10.71	13.79	10.52	11.25	8.34
			4.29	2.86	4.95	3.46	3.24	2.28	4.61	2.42	4.68	3.08	3.18	3.02	4.22	3.38	2.99	3.49	4.21	4.07	4.16	3.52
None	Mix	1	9.8	9.98	11.43	10.89	8.17	8.53	11.43	10.7	11.07	10.17	8.35	9.25	14.53	9.26	9.62	10.71	13.79	10.16	10.52	7.98
			3.86	2.87	4.85	3.32	3.67	2.08	5	3.01	4.87	2.75	2.45	2.74	4.22	3.38	2.99	3.49	4.21	3.41	3.7	3.42
None	Mix	.95	9.26	10.17	9.98	11.25	8.71	8.16	11.43	10.7	11.43	10.17	8.71	9.43	14.53	9.26	9.62	10.71	13.79	9.79	10.89	7.8
			3.58	3	4.22	3.3	3.07	1.93	4.61	2.15	4.11	3.24	2.93	3.02	4.22	3.38	2.99	3.49	4.21	3.41	4.28	3.29

Table 18: A table of the error rate for each method with different setup of 10-CV of Post Michael dataset. The upper number is mean and the lower number is standard derivation.

### 5.1.10 Post Michael: Recall

Data Transform			Grid Search Model						Bayesian Inf Model						Decision Tree				Logistic Regression			
Filled Latent	Prob	$\gamma$	None		Income		Prev E		None		Income		Prev E		Obs	Lat	Obs	Lat	Obs	Lat	Obs	All
			N	L	N	L	N	L	N	L	N	L	N	L								
None	Unif	1	0.63	0.59	0.65	0.61	0.7	0.68	0.51	0.71	0.5	0.73	0.67	0.73	0.51	0.73	0.73	0.37	0.55	0.54	0.67	
			0.12	0.12	0.11	0.13	0.15	0.15	0.16	0.1	0.14	0.12	0.15	0.15	0.15	0.12	0.12	0.17	0.15	0.15	0.11	
None	Unif	.95	0.62	0.59	0.61	0.58	0.75	0.68	0.5	0.7	0.49	0.71	0.68	0.73	0.51	0.73	0.73	0.37	0.55	0.54	0.67	
			0.12	0.12	0.12	0.13	0.09	0.15	0.16	0.12	0.15	0.09	0.18	0.15	0.15	0.12	0.12	0.17	0.15	0.15	0.11	
None	Norm	1	0.62	0.59	0.65	0.6	0.7	0.68	0.51	0.71	0.5	0.73	0.68	0.73	0.51	0.73	0.73	0.37	0.55	0.54	0.66	
			0.12	0.12	0.11	0.09	0.15	0.15	0.15	0.1	0.14	0.09	0.15	0.15	0.15	0.12	0.12	0.17	0.15	0.15	0.11	
None	Norm	.95	0.63	0.59	0.64	0.57	0.73	0.68	0.52	0.7	0.49	0.71	0.69	0.73	0.51	0.73	0.73	0.37	0.55	0.54	0.66	
			0.12	0.12	0.11	0.13	0.14	0.15	0.16	0.11	0.15	0.08	0.17	0.15	0.15	0.12	0.12	0.17	0.15	0.15	0.11	
None	Mix	1	0.64	0.61	0.65	0.61	0.72	0.67	0.51	0.68	0.54	0.73	0.7	0.73	0.51	0.73	0.73	0.37	0.57	0.57	0.68	
			0.11	0.1	0.12	0.11	0.13	0.14	0.11	0.11	0.17	0.09	0.13	0.15	0.15	0.12	0.12	0.17	0.15	0.14	0.1	
None	Mix	.95	0.64	0.65	0.65	0.6	0.71	0.67	0.53	0.69	0.55	0.73	0.68	0.73	0.51	0.73	0.73	0.37	0.58	0.56	0.68	
			0.12	0.1	0.12	0.1	0.13	0.14	0.14	0.12	0.14	0.09	0.15	0.15	0.15	0.12	0.12	0.17	0.15	0.14	0.1	

Table 19: A table of the recall for each method with different setup of 10-CV of Post Michael dataset. The upper number is mean and the lower number is standard derivation.

### 5.1.11 Post Michael: Precision

Data Transform		Grid Search Model						Bayesian Inf Model						Decision Tree				Logistic Regression			
		None		Income		Prev E		None		Income		Prev E		Obs	Lat	Obs	All	Obs	Lat	Obs	All
Filled Latent	Prob	N	L	N	L	N	L	N	L	N	L	N	L								
None	Unif	0.82	0.84	0.74	0.79	0.87	0.79	0.86	0.71	0.84	0.74	0.82	0.75	0.64	0.77	0.76	0.7	0.78	0.84	0.81	0.85
		0.14	0.14	0.16	0.16	0.15	0.13	0.13	0.11	0.13	0.09	0.09	0.12	0.13	0.12	0.11	0.17	0.2	0.19	0.16	0.11
None	Unif	0.83	0.85	0.73	0.8	0.78	0.86	0.84	0.69	0.8	0.73	0.81	0.74	0.64	0.77	0.76	0.7	0.78	0.84	0.81	0.84
		0.12	0.13	0.16	0.15	0.12	0.12	0.14	0.11	0.15	0.1	0.09	0.13	0.13	0.12	0.11	0.17	0.2	0.19	0.16	0.1
None	Norm	0.82	0.82	0.73	0.8	0.79	0.85	0.85	0.71	0.81	0.74	0.82	0.75	0.64	0.77	0.76	0.7	0.78	0.84	0.81	0.85
		0.14	0.14	0.16	0.15	0.15	0.12	0.14	0.11	0.12	0.1	0.08	0.12	0.13	0.12	0.11	0.17	0.2	0.19	0.16	0.11
None	Norm	0.84	0.85	0.74	0.8	0.79	0.85	0.84	0.69	0.8	0.73	0.82	0.74	0.64	0.77	0.76	0.7	0.78	0.83	0.8	0.84
		0.11	0.13	0.17	0.15	0.13	0.13	0.14	0.11	0.15	0.11	0.09	0.13	0.13	0.12	0.11	0.17	0.2	0.18	0.16	0.1
None	Mix	0.82	0.81	0.73	0.78	0.8	0.84	0.85	0.72	0.85	0.73	0.82	0.75	0.64	0.77	0.76	0.7	0.78	0.85	0.82	0.85
		0.14	0.15	0.17	0.17	0.15	0.13	0.12	0.13	0.13	0.11	0.08	0.12	0.13	0.12	0.11	0.17	0.2	0.17	0.15	0.12
None	Mix	0.83	0.78	0.79	0.76	0.78	0.86	0.83	0.72	0.81	0.73	0.82	0.74	0.64	0.77	0.76	0.7	0.78	0.85	0.81	0.86
		0.11	0.14	0.11	0.15	0.13	0.12	0.13	0.11	0.13	0.11	0.09	0.13	0.13	0.12	0.11	0.17	0.2	0.17	0.15	0.11

Table 20: A table of the precision for each method with different setup of 10-CV of Post Michael dataset. The upper number is mean and the lower number is standard derivation.

### 5.1.12 Post Michael: F-score

Data Transform		Grid Search Model						Bayesian Inf Model						Decision Tree				Logistic Regression			
		None		Income		Prev E		None		Income		Prev E		Obs	Lat	Obs	All	Obs	Lat	Obs	All
Filled Latent	Prob	N	L	N	L	N	L	N	L	N	L	N	L								
None	Unif	0.7	0.68	0.68	0.67	0.74	0.74	0.62	0.7	0.61	0.73	0.73	0.74	0.56	0.74	0.73	0.7	0.49	0.65	0.64	0.74
		0.09	0.11	0.1	0.11	0.14	0.12	0.12	0.08	0.12	0.06	0.1	0.11	0.13	0.09	0.08	0.14	0.18	0.15	0.12	0.15
None	Unif	0.7	0.68	0.66	0.67	0.76	0.75	0.61	0.69	0.59	0.71	0.73	0.73	0.56	0.74	0.73	0.7	0.49	0.66	0.64	0.74
		0.08	0.11	0.11	0.12	0.08	0.12	0.12	0.09	0.13	0.04	0.13	0.11	0.13	0.09	0.08	0.14	0.18	0.15	0.12	0.15
None	Norm	0.7	0.68	0.68	0.68	0.74	0.74	0.62	0.7	0.61	0.73	0.74	0.74	0.56	0.74	0.73	0.7	0.49	0.65	0.64	0.73
		0.1	0.11	0.11	0.1	0.14	0.11	0.12	0.08	0.12	0.06	0.1	0.11	0.13	0.09	0.08	0.14	0.18	0.15	0.12	0.15
None	Norm	0.71	0.68	0.67	0.66	0.75	0.74	0.62	0.68	0.59	0.71	0.74	0.73	0.56	0.74	0.73	0.7	0.49	0.65	0.64	0.73
		0.09	0.11	0.11	0.13	0.13	0.13	0.12	0.08	0.13	0.07	0.13	0.11	0.13	0.09	0.08	0.14	0.18	0.15	0.12	0.15
None	Mix	0.71	0.69	0.68	0.67	0.76	0.73	0.63	0.69	0.64	0.73	0.75	0.74	0.56	0.74	0.73	0.7	0.49	0.67	0.67	0.74
		0.09	0.1	0.12	0.11	0.14	0.11	0.09	0.11	0.12	0.06	0.08	0.11	0.13	0.09	0.08	0.14	0.18	0.12	0.11	0.14
None	Mix	0.72	0.7	0.71	0.66	0.74	0.74	0.64	0.7	0.64	0.72	0.74	0.73	0.56	0.74	0.73	0.7	0.49	0.68	0.66	0.75
		0.09	0.09	0.1	0.1	0.12	0.11	0.1	0.09	0.1	0.08	0.1	0.11	0.13	0.09	0.08	0.14	0.18	0.12	0.11	0.14

Table 21: A table of the F-score for each method with different setup of 10-CV of Post Michael dataset. The upper number is mean and the lower number is standard derivation.

## 5.2 Across Data results

### 5.2.1 Pre Florence to Post Florence: Error

Data Transform			Grid Search Model						Bayesian Inf Model						Decision Tree			Logistic Regression					
Filled Latent	Prob	$\gamma$	None			Income			Prev E			None			Income			Prev E			Obs	Lat	All
			N	L	N	N	L	N	N	L	N	N	L	N	N	L	N	N	L				
Group	Unif	1	13.45	17.54	12.72	14.04	13.89	15.94	25.88	26.02	24.12	31.87	31.87	21.49	26.02	23.39	28.22	26.02	31.43	15.2	19.01	23.39	23.98
Group	Unif	.95	14.18	15.94	12.28	14.04	12.28	16.23	23.98	25.88	23.83	31.87	31.87	20.76	26.02	23.39	28.22	26.02	31.43	15.2	19.01	22.81	23.54
Group	Norm	1	17.11	15.64	12.57	21.49	13.89	14.77	25.88	26.17	24.27	31.29	31.29	21.64	26.32	23.39	28.22	26.02	31.43	15.2	19.01	23.54	24.12
Group	Norm	.95	16.23	15.64	12.13	21.49	17.11	14.62	24.27	25.88	23.83	31.43	31.43	21.2	26.32	23.39	28.22	26.02	31.43	15.2	19.01	23.25	23.83
Group	Mix	1	17.11	16.37	12.57	21.05	17.4	14.62	21.64	26.32	22.81	30.85	30.85	18.71	26.32	23.39	28.22	26.02	31.43	15.2	19.01	21.2	22.95
Group	Mix	.95	16.81	17.11	17.11	20.76	13.6	14.33	21.05	26.02	22.81	30.7	30.7	18.71	26.32	23.39	28.22	26.02	31.43	15.2	19.01	21.64	22.81
Reg	Unif	1	15.35	19.15	13.16	14.33	14.91	15.64	25.88	26.02	25	31.58	31.58	21.78	25.73	23.39	29.82	26.02	31.43	15.2	19.01	23.54	24.12
Reg	Unif	.95	13.6	15.79	12.72	14.62	13.74	16.08	25.29	25.88	25.29	31.87	31.87	22.22	25.73	23.39	29.82	26.02	31.43	15.2	19.01	22.81	23.83
Reg	Norm	1	17.11	15.79	13.01	21.78	15.06	14.62	26.17	25.88	25	31.29	31.29	22.22	26.02	23.39	29.82	26.02	31.43	15.2	19.01	23.68	24.12
Reg	Norm	.95	16.81	16.23	12.43	21.64	17.69	14.47	25.58	25.88	25	31.73	31.73	22.37	26.32	23.39	29.82	26.02	31.43	15.2	19.01	23.25	23.54
Reg	Mix	1	17.69	16.81	12.87	21.05	17.25	14.91	21.49	26.46	23.39	31.14	31.14	19.3	26.61	23.39	29.82	26.02	31.43	15.2	19.01	21.49	23.1
Reg	Mix	.95	17.69	17.84	17.54	20.91	14.91	14.77	21.93	26.32	24.12	30.85	30.85	20.32	26.32	23.39	29.82	26.02	31.43	15.2	19.01	21.93	23.1

Table 22: A table of the error rate for each method with different setup of using Pre Florence to predict Post Florence.

### 5.2.2 Pre Florence to Post Florence: Recall

Data Transform			Grid Search Model						Bayesian Inf Model						Decision Tree			Logistic Regression				
Filled Latent	Prob	$\gamma$	None		Income		Prev E		None		Income		Prev E		Obs	Lat	All	Obs	Lat	All		
			N	L	N	L	N	L	N	L	N	L	N	L								
Group	Unif	1	0.77	0.87	0.72	0.85	0.84	0.88	0.86	0.88	0.86	0.88	0.9	0.86	0.89	0.62	0.78	0.69	0	0.67	0.73	0.71
Group	Unif	.95	0.74	0.87	0.7	0.85	0.83	0.88	0.86	0.88	0.85	0.88	0.91	0.87	0.89	0.62	0.78	0.69	0	0.67	0.74	0.72
Group	Norm	1	0.79	0.84	0.73	0.84	0.85	0.87	0.86	0.88	0.86	0.88	0.9	0.87	0.89	0.62	0.78	0.69	0	0.67	0.74	0.73
Group	Norm	.95	0.8	0.85	0.72	0.84	0.87	0.87	0.86	0.88	0.85	0.88	0.91	0.86	0.89	0.62	0.78	0.69	0	0.67	0.74	0.72
Group	Mix	1	0.79	0.87	0.73	0.84	0.84	0.88	0.86	0.88	0.86	0.88	0.9	0.85	0.89	0.62	0.78	0.69	0	0.67	0.73	0.72
Group	Mix	.95	0.83	0.87	0.77	0.84	0.84	0.88	0.85	0.88	0.85	0.88	0.9	0.86	0.89	0.62	0.78	0.69	0	0.67	0.73	0.72
Reg	Unif	1	0.78	0.87	0.73	0.85	0.85	0.88	0.85	0.88	0.85	0.88	0.9	0.86	0.89	0.62	0.81	0.69	0	0.67	0.74	0.71
Reg	Unif	.95	0.76	0.87	0.71	0.85	0.84	0.88	0.86	0.88	0.82	0.88	0.9	0.85	0.89	0.62	0.81	0.69	0	0.67	0.74	0.72
Reg	Norm	1	0.79	0.84	0.73	0.83	0.84	0.87	0.85	0.88	0.85	0.88	0.9	0.86	0.89	0.62	0.81	0.69	0	0.67	0.74	0.73
Reg	Norm	.95	0.78	0.84	0.73	0.83	0.83	0.85	0.86	0.88	0.83	0.88	0.9	0.87	0.89	0.62	0.81	0.69	0	0.67	0.74	0.73
Reg	Mix	1	0.8	0.87	0.73	0.85	0.86	0.88	0.85	0.88	0.85	0.88	0.9	0.85	0.89	0.62	0.81	0.69	0	0.67	0.73	0.72
Reg	Mix	.95	0.82	0.87	0.78	0.85	0.84	0.88	0.85	0.88	0.82	0.88	0.9	0.85	0.89	0.62	0.81	0.69	0	0.67	0.73	0.72

Table 23: A table of the recall for each method with different setup of using Pre Florence to predict Post Florence.

### 5.2.3 Pre Florence to Post Florence: Precision

Data Transform			Grid Search Model						Bayesian Inf Model						Decision Tree				Logistic Regression			
Filled Latent	Prob	$\gamma$	None		Income		Prev E		None		Income		Prev E		Obs	Lat	Obs	All	Obs	Lat	Obs	All
			N	L	N	L	N	L	N	L	N	L	N	L								
Group	Unif	1	0.54	0.46	0.56	0.52	0.53	0.49	0.35	0.36	0.37	0.31	0.4	0.36	0.35	0.32	0.33	0.28	0	0.42	0.37	0.36
Group	Unif	.95	0.52	0.49	0.58	0.52	0.57	0.48	0.37	0.36	0.37	0.31	0.41	0.36	0.35	0.32	0.33	0.28	0	0.42	0.37	0.36
Group	Norm	1	0.46	0.49	0.57	0.4	0.53	0.51	0.35	0.35	0.37	0.32	0.4	0.35	0.35	0.32	0.33	0.28	0	0.42	0.36	0.36
Group	Norm	.95	0.48	0.49	0.58	0.4	0.47	0.51	0.37	0.36	0.37	0.32	0.41	0.35	0.35	0.32	0.33	0.28	0	0.42	0.37	0.36
Group	Mix	1	0.46	0.48	0.57	0.41	0.46	0.51	0.4	0.35	0.39	0.32	0.44	0.35	0.35	0.32	0.33	0.28	0	0.42	0.39	0.37
Group	Mix	.95	0.47	0.47	0.46	0.41	0.53	0.52	0.41	0.36	0.39	0.32	0.44	0.35	0.35	0.32	0.33	0.28	0	0.42	0.39	0.37
Reg	Unif	1	0.5	0.43	0.55	0.52	0.51	0.49	0.35	0.36	0.36	0.31	0.4	0.36	0.35	0.31	0.33	0.28	0	0.42	0.36	0.35
Reg	Unif	.95	0.54	0.49	0.56	0.51	0.53	0.48	0.36	0.36	0.36	0.31	0.39	0.36	0.35	0.31	0.33	0.28	0	0.42	0.37	0.36
Reg	Norm	1	0.46	0.49	0.55	0.4	0.5	0.51	0.35	0.36	0.36	0.32	0.39	0.36	0.35	0.31	0.33	0.28	0	0.42	0.36	0.36
Reg	Norm	.95	0.47	0.48	0.57	0.4	0.46	0.51	0.36	0.36	0.36	0.31	0.39	0.35	0.35	0.31	0.33	0.28	0	0.42	0.37	0.36
Reg	Mix	1	0.45	0.47	0.56	0.41	0.46	0.51	0.4	0.35	0.38	0.32	0.43	0.35	0.35	0.31	0.33	0.28	0	0.42	0.39	0.37
Reg	Mix	.95	0.45	0.45	0.46	0.41	0.51	0.51	0.4	0.35	0.37	0.32	0.42	0.35	0.35	0.31	0.33	0.28	0	0.42	0.38	0.37

Table 24: A table of the precision for each method with different setup of using Pre Florence to predict Post Florence.

### 5.2.4 Pre Florence to Post Florence: F-score

Data Transform			Grid Search Model						Bayesian Inf Model						Decision Tree				Logistic Regression			
			None		Income		Prev E		None		Income		Prev E		Obs	Lat	Obs	All	Obs	Lat	Obs	All
Filled Latent	Prob	$\gamma$	N	L	N	L	N	L	N	L	N	L	N	L								
Group	Unif	1	0.63	0.6	0.63	0.65	0.63	0.65	0.5	0.51	0.52	0.46	0.55	0.51	0.45	0.46	0.45	0.4	0	0.52	0.49	0.47
Group	Unif	.95	0.61	0.62	0.63	0.65	0.67	0.62	0.52	0.51	0.52	0.47	0.56	0.51	0.45	0.46	0.45	0.4	0	0.52	0.5	0.48
Group	Norm	1	0.58	0.62	0.64	0.54	0.65	0.64	0.5	0.5	0.52	0.47	0.55	0.51	0.45	0.46	0.45	0.4	0	0.52	0.49	0.48
Group	Norm	.95	0.6	0.62	0.64	0.54	0.61	0.64	0.52	0.51	0.52	0.47	0.55	0.51	0.45	0.46	0.45	0.4	0	0.52	0.49	0.48
Group	Mix	1	0.58	0.62	0.64	0.55	0.59	0.65	0.55	0.5	0.53	0.47	0.58	0.51	0.45	0.46	0.45	0.4	0	0.52	0.51	0.49
Group	Mix	.95	0.6	0.61	0.58	0.55	0.65	0.65	0.55	0.51	0.53	0.47	0.58	0.51	0.45	0.46	0.45	0.4	0	0.52	0.51	0.49
Reg	Unif	1	0.61	0.58	0.63	0.64	0.63	0.63	0.5	0.51	0.51	0.47	0.54	0.51	0.45	0.45	0.45	0.4	0	0.52	0.49	0.47
Reg	Unif	.95	0.63	0.62	0.63	0.64	0.65	0.63	0.51	0.51	0.5	0.46	0.54	0.51	0.45	0.45	0.45	0.4	0	0.52	0.5	0.48
Reg	Norm	1	0.58	0.62	0.63	0.54	0.63	0.64	0.5	0.51	0.51	0.47	0.54	0.51	0.45	0.45	0.45	0.4	0	0.52	0.49	0.48
Reg	Norm	.95	0.58	0.61	0.64	0.54	0.59	0.65	0.5	0.51	0.5	0.46	0.54	0.51	0.45	0.45	0.45	0.4	0	0.52	0.49	0.49
Reg	Mix	1	0.58	0.61	0.63	0.55	0.6	0.64	0.54	0.5	0.52	0.47	0.57	0.51	0.45	0.45	0.45	0.4	0	0.52	0.51	0.49
Reg	Mix	.95	0.58	0.6	0.57	0.55	0.63	0.64	0.54	0.5	0.51	0.47	0.56	0.51	0.45	0.45	0.45	0.4	0	0.52	0.5	0.49

Table 25: A table of the F-score for each method with different setup of using Pre Florence to predict Post Florence.



### 5.2.5 Pre Florence to Post Michael: Error

Data Transform			Grid Search Model						Bayesian Inf Model						Decision Tree			Logistic Regression		
Filled Latent	Prob	$\gamma$	None		Income		Prev E		None		Income		Prev E		Obs	Lat	Obs	Lat	Obs	Lat
			N	L	N	L	N	L	N	L	N	L	N	L						
None	Unif	1	10.89	12.73	10.15	11.99	9.96	12.18	17.71	17.9	15.87	19.74	14.21	18.45	37.82	21.77	22.69	24.72	19.19	16.79
None	Unif	.95	11.25	11.99	10.33	12.36	9.04	11.99	15.87	17.9	15.68	20.11	12.73	18.45	37.82	21.77	22.69	24.72	19.19	16.79
None	Norm	1	11.25	11.62	9.96	15.5	10.15	10.89	18.08	17.9	15.87	19.74	14.39	18.63	37.82	21.77	22.69	24.72	19.19	16.79
None	Norm	.95	11.62	12.18	10.7	15.87	11.07	10.52	16.05	17.9	15.5	19.74	14.02	18.27	37.82	21.77	22.69	24.72	19.19	16.79
None	Mix	1	11.25	12.18	9.78	15.13	11.07	10.7	14.58	18.27	15.31	19	13.1	18.82	37.82	21.77	22.69	24.72	19.19	16.79
None	Mix	.95	11.44	12.55	11.07	15.5	9.41	10.33	14.02	18.27	14.21	19.19	11.99	18.82	37.82	21.77	22.69	24.72	19.19	16.79

Table 26: A table of the error rate for each method with different setup of using Pre Florence to predict Post Michael.

### 5.2.6 Pre Florence to Post Michael: Recall

Data Transform			Grid Search Model						Bayesian Inf Model						Decision Tree			Logistic Regression		
Filled Latent	Prob	$\gamma$	None		Income		Prev E		None		Income		Prev E		Obs	Lat	Obs	Lat	Obs	Lat
			N	L	N	L	N	L	N	L	N	L	N	L						
None	Unif	1	0.67	0.76	0.65	0.71	0.79	0.82	0.73	0.85	0.76	0.84	0.82	0.86	0.54	0.74	0.68	0.66	0	0.62
None	Unif	.95	0.66	0.74	0.63	0.71	0.75	0.82	0.76	0.85	0.75	0.83	0.82	0.86	0.54	0.74	0.68	0.66	0	0.62
None	Norm	1	0.7	0.73	0.65	0.72	0.76	0.81	0.73	0.85	0.76	0.84	0.82	0.86	0.54	0.74	0.68	0.66	0	0.62
None	Norm	.95	0.7	0.71	0.63	0.7	0.8	0.81	0.75	0.85	0.75	0.84	0.81	0.86	0.54	0.74	0.68	0.66	0	0.62
None	Mix	1	0.71	0.76	0.66	0.73	0.8	0.82	0.75	0.86	0.75	0.85	0.82	0.86	0.54	0.74	0.68	0.66	0	0.62
None	Mix	.95	0.72	0.76	0.72	0.72	0.75	0.82	0.76	0.86	0.76	0.85	0.83	0.86	0.54	0.74	0.68	0.66	0	0.62

Table 27: A table of the recall for each method with different setup of using Pre Florence to predict Post Michael.

### 5.2.7 Pre Florence to Post Michael: Precision

Data Transform			Grid Search Model						Bayesian Inf Model						Decision Tree				Logistic Regression				
Filled Latent	Prob	$\gamma$	None		Income		None		Income		None		Income		Prev E	L	Obs	Lat	Obs	Lat	Obs	Lat	All
None	Unif	1	0.74	0.64	0.78	0.68	0.72	0.64	0.53	0.52	0.56	0.49	0.59	0.51	0.26	0.46	0.44	0.41	0	0.56	0.46	0.46	0.46
None	Unif	.95	0.73	0.67	0.79	0.67	0.77	0.65	0.56	0.52	0.57	0.49	0.63	0.51	0.26	0.46	0.44	0.41	0	0.56	0.47	0.46	0.46
None	Norm	1	0.71	0.68	0.79	0.58	0.72	0.68	0.52	0.56	0.49	0.59	0.51	0.26	0.46	0.44	0.41	0	0.56	0.45	0.45	0.46	0.46
None	Norm	.95	0.7	0.67	0.77	0.57	0.68	0.69	0.56	0.52	0.57	0.49	0.6	0.51	0.26	0.46	0.44	0.41	0	0.56	0.46	0.45	0.45
None	Mix	1	0.7	0.66	0.79	0.58	0.68	0.69	0.58	0.51	0.58	0.5	0.62	0.51	0.26	0.46	0.44	0.41	0	0.56	0.49	0.49	0.47
None	Mix	.95	0.69	0.65	0.71	0.58	0.76	0.7	0.61	0.51	0.6	0.5	0.65	0.51	0.26	0.46	0.44	0.41	0	0.56	0.48	0.48	0.47

Table 28: A table of the Precision for each method with different setup of using Pre Florence to predict Post Michael.

### 5.2.8 Pre Florence to Post Michael: F-score

Data Transform			Grid Search Model						Bayesian Inf Model						Decision Tree			Logistic Regression				
Filled Latent	Prob	$\gamma$	None		Income		Prev E		None		Income		Prev E		Obs	Lat	Obs	Lat	All			
			N	L	N	L	N	L	N	L	N	L	N	L								
None	Unif	1	0.7	0.7	0.71	0.69	0.75	0.72	0.61	0.64	0.65	0.62	0.69	0.64	0.35	0.57	0.54	0.51	0	0.59	0.55	0.56
None	Unif	.95	0.69	0.7	0.7	0.69	0.76	0.72	0.65	0.64	0.65	0.61	0.71	0.64	0.35	0.57	0.54	0.51	0	0.59	0.56	0.56
None	Norm	1	0.71	0.71	0.72	0.64	0.74	0.74	0.61	0.64	0.65	0.62	0.69	0.64	0.35	0.57	0.54	0.51	0	0.59	0.54	0.56
None	Norm	.95	0.7	0.69	0.69	0.63	0.73	0.75	0.64	0.64	0.65	0.62	0.69	0.64	0.35	0.57	0.54	0.51	0	0.59	0.56	0.56
None	Mix	1	0.71	0.71	0.72	0.65	0.73	0.75	0.66	0.64	0.65	0.63	0.71	0.64	0.35	0.57	0.54	0.51	0	0.59	0.55	0.56
None	Mix	.95	0.71	0.7	0.71	0.64	0.75	0.75	0.68	0.64	0.67	0.63	0.73	0.64	0.35	0.57	0.54	0.51	0	0.59	0.56	0.56

Table 29: A table of the F-score for each method with different setup of using Pre Florence to predict Post Michael.

### 5.2.9 Post Florence to Post Michael: Error

Data Transform			Grid Search Model						Bayesian Inf Model						Decision Tree				Logistic Regression				
Filled Latent	Prob	$\gamma$	None		Income		Prev E		None		Income		Prev E		Obs	Lat	Obs	Lat	All	Obs	Lat	Obs	All
			N	L	N	L	N	L	N	L	N	L	N	L									
Group	Unif	1	13.65	14.39	12.92	15.31	12.92	8.12	13.47	17.34	14.76	17.34	8.49	10.89	21.4	17.71	17.71	17.71	16.24	18.45	13.47	14.02	8.86
Group	Unif	.95	12.73	14.39	15.68	12.18	12.36	8.3	13.1	16.97	13.65	17.9	8.3	11.07	21.4	17.71	17.71	17.71	16.24	18.45	14.39	13.84	9.04
Group	Norm	1	12.73	14.21	11.81	15.13	13.1	8.49	14.02	17.16	14.94	16.97	8.3	11.07	21.4	17.71	17.71	17.71	16.24	18.45	13.47	14.02	9.04
Group	Norm	.95	12.73	13.47	12.36	13.1	14.39	8.49	12.73	17.34	14.02	17.16	8.12	11.07	21.4	17.71	17.71	17.71	16.24	18.45	14.39	13.84	9.04
Group	Mix	1	13.28	15.5	12.55	14.21	14.76	8.67	13.65	17.16	14.39	16.97	8.67	10.89	21.4	17.71	17.71	17.71	16.24	18.45	13.84	13.47	9.41
Group	Mix	.95	12.92	16.61	13.28	14.94	13.84	8.49	13.47	17.16	13.65	16.97	8.3	10.89	21.4	17.71	17.71	17.71	16.24	18.45	14.58	13.65	9.04
Reg	Unif	1	14.21	14.94	13.65	15.31	14.21	8.12	14.21	18.27	14.76	16.97	9.04	11.44	21.4	17.71	17.71	17.71	16.24	18.45	13.65	14.02	8.86
Reg	Unif	.95	14.21	13.84	17.53	13.1	13.1	8.3	13.1	18.08	14.39	17.71	8.86	11.25	21.4	17.71	17.71	17.71	16.24	18.45	14.39	13.84	9.04
Reg	Norm	1	12.92	14.02	12.18	15.87	13.84	8.49	13.65	18.08	14.94	17.9	9.04	11.25	21.4	17.71	17.71	17.71	16.24	18.45	14.39	13.84	9.04
Reg	Norm	.95	13.65	13.84	13.28	13.65	14.76	8.49	13.47	18.45	14.58	18.08	8.86	11.07	21.4	17.71	17.71	17.71	16.24	18.45	14.39	13.84	9.04
Reg	Mix	1	14.39	14.94	12.92	14.58	15.87	8.67	14.21	18.08	14.58	17.71	9.59	11.07	21.4	17.71	17.71	17.71	16.24	18.45	13.84	13.47	9.41
Reg	Mix	.95	14.02	16.97	13.84	15.5	14.94	8.49	13.65	18.08	14.21	18.08	9.41	11.07	21.4	17.71	17.71	17.71	16.24	18.45	14.58	13.65	9.04

Table 30: A table of the error rate for each method with different setup of using Post Florence to predict Post Michael.

### 5.2.10 Post Florence to Post Michael: Recall

Data Transform			Grid Search Model						Bayesian Inf Model						Decision Tree				Logistic Regression			
Filled Latent	Prob	$\gamma$	None		Income		Prev E		None		Income		Prev E		Obs	Lat	Obs	Lat	Obs	Lat	All	
			N	L	N	L	N	L	N	L	N	L	N	L								
Group	Unif	1	0.68	0.75	0.67	0.79	0.79	0.78	0.55	0.83	0.52	0.86	0.68	0.8	0.56	0.66	0.66	0.68	0.51	0.67	0.66	0.77
	Unif	.95	0.69	0.75	0.71	0.76	0.8	0.78	0.6	0.84	0.58	0.86	0.71	0.8	0.56	0.66	0.66	0.68	0.51	0.66	0.66	0.77
	Norm	1	0.67	0.8	0.67	0.81	0.78	0.77	0.55	0.84	0.51	0.85	0.7	0.8	0.56	0.66	0.66	0.68	0.51	0.67	0.66	0.76
Group	Norm	.95	0.69	0.75	0.7	0.76	0.84	0.77	0.63	0.84	0.56	0.85	0.71	0.8	0.56	0.66	0.66	0.68	0.51	0.66	0.66	0.77
	Mix	1	0.72	0.81	0.68	0.8	0.8	0.77	0.54	0.83	0.53	0.85	0.69	0.81	0.56	0.66	0.66	0.68	0.51	0.68	0.67	0.76
	Mix	.95	0.71	0.82	0.68	0.81	0.83	0.78	0.58	0.83	0.57	0.85	0.7	0.81	0.56	0.66	0.66	0.68	0.51	0.67	0.67	0.77
Reg	Unif	1	0.69	0.75	0.68	0.79	0.8	0.78	0.55	0.82	0.54	0.86	0.69	0.8	0.56	0.66	0.66	0.68	0.51	0.67	0.66	0.77
	Unif	.95	0.71	0.75	0.71	0.77	0.83	0.78	0.6	0.84	0.58	0.86	0.71	0.81	0.56	0.66	0.66	0.68	0.51	0.66	0.66	0.77
	Norm	1	0.69	0.8	0.69	0.8	0.78	0.76	0.58	0.83	0.53	0.85	0.69	0.8	0.56	0.66	0.66	0.68	0.51	0.67	0.66	0.76
Reg	Norm	.95	0.73	0.75	0.71	0.77	0.85	0.76	0.62	0.83	0.56	0.86	0.71	0.81	0.56	0.66	0.66	0.68	0.51	0.66	0.66	0.77
	Mix	1	0.73	0.82	0.7	0.81	0.82	0.76	0.54	0.83	0.53	0.85	0.68	0.81	0.56	0.66	0.66	0.68	0.51	0.68	0.67	0.76
	Mix	.95	0.73	0.82	0.7	0.81	0.83	0.78	0.58	0.83	0.57	0.85	0.7	0.81	0.56	0.66	0.66	0.68	0.51	0.67	0.67	0.77

Table 31: A table of the recall for each method with different setup of using Post Florence to predict Post Michael.

### 5.2.11 Post Florence to Post Michael: Precision

Data Transform		Grid Search Model						Bayesian Inf Model						Decision Tree			Logistic Regression		
		None		Income		Prev E		None		Income		Prev E		Obs	Lat	Obs	Lat	Obs	All
		N	L	N	L	N	L	N	L	N	L	N	L						
Filled Latent	Prob	$\gamma$																	
Group	Unif	1	0.63	0.6	0.66	0.57	0.63	0.79	0.63	0.64	0.53	0.85	0.69	0.45	0.53	0.52	0.64	0.63	0.77
Group	Unif	.95	0.66	0.6	0.57	0.66	0.64	0.79	0.68	0.54	0.67	0.83	0.68	0.45	0.53	0.52	0.62	0.63	0.76
Group	Norm	1	0.67	0.6	0.7	0.58	0.63	0.78	0.66	0.53	0.64	0.84	0.68	0.45	0.53	0.52	0.64	0.63	0.77
Group	Norm	.95	0.66	0.62	0.67	0.63	0.59	0.78	0.68	0.53	0.66	0.83	0.68	0.45	0.53	0.52	0.62	0.63	0.76
Group	Mix	1	0.64	0.57	0.67	0.6	0.58	0.78	0.68	0.53	0.65	0.83	0.68	0.45	0.53	0.52	0.63	0.64	0.75
Group	Mix	.95	0.65	0.54	0.65	0.58	0.6	0.78	0.67	0.53	0.67	0.84	0.68	0.45	0.53	0.52	0.61	0.64	0.76
Reg	Unif	1	0.62	0.59	0.63	0.57	0.6	0.79	0.66	0.52	0.64	0.81	0.67	0.45	0.53	0.52	0.64	0.63	0.77
Reg	Unif	.95	0.61	0.61	0.53	0.63	0.62	0.79	0.68	0.52	0.64	0.8	0.67	0.45	0.53	0.52	0.62	0.63	0.76
Reg	Norm	1	0.65	0.6	0.68	0.56	0.61	0.79	0.67	0.52	0.63	0.81	0.67	0.45	0.53	0.52	0.64	0.63	0.77
Reg	Norm	.95	0.62	0.61	0.64	0.62	0.58	0.79	0.66	0.51	0.64	0.8	0.68	0.45	0.53	0.52	0.62	0.63	0.76
Reg	Mix	1	0.6	0.58	0.65	0.59	0.56	0.78	0.66	0.52	0.65	0.8	0.68	0.45	0.53	0.52	0.63	0.64	0.75
Reg	Mix	.95	0.61	0.54	0.62	0.57	0.58	0.78	0.67	0.52	0.65	0.78	0.68	0.45	0.53	0.52	0.61	0.64	0.76

Table 32: A table of the precision for each method with different setup of using Post Florence to predict Post Michael.

### 5.2.12 Post Florence to Post Michael: F-score

Data Transform		Grid Search Model						Bayesian Inf Model						Decision Tree			Logistic Regression		
		None		Income		Prev E		None		Income		Prev E		Obs	Lat	Obs	Lat	Obs	All
		N	L	N	L	N	L	N	L	N	L	N	L						
Filled Latent	Prob	$\gamma$																	
Group	Unif	1	0.66	0.67	0.67	0.66	0.7	0.79	0.61	0.65	0.57	0.65	0.76	0.74	0.5	0.59	0.62	0.64	0.77
Group	Unif	.95	0.68	0.67	0.64	0.71	0.71	0.78	0.64	0.65	0.62	0.65	0.77	0.73	0.5	0.59	0.62	0.64	0.77
Group	Norm	1	0.67	0.68	0.69	0.67	0.7	0.78	0.6	0.65	0.57	0.66	0.76	0.73	0.5	0.59	0.62	0.64	0.76
Group	Norm	.95	0.68	0.68	0.69	0.69	0.69	0.78	0.66	0.65	0.6	0.65	0.77	0.73	0.5	0.59	0.62	0.64	0.77
Group	Mix	1	0.68	0.67	0.68	0.68	0.67	0.77	0.6	0.65	0.59	0.66	0.75	0.74	0.5	0.59	0.62	0.65	0.76
Group	Mix	.95	0.68	0.65	0.66	0.67	0.7	0.78	0.62	0.65	0.61	0.66	0.76	0.74	0.5	0.59	0.62	0.65	0.77
Reg	Unif	1	0.65	0.66	0.66	0.66	0.68	0.79	0.6	0.63	0.58	0.66	0.75	0.73	0.5	0.59	0.62	0.64	0.77
Reg	Unif	.95	0.66	0.68	0.61	0.69	0.71	0.78	0.64	0.64	0.61	0.65	0.76	0.73	0.5	0.59	0.62	0.64	0.77
Reg	Norm	1	0.67	0.69	0.69	0.66	0.68	0.77	0.62	0.64	0.58	0.64	0.75	0.73	0.5	0.59	0.62	0.64	0.76
Reg	Norm	.95	0.67	0.68	0.67	0.68	0.69	0.77	0.64	0.63	0.59	0.64	0.76	0.74	0.5	0.59	0.62	0.64	0.77
Reg	Mix	1	0.66	0.68	0.68	0.68	0.66	0.77	0.59	0.64	0.58	0.65	0.73	0.74	0.5	0.59	0.62	0.65	0.76
Reg	Mix	.95	0.67	0.65	0.66	0.67	0.68	0.78	0.62	0.64	0.61	0.64	0.74	0.74	0.5	0.59	0.62	0.64	0.77

Table 33: A table of the F-score for each method with different setup of using Post Florence to predict Post Michael.

### 5.2.13 Post Michael to Post Florence: Error

Data Transform		Grid Search Model						Bayesian Inf Model						Decision Tree			Logistic Regression		
Filled Latent	Prob	$\gamma$	None		Income		Prev E		None		Income		Prev E		Obs	Lat	Obs	Lat	All
			N	L	N	L	N	L	N	L	N	L	N	L					
Group	Unif	1	10.82	11.4	10.23	12.13	10.23	6.43	10.67	13.74	11.7	13.74	6.73	8.63	16.96	14.04	14.04	14.62	11.11
Group	Unif	.95	10.09	11.4	12.43	9.65	9.8	6.58	10.38	13.45	10.82	14.18	6.58	8.77	16.96	14.04	14.04	14.62	11.4
Group	Norm	1	10.09	11.26	9.36	11.99	10.38	6.73	11.11	13.6	11.84	13.45	6.58	8.77	16.96	14.04	14.04	14.62	11.11
Group	Norm	.95	10.09	10.67	9.8	10.38	11.4	6.73	10.09	13.74	11.11	13.6	6.43	8.77	16.96	14.04	14.04	14.62	11.4
Group	Mix	1	10.53	12.28	9.94	11.26	11.7	6.87	10.82	13.6	11.4	13.45	6.87	8.63	16.96	14.04	14.04	14.62	10.67
Group	Mix	.95	10.23	13.16	10.53	11.84	10.96	6.73	10.67	13.6	10.82	13.45	6.58	8.63	16.96	14.04	14.04	14.62	11.55
Reg	Unif	1	11.26	11.84	10.82	12.13	11.26	6.43	11.26	14.47	11.7	13.45	7.16	9.06	16.96	14.04	14.04	14.62	11.11
Reg	Unif	.95	11.26	10.96	13.89	10.38	10.38	6.58	10.38	14.33	11.4	14.04	7.02	8.92	16.96	14.04	14.04	14.62	11.4
Reg	Norm	1	10.23	11.11	9.65	12.57	10.96	6.73	10.82	14.33	11.84	14.18	7.16	8.92	16.96	14.04	14.04	14.62	11.11
Reg	Norm	.95	10.82	10.96	10.53	10.82	11.7	6.73	10.67	14.62	11.55	14.33	7.02	8.77	16.96	14.04	14.04	14.62	11.4
Reg	Mix	1	11.4	11.84	10.23	11.55	12.57	6.87	11.26	14.33	11.55	14.04	7.6	8.77	16.96	14.04	14.04	14.62	10.67
Reg	Mix	.95	11.11	13.45	10.96	12.28	11.84	6.73	10.82	14.33	11.26	14.33	7.46	8.77	16.96	14.04	14.04	14.62	11.55

Table 34: A table of the error rate for each method with different setup of using Post Michael to predict Post Florence.

### 5.2.14 Post Michael to Post Florence: Recall

Data Transform		Grid Search Model						Bayesian Inf Model						Decision Tree			Logistic Regression		
Filled Latent	Prob	$\gamma$	None		Income		Prev E		None		Income		Prev E		Obs	Lat	Obs	Lat	All
			N	L	N	L	N	L	N	L	N	L	N	L					
Group	Unif	1	0.68	0.75	0.67	0.79	0.79	0.78	0.55	0.83	0.52	0.86	0.68	0.8	0.56	0.66	0.66	0.66	0.77
Group	Unif	.95	0.69	0.75	0.71	0.76	0.8	0.78	0.6	0.84	0.58	0.86	0.71	0.8	0.56	0.66	0.66	0.66	0.77
Group	Norm	1	0.67	0.8	0.67	0.81	0.78	0.77	0.55	0.84	0.51	0.85	0.7	0.8	0.56	0.66	0.66	0.66	0.76
Group	Norm	.95	0.69	0.75	0.7	0.76	0.84	0.77	0.63	0.84	0.56	0.85	0.71	0.8	0.56	0.66	0.66	0.66	0.77
Group	Mix	1	0.72	0.81	0.68	0.8	0.8	0.77	0.54	0.83	0.53	0.85	0.69	0.81	0.56	0.66	0.66	0.68	0.76
Group	Mix	.95	0.71	0.82	0.68	0.81	0.83	0.78	0.58	0.83	0.57	0.85	0.7	0.81	0.56	0.66	0.66	0.67	0.77
Reg	Unif	1	0.69	0.75	0.68	0.79	0.8	0.78	0.55	0.82	0.54	0.86	0.69	0.8	0.56	0.66	0.66	0.66	0.77
Reg	Unif	.95	0.71	0.75	0.71	0.77	0.83	0.78	0.6	0.84	0.58	0.86	0.71	0.81	0.56	0.66	0.66	0.66	0.77
Reg	Norm	1	0.69	0.8	0.69	0.8	0.78	0.76	0.58	0.83	0.53	0.85	0.69	0.8	0.56	0.66	0.66	0.66	0.76
Reg	Norm	.95	0.73	0.75	0.71	0.77	0.85	0.76	0.62	0.83	0.56	0.86	0.71	0.81	0.56	0.66	0.66	0.66	0.77
Reg	Mix	1	0.73	0.82	0.7	0.81	0.82	0.76	0.54	0.83	0.53	0.85	0.68	0.81	0.56	0.66	0.66	0.67	0.76
Reg	Mix	.95	0.73	0.82	0.7	0.81	0.83	0.78	0.58	0.83	0.57	0.85	0.7	0.81	0.56	0.66	0.66	0.67	0.77

Table 35: A table of the recall for each method with different setup of using Post Michael to predict Post Florence.

### 5.2.15 Post Michael to Post Florence: Precision

Data Transform		Grid Search Model						Bayesian Inf Model						Decision Tree			Logistic Regression		
		None			Income			None			Income			Obs	Lat	All	Obs	Lat	All
		N	L	N	N	L	N	N	L	N	N	L	N						
Filled Latent	Prob	$\gamma$																	
Group	Unif	1	0.63	0.6	0.66	0.57	0.63	0.79	0.63	0.64	0.53	0.64	0.53	0.45	0.53	0.56	0.52	0.64	0.77
Group	Unif	.95	0.66	0.6	0.57	0.66	0.64	0.79	0.68	0.54	0.67	0.52	0.83	0.68	0.53	0.56	0.52	0.62	0.76
Group	Norm	1	0.67	0.6	0.7	0.58	0.63	0.78	0.66	0.53	0.64	0.54	0.84	0.68	0.53	0.56	0.52	0.64	0.77
Group	Norm	.95	0.66	0.62	0.67	0.63	0.59	0.78	0.68	0.53	0.66	0.53	0.84	0.68	0.45	0.56	0.52	0.62	0.76
Group	Mix	1	0.64	0.57	0.67	0.6	0.58	0.78	0.68	0.53	0.65	0.54	0.83	0.68	0.45	0.56	0.52	0.63	0.75
Group	Mix	.95	0.65	0.54	0.65	0.58	0.6	0.78	0.67	0.53	0.67	0.54	0.84	0.68	0.45	0.56	0.52	0.61	0.76
Reg	Unif	1	0.62	0.59	0.63	0.57	0.6	0.79	0.66	0.52	0.64	0.54	0.81	0.67	0.45	0.56	0.52	0.64	0.77
Reg	Unif	.95	0.61	0.61	0.53	0.63	0.62	0.79	0.68	0.52	0.64	0.52	0.8	0.67	0.45	0.56	0.52	0.62	0.76
Reg	Norm	1	0.65	0.6	0.68	0.56	0.61	0.79	0.67	0.52	0.63	0.52	0.81	0.67	0.45	0.56	0.52	0.64	0.77
Reg	Norm	.95	0.62	0.61	0.64	0.62	0.58	0.79	0.66	0.51	0.64	0.52	0.8	0.68	0.45	0.56	0.52	0.62	0.76
Reg	Mix	1	0.6	0.58	0.65	0.59	0.56	0.78	0.66	0.52	0.65	0.52	0.79	0.68	0.45	0.56	0.52	0.63	0.75
Reg	Mix	.95	0.61	0.54	0.62	0.57	0.58	0.78	0.67	0.52	0.65	0.52	0.78	0.68	0.45	0.56	0.52	0.61	0.76

Table 36: A table of the precision for each method with different setup of using Post Michael to predict Post Florence.

### 5.2.16 Post Michael to Post Florence: F-score

Data Transform		Grid Search Model						Bayesian Inf Model						Decision Tree			Logistic Regression		
		None			Income			None			Income			Obs	Lat	All	Obs	Lat	All
		N	L	N	N	L	N	N	L	N	N	L	N						
Filled Latent	Prob	$\gamma$																	
Group	Unif	1	0.66	0.67	0.67	0.66	0.7	0.79	0.61	0.65	0.57	0.65	0.76	0.74	0.5	0.59	0.51	0.66	0.77
Group	Unif	.95	0.68	0.67	0.64	0.71	0.71	0.78	0.64	0.65	0.62	0.65	0.77	0.73	0.5	0.59	0.51	0.64	0.77
Group	Norm	1	0.67	0.68	0.69	0.67	0.7	0.78	0.6	0.65	0.57	0.66	0.76	0.73	0.5	0.59	0.51	0.66	0.76
Group	Norm	.95	0.68	0.68	0.69	0.69	0.69	0.78	0.66	0.65	0.6	0.65	0.77	0.73	0.5	0.59	0.51	0.64	0.77
Group	Mix	1	0.68	0.67	0.68	0.68	0.67	0.77	0.6	0.65	0.59	0.66	0.75	0.74	0.5	0.59	0.51	0.65	0.76
Group	Mix	.95	0.68	0.65	0.66	0.67	0.7	0.78	0.62	0.65	0.61	0.66	0.76	0.74	0.5	0.59	0.51	0.64	0.77
Reg	Unif	1	0.65	0.66	0.66	0.66	0.68	0.79	0.6	0.63	0.58	0.66	0.75	0.73	0.5	0.59	0.51	0.65	0.77
Reg	Unif	.95	0.66	0.68	0.61	0.69	0.71	0.78	0.64	0.64	0.61	0.65	0.76	0.73	0.5	0.59	0.51	0.64	0.77
Reg	Norm	1	0.67	0.69	0.69	0.66	0.68	0.77	0.62	0.64	0.58	0.64	0.75	0.73	0.5	0.59	0.51	0.66	0.76
Reg	Norm	.95	0.67	0.68	0.67	0.68	0.69	0.77	0.64	0.63	0.59	0.64	0.76	0.74	0.5	0.59	0.51	0.64	0.77
Reg	Mix	1	0.66	0.68	0.68	0.68	0.66	0.77	0.59	0.64	0.58	0.65	0.73	0.74	0.5	0.59	0.51	0.65	0.76
Reg	Mix	.95	0.67	0.65	0.66	0.67	0.68	0.78	0.62	0.64	0.61	0.64	0.74	0.74	0.5	0.59	0.51	0.64	0.77

Table 37: A table of the F-score for each method with different setup of using Post Michael to predict Post Florence.

### 5.3 Across dataset using only observable features

#### 5.3.1 Pre Florence to Post Florence Obs Only: Error

Data Transform			Grid Search Model						Bayesian Inf Model						Tree	Logit
Filled Latent	Prob	$\gamma$	None		Income		Evac N		None		Income		Evac N		Obs	Obs
			N	L	N	L	N	L	N	L	N	L	N	L		
None	Unif	1	17.69	14.91	17.84	14.47	18.13	14.18	19.15	16.08	18.13	18.42	18.57	17.84	23.39	15.2
None	Unif	.95	16.52	14.62	17.4	14.77	17.11	13.45	17.98	16.96	16.67	18.27	17.69	17.84	23.39	15.2
None	Norm	1	18.42	14.91	18.42	21.2	18.71	14.91	16.96	15.06	19.88	17.54	16.37	16.52	23.39	15.2
None	Norm	.95	16.52	14.62	16.96	21.78	16.67	19.74	15.79	17.54	17.4	16.96	15.64	16.81	23.39	15.2
None	Mix	1	18.27	14.62	18.27	21.2	18.13	19.74	19.44	16.08	17.98	18.57	19.01	18.13	23.39	15.2
None	Mix	.95	16.67	14.33	16.67	21.78	16.67	19.88	18.13	17.11	17.54	18.71	17.4	18.13	23.39	15.2

Table 38: A table of the error rate for each method with different setup of using Pre Florence to predict Post Florence using only observable features.

#### 5.3.2 Pre Florence to Post Florence Obs Only: Recall

Data Transform			Grid Search Model						Bayesian Inf Model						Tree	Logit
Filled Latent	Prob	$\gamma$	None		Income		Evac N		None		Income		Evac N		Obs	Obs
			N	L	N	L	N	L	N	L	N	L	N	L		
None	Unif	1	0.33	0.16	0.33	0.2	0.38	0.52	0.49	0.42	0.5	0.48	0.47	0.39	0.62	0
None	Unif	.95	0.36	0.15	0.36	0.19	0.5	0.54	0.52	0.48	0.54	0.47	0.52	0.39	0.62	0
None	Norm	1	0.32	0.16	0.32	0.38	0.38	0.16	0.44	0.45	0.45	0.48	0.49	0.37	0.62	0
None	Norm	.95	0.38	0.14	0.35	0.37	0.38	0.35	0.5	0.45	0.51	0.5	0.51	0.37	0.62	0
None	Mix	1	0.33	0.16	0.33	0.38	0.41	0.35	0.49	0.46	0.52	0.48	0.5	0.4	0.62	0
None	Mix	.95	0.4	0.18	0.4	0.38	0.48	0.35	0.52	0.51	0.56	0.46	0.54	0.41	0.62	0

Table 39: A table of the recall for each method with different setup of using Pre Florence to predict Post Florence using only observable features.

#### 5.3.3 Pre Florence to Post Florence Obs Only: Precision

Data Transform			Grid Search Model						Bayesian Inf Model						Tree	Logit
Filled Latent	Prob	$\gamma$	None		Income		Evac N		None		Income		Evac N		Obs	Obs
			N	L	N	L	N	L	N	L	N	L	N	L		
None	Unif	1	0.4	0.53	0.4	0.57	0.4	0.53	0.4	0.47	0.42	0.41	0.4	0.41	0.35	0
None	Unif	.95	0.45	0.57	0.42	0.54	0.44	0.56	0.43	0.45	0.46	0.41	0.43	0.41	0.35	0
None	Norm	1	0.38	0.53	0.38	0.33	0.38	0.53	0.44	0.51	0.37	0.43	0.46	0.45	0.35	0
None	Norm	.95	0.45	0.58	0.43	0.31	0.44	0.35	0.48	0.43	0.44	0.45	0.49	0.44	0.35	0
None	Mix	1	0.38	0.57	0.38	0.33	0.41	0.35	0.39	0.47	0.43	0.41	0.4	0.4	0.35	0
None	Mix	.95	0.45	0.59	0.45	0.32	0.45	0.35	0.42	0.45	0.44	0.4	0.44	0.41	0.35	0

Table 40: A table of the Precision for each method with different setup of using Pre Florence to predict Post Florence using only observable features.

#### 5.3.4 Pre Florence to Post Florence Obs Only: F-score

Data Transform			Grid Search Model						Bayesian Inf Model						Tree	Logit
Filled Latent	Prob	$\gamma$	None		Income		Evac N		None		Income		Evac N		Obs	Obs
			N	L	N	L	N	L	N	L	N	L	N	L		
None	Unif	1	0.36	0.25	0.36	0.3	0.39	0.53	0.44	0.44	0.46	0.44	0.44	0.4	0.45	0
None	Unif	.95	0.4	0.24	0.38	0.28	0.47	0.55	0.47	0.46	0.5	0.44	0.47	0.4	0.45	0
None	Norm	1	0.34	0.25	0.34	0.35	0.38	0.25	0.44	0.48	0.41	0.45	0.48	0.4	0.45	0
None	Norm	.95	0.41	0.23	0.38	0.34	0.41	0.35	0.49	0.44	0.47	0.47	0.5	0.4	0.45	0
None	Mix	1	0.35	0.25	0.35	0.35	0.41	0.35	0.43	0.47	0.47	0.44	0.44	0.4	0.45	0
None	Mix	.95	0.42	0.28	0.42	0.34	0.47	0.35	0.47	0.48	0.49	0.43	0.48	0.41	0.45	0

Table 41: A table of the F-score for each method with different setup of using Pre Florence to predict Post Florence using only observable features.

### 5.3.5 Pre Florence to Post Michael Obs Only: Error

Data Transform			Grid Search Model						Bayesian Inf Model						Tree	Logit
Filled Latent	Prob	$\gamma$	None		Income		Evac N		None		Income		Evac N		Obs	Obs
			N	L	N	L	N	L	N	L	N	L	N	L		
None	Unif	1	22.32	16.61	22.32	16.97	21.4	16.61	19.19	16.97	19.56	16.42	19	17.71	21.4	18.08
None	Unif	.95	21.4	16.97	21.4	17.16	20.11	16.61	19	16.97	19.37	16.42	18.82	17.71	21.4	18.08
None	Norm	1	22.32	17.16	22.32	17.34	21.4	17.71	18.82	16.97	19.37	16.61	19	17.9	21.4	18.08
None	Norm	.95	21.4	17.16	21.4	17.16	20.85	17.9	18.82	16.97	19.19	16.61	18.82	17.9	21.4	18.08
None	Mix	1	22.32	16.97	22.32	16.79	21.22	17.9	19.74	16.97	19.19	16.61	19	17.71	21.4	18.08
None	Mix	.95	21.4	16.97	21.4	16.79	20.3	17.9	18.82	16.97	19	16.61	18.82	17.71	21.4	18.08

Table 42: A table of the error rate for each method with different setup of using Pre Florence to predict Post Michael using only observable features.

### 5.3.6 Pre Florence to Post Michael Obs Only: Recall

Data Transform			Grid Search Model						Bayesian Inf Model						Tree	Logit
Filled Latent	Prob	$\gamma$	None		Income		Evac N		None		Income		Evac N		Obs	Obs
			N	L	N	L	N	L	N	L	N	L	N	L		
None	Unif	1	0.21	0.36	0.21	0.35	0.46	0.37	0.19	0.36	0.18	0.37	0.53	0.51	0.56	0.53
None	Unif	.95	0.21	0.34	0.21	0.33	0.45	0.37	0.19	0.36	0.18	0.37	0.5	0.51	0.56	0.53
None	Norm	1	0.21	0.34	0.21	0.33	0.46	0.52	0.19	0.36	0.19	0.37	0.53	0.5	0.56	0.53
None	Norm	.95	0.21	0.33	0.21	0.33	0.41	0.52	0.19	0.36	0.19	0.37	0.5	0.5	0.56	0.53
None	Mix	1	0.21	0.36	0.21	0.35	0.45	0.52	0.19	0.36	0.2	0.37	0.53	0.51	0.56	0.53
None	Mix	.95	0.21	0.36	0.21	0.35	0.44	0.52	0.19	0.36	0.2	0.37	0.51	0.51	0.56	0.53

Table 43: A table of the recall for each method with different setup of using Pre Florence to predict Post Michael using only observable features.

### 5.3.7 Pre Florence to Post Michael Obs Only: Precision

Data Transform			Grid Search Model						Bayesian Inf Model						Tree	Logit
Filled Latent	Prob	$\gamma$	None		Income		Evac N		None		Income		Evac N		Obs	Obs
			N	L	N	L	N	L	N	L	N	L	N	L		
None	Unif	1	0.36	0.62	0.36	0.6	0.44	0.61	0.5	0.6	0.48	0.62	0.5	0.54	0.45	0.53
None	Unif	.95	0.39	0.6	0.39	0.6	0.47	0.61	0.51	0.6	0.49	0.62	0.51	0.54	0.45	0.53
None	Norm	1	0.36	0.59	0.36	0.59	0.44	0.54	0.53	0.6	0.49	0.61	0.5	0.54	0.45	0.53
None	Norm	.95	0.39	0.6	0.39	0.6	0.45	0.53	0.53	0.6	0.5	0.61	0.51	0.54	0.45	0.53
None	Mix	1	0.36	0.6	0.36	0.61	0.45	0.53	0.47	0.6	0.5	0.61	0.5	0.54	0.45	0.53
None	Mix	.95	0.39	0.6	0.39	0.61	0.47	0.53	0.53	0.6	0.51	0.61	0.51	0.54	0.45	0.53

Table 44: A table of the precision for each method with different setup of using Pre Florence to predict Post Michael using only observable features.



### 5.3.8 Pre Florence to Post Michael Obs Only: F-score

Data Transform			Grid Search Model						Bayesian Inf Model						Tree	Logit
Filled Latent	Prob	$\gamma$	None		Income		Evac N		None		Income		Evac N		Obs	Obs
			N	L	N	L	N	L	N	L	N	L	N	L		
None	Unif	1	0.27	0.45	0.27	0.44	0.45	0.46	0.28	0.45	0.26	0.46	0.52	0.52	0.5	0.53
None	Unif	.95	0.28	0.43	0.28	0.42	0.46	0.46	0.28	0.45	0.27	0.46	0.5	0.52	0.5	0.53
None	Norm	1	0.27	0.43	0.27	0.42	0.45	0.53	0.28	0.45	0.28	0.46	0.52	0.52	0.5	0.53
None	Norm	.95	0.28	0.42	0.28	0.42	0.43	0.53	0.28	0.45	0.28	0.46	0.5	0.52	0.5	0.53
None	Mix	1	0.27	0.45	0.27	0.44	0.45	0.53	0.27	0.45	0.29	0.46	0.52	0.52	0.5	0.53
None	Mix	.95	0.28	0.45	0.28	0.44	0.46	0.53	0.28	0.45	0.29	0.46	0.51	0.52	0.5	0.53

Table 45: A table of the F-score for each method with different setup of using Pre Florence to predict Post Michael using only observable features.

### 5.3.9 Post Florence to Post Michael Obs Only: Error

Data Transform			Grid Search Model						Bayesian Inf Model						Tree	Logit
Filled Latent	Prob	$\gamma$	None		Income		Evac N		None		Income		Evac N		Obs	Obs
			N	L	N	L	N	L	N	L	N	L	N	L		
None	Unif	1	18.63	22.14	18.63	22.51	17.9	21.96	19.93	21.59	20.48	22.32	15.68	20.66	23.25	17.34
None	Unif	.95	22.69	22.14	22.51	23.25	21.59	21.77	19.74	21.59	19.74	21.96	17.53	20.66	23.25	17.34
None	Norm	1	18.63	21.96	19.93	23.43	17.71	21.77	19.93	21.59	19.93	21.96	16.24	19.93	23.25	17.34
None	Norm	.95	22.69	21.96	22.32	23.43	21.59	21.77	20.3	21.59	21.96	21.96	17.53	19.93	23.25	17.34
None	Mix	1	18.82	21.96	19.74	22.51	18.08	21.77	19.93	21.59	19.93	21.96	16.24	19.93	23.25	17.34
None	Mix	.95	22.69	21.96	22.32	23.43	21.59	21.77	20.11	21.59	21.96	21.96	17.34	19.93	23.25	17.34

Table 46: A table of the error rate for each method with different setup of using Post Florence to predict Post Michael using only observable features.

### 5.3.10 Post Florence to Post Michael Obs Only: Recall

Data Transform			Grid Search Model						Bayesian Inf Model						Tree	Logit
Filled Latent	Prob	$\gamma$	None		Income		Evac N		None		Income		Evac N		Obs	Obs
			N	L	N	L	N	L	N	L	N	L	N	L		
None	Unif	1	0.18	0.11	0.17	0.15	0.24	0.12	0.07	0.11	0.04	0.15	0.27	0.13	0.42	0.28
None	Unif	.95	0.13	0.11	0.08	0.15	0.17	0.12	0.05	0.11	0.05	0.11	0.12	0.13	0.42	0.28
None	Norm	1	0.18	0.11	0.23	0.16	0.26	0.12	0.07	0.11	0.07	0.14	0.24	0.17	0.42	0.28
None	Norm	.95	0.13	0.11	0.09	0.16	0.21	0.12	0.05	0.11	0.07	0.14	0.19	0.17	0.42	0.28
None	Mix	1	0.17	0.11	0.18	0.15	0.29	0.12	0.07	0.11	0.07	0.14	0.24	0.17	0.42	0.28
None	Mix	.95	0.12	0.11	0.12	0.16	0.21	0.12	0.06	0.11	0.08	0.14	0.2	0.17	0.42	0.28

Table 47: A table of the recall for each method with different setup of using Post Florence to predict Post Michael using only observable features.

### 5.3.11 Post Florence to Post Michael Obs Only: Precision

Data Transform			Grid Search Model						Bayesian Inf Model						Tree	Logit
Filled Latent	Prob	$\gamma$	None		Income		Evac N		None		Income		Evac N		Obs	Obs
			N	L	N	L	N	L	N	L	N	L	N	L		
None	Unif	1	0.54	0.29	0.55	0.32	0.58	0.31	0.39	0.31	0.27	0.33	0.76	0.39	0.4	0.6
None	Unif	.95	0.3	0.29	0.24	0.3	0.37	0.32	0.38	0.31	0.38	0.3	0.8	0.39	0.4	0.6
None	Norm	1	0.54	0.3	0.46	0.3	0.59	0.32	0.39	0.31	0.39	0.33	0.74	0.45	0.4	0.6
None	Norm	.95	0.3	0.3	0.26	0.3	0.39	0.32	0.31	0.31	0.24	0.33	0.65	0.45	0.4	0.6
None	Mix	1	0.53	0.3	0.46	0.32	0.56	0.32	0.39	0.31	0.39	0.33	0.74	0.45	0.4	0.6
None	Mix	.95	0.28	0.3	0.3	0.3	0.39	0.32	0.35	0.31	0.26	0.33	0.66	0.45	0.4	0.6

Table 48: A table of the precision for each method with different setup of using Post Florence to predict Post Michael using only observable features.

### 5.3.12 Post Florence to Post Michael Obs Only: F-score

Data Transform			Grid Search Model								Bayesian Inf Model						Tree	Logit
Filled Latent	Prob	$\gamma$	None		Income		Evac N		None		Income		Evac N		Obs	Obs		
			N	L	N	L	N	L	N	L	N	L	N	L				
None	Unif	1	0.27	0.15	0.26	0.21	0.34	0.17	0.11	0.16	0.07	0.21	0.4	0.2	0.41	0.38		
None	Unif	.95	0.19	0.15	0.12	0.2	0.24	0.17	0.09	0.16	0.09	0.16	0.2	0.2	0.41	0.38		
None	Norm	1	0.27	0.16	0.31	0.21	0.36	0.17	0.11	0.16	0.11	0.2	0.36	0.25	0.41	0.38		
None	Norm	.95	0.19	0.16	0.13	0.21	0.27	0.17	0.08	0.16	0.11	0.2	0.3	0.25	0.41	0.38		
None	Mix	1	0.26	0.16	0.26	0.21	0.38	0.17	0.11	0.16	0.11	0.2	0.36	0.25	0.41	0.38		
None	Mix	.95	0.16	0.16	0.18	0.21	0.27	0.17	0.1	0.16	0.12	0.2	0.31	0.25	0.41	0.38		

Table 49: A table of the F-score for each method with different setup of using Post Florence to predict Post Michael using only observable features.

### 5.3.13 Post Michael to Post Florence Obs Only: Error

Data Transform			Grid Search Model								Bayesian Inf Model						Tree	Logit
Filled Latent	Prob	$\gamma$	None		Income		Evac N		None		Income		Evac N		Obs	Obs		
			N	L	N	L	N	L	N	L	N	L	N	L				
None	Unif	1	17.69	13.16	17.69	13.45	16.96	13.16	15.2	13.45	15.5	13.01	15.06	14.04	16.96	14.33		
None	Unif	.95	16.96	13.45	16.96	13.6	15.94	13.16	15.06	13.45	15.35	13.01	14.91	14.04	16.96	14.33		
None	Norm	1	17.69	13.6	17.69	13.74	16.96	14.04	14.91	13.45	15.35	13.16	15.06	14.18	16.96	14.33		
None	Norm	.95	16.96	13.6	16.96	13.6	16.52	14.18	14.91	13.45	15.2	13.16	14.91	14.18	16.96	14.33		
None	Mix	1	17.69	13.45	17.69	13.3	16.81	14.18	15.64	13.45	15.2	13.16	15.06	14.04	16.96	14.33		
None	Mix	.95	16.96	13.45	16.96	13.3	16.08	14.18	14.91	13.45	15.06	13.16	14.91	14.04	16.96	14.33		

Table 50: A table of the error rate for each method with different setup of using Post Michael to predict Post Florence using only observable features.

### 5.3.14 Post Michael to Post Florence Obs Only: Recall

Data Transform			Grid Search Model								Bayesian Inf Model						Tree	Logit
Filled Latent	Prob	$\gamma$	None		Income		Evac N		None		Income		Evac N		Obs	Obs		
			N	L	N	L	N	L	N	L	N	L	N	L				
None	Unif	1	0.21	0.36	0.21	0.35	0.46	0.37	0.19	0.36	0.18	0.37	0.53	0.51	0.56	0.53		
None	Unif	.95	0.21	0.34	0.21	0.33	0.45	0.37	0.19	0.36	0.18	0.37	0.5	0.51	0.56	0.53		
None	Norm	1	0.21	0.34	0.21	0.33	0.46	0.52	0.19	0.36	0.19	0.37	0.53	0.5	0.56	0.53		
None	Norm	.95	0.21	0.33	0.21	0.33	0.41	0.52	0.19	0.36	0.19	0.37	0.5	0.5	0.56	0.53		
None	Mix	1	0.21	0.36	0.21	0.35	0.45	0.52	0.19	0.36	0.2	0.37	0.53	0.51	0.56	0.53		
None	Mix	.95	0.21	0.36	0.21	0.35	0.44	0.52	0.19	0.36	0.2	0.37	0.51	0.51	0.56	0.53		

Table 51: A table of the recall for each method with different setup of using Post Michael to predict Post Florence using only observable features.

### 5.3.15 Post Michael to Post Florence Obs Only: Precision

Data Transform			Grid Search Model								Bayesian Inf Model						Tree	Logit
Filled Latent	Prob	$\gamma$	None		Income		Evac N		None		Income		Evac N		Obs	Obs		
			N	L	N	L	N	L	N	L	N	L	N	L				
None	Unif	1	0.36	0.62	0.36	0.6	0.44	0.61	0.5	0.6	0.48	0.62	0.5	0.54	0.45	0.53		
None	Unif	.95	0.39	0.6	0.39	0.6	0.47	0.61	0.51	0.6	0.49	0.62	0.51	0.54	0.45	0.53		
None	Norm	1	0.36	0.59	0.36	0.59	0.44	0.54	0.53	0.6	0.49	0.61	0.5	0.54	0.45	0.53		
None	Norm	.95	0.39	0.6	0.39	0.6	0.45	0.53	0.53	0.6	0.5	0.61	0.51	0.54	0.45	0.53		
None	Mix	1	0.36	0.6	0.36	0.61	0.45	0.53	0.47	0.6	0.5	0.61	0.5	0.54	0.45	0.53		
None	Mix	.95	0.39	0.6	0.39	0.61	0.47	0.53	0.53	0.6	0.51	0.61	0.51	0.54	0.45	0.53		

Table 52: A table of the precision for each method with different setup of using Post Michael to predict Post Florence using only observable features.

### 5.3.16 Post Michael to Post Florence Obs Only: F-score

Data Transform			Grid Search Model						Bayesian Inf Model						Tree	Logit
Filled Latent	Prob	$\gamma$	None		Income		Evac N		None		Income		Evac N		Obs	Obs
			N	L	N	L	N	L	N	L	N	L	N	L		
None	Unif	1	0.27	0.45	0.27	0.44	0.45	0.46	0.28	0.45	0.26	0.46	0.52	0.52	0.5	0.53
None	Unif	.95	0.28	0.43	0.28	0.42	0.46	0.46	0.28	0.45	0.27	0.46	0.5	0.52	0.5	0.53
None	Norm	1	0.27	0.43	0.27	0.42	0.45	0.53	0.28	0.45	0.28	0.46	0.52	0.52	0.5	0.53
None	Norm	.95	0.28	0.42	0.28	0.42	0.43	0.53	0.28	0.45	0.28	0.46	0.5	0.52	0.5	0.53
None	Mix	1	0.27	0.45	0.27	0.44	0.45	0.53	0.27	0.45	0.29	0.46	0.52	0.52	0.5	0.53
None	Mix	.95	0.28	0.45	0.28	0.44	0.46	0.53	0.28	0.45	0.29	0.46	0.51	0.52	0.5	0.53

Table 53: A table of the F-score for each method with different setup of using Post Michael to predict Post Florence using only observable features.