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. **Conduct logistic regression for OP umnet need**
. logistic Reg_no_treatment i.New_country i.New_sex i.New_age ///
> i.Divided_hh_income i.New_past_sick i.New_chronic_disease

```

```

Logistic regression          Number of obs =      178
                             LR chi2(8)      =      57.21
                             Prob > chi2     =      0.0000
Log likelihood = -94.221733   Pseudo R2    =      0.2329

```

Reg_no_treatment	Odds Ratio	Std. Err.	z	P> z	[95% Conf. Interval]	
New_country						
ARAB	14.68327	9.880823	3.99	0.000	3.926656	54.90633
OTHERS	2.691453	1.046859	2.55	0.011	1.255759	5.768561
New_sex						
Female	.955993	.3473193	-0.12	0.901	.4690368	1.948509
New_age						
More than 15 years but not over than 60 years	1.712135	.6569654	1.40	0.161	.8070912	3.632065
Over than 60 years	2.979117	4.112764	0.79	0.429	.1990571	44.58591
Divided_hh_income						
Income<=45707	3.490746	2.151798	2.03	0.043	1.042829	11.68486
New_past_sick						
Yes	4.321192	1.67455	3.78	0.000	2.021835	9.235523
New_chronic_disease						
Yes	1.95132	.9788446	1.33	0.183	.7300267	5.21577
_cons	.0407785	.0306445	-4.26	0.000	.009349	.1778682

```

. logit Reg_no_treatment i.New_country i.New_sex i.New_age ///
> i.Divided_hh_income i.New_past_sick i.New_chronic_disease

```

```

Iteration 0: log likelihood = -122.82907
Iteration 1: log likelihood = -94.462989
Iteration 2: log likelihood = -94.222278
Iteration 3: log likelihood = -94.221733
Iteration 4: log likelihood = -94.221733

```

```

Logistic regression          Number of obs =      178
                             LR chi2(8)      =      57.21
                             Prob > chi2     =      0.0000
Log likelihood = -94.221733   Pseudo R2    =      0.2329

```

Reg_no_treatment	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
New_country						
ARAB	2.686708	.6729308	3.99	0.000	1.367788	4.005629
OTHERS	.9900814	.3889568	2.55	0.011	.2277401	1.752423
New_sex						
Female	-.0450047	.3633074	-0.12	0.901	-.7570741	.6670646
New_age						
More than 15 years but not over than 60 years	.5377414	.3837111	1.40	0.161	-.2143186	1.289801
Over than 60 years	1.091627	1.380531	0.79	0.429	-1.614164	3.797418
Divided_hh_income						
Income<=45707	1.250116	.6164291	2.03	0.043	.0419368	2.458294
New_past_sick						
Yes	1.463531	.3875204	3.78	0.000	.7040053	2.223057
New_chronic_disease						
Yes	.6685063	.5016319	1.33	0.183	-.3146742	1.651687
_cons	-3.199601	.7514877	-4.26	0.000	-4.67249	-1.726712

```

. **Then check probability that should be line between 0 and 1**
. predict predLOGISTIC
(option pr assumed; Pr(Reg_no_treatment))
(5 missing values generated)

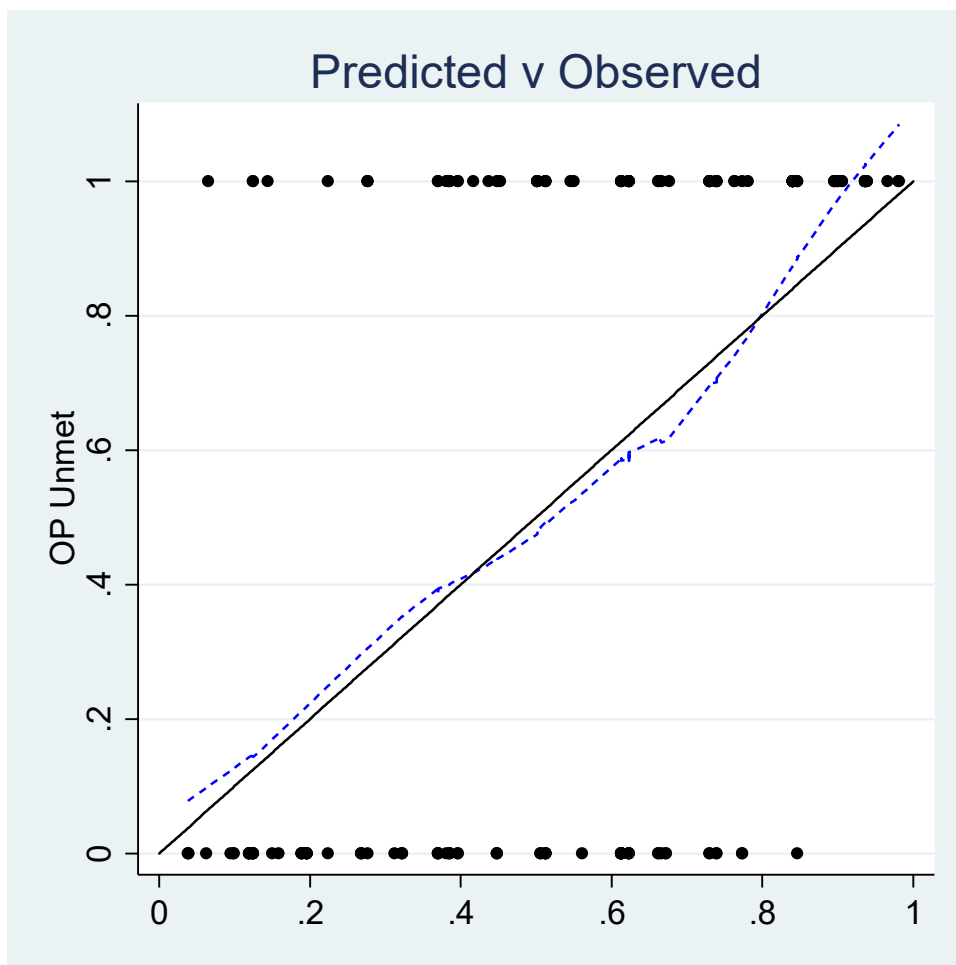
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. summ predLOGISTIC

```

Variable	Obs	Mean	Std. Dev.	Min	Max
predLOGISTIC	178	.5393258	.2673401	.0375212	.9813098



```

. **Check linear probability model**
. regress Reg_no_treatment i.New_country i.New_sex i.New_age ///
> i.Divided_hh_income i.New_past_sick i.New_chronic_disease

```

Source	SS	df	MS	Number of obs =	178
Model	12.3514827	8	1.54393534	F(8, 169) =	8.19
Residual	31.8732364	169	.188599032	Prob > F =	0.0000
				R-squared =	0.2793
				Adj R-squared =	0.2452
Total	44.2247191	177	.24985717	Root MSE =	.43428

Reg_no_treatment	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
New_country						
ARAB	.4682442	.102677	4.56	0.000	.2655495	.6709389
OTHERS	.1969934	.0736035	2.68	0.008	.0516927	.3422941
New_sex						
Female	-.0101872	.0668601	-0.15	0.879	-.1421758	.1218014
New_age						
More than 15 years but not over than 60 years	.0902524	.0704178	1.28	0.202	-.0487594	.2292643
Over than 60 years	.1068284	.2067557	0.52	0.606	-.301328	.5149848
Divided_hh_income						
Income<=45707	.2164364	.1046446	2.07	0.040	.0098574	.4230155
New_past_sick						
Yes	.2840757	.0715875	3.97	0.000	.1427547	.4253967
New_chronic_disease						
Yes	.1387457	.0932971	1.49	0.139	-.0454322	.3229236
_cons	-.0837571	.1144761	-0.73	0.465	-.3097444	.1422302

```

. **Predict the probability of linear model**
. predict predLPM
(option xb assumed; fitted values)
(5 missing values generated)

```

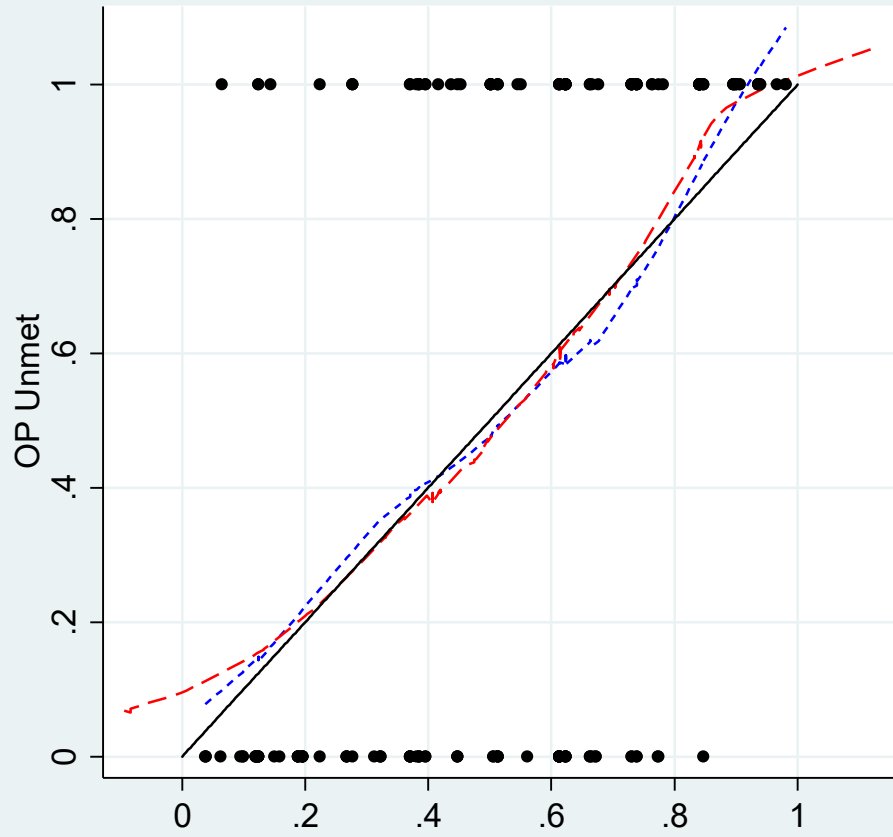
```

. summ predLPM

```

Variable	Obs	Mean	Std. Dev.	Min	Max
predLPM	178	.5393258	.2641636	-.0939443	1.130573

Predicted v Observed



Logistic model for Reg no treatment, goodness-of-fit test

(Table collapsed on quantiles of estimated probabilities)

number of observations =	179
number of groups =	8
Hosmer-Lemeshow chi2(6) =	10.24
Prob > chi2 =	0.1150

. estat gof, group(10)

Logistic model for Reg no treatment, goodness-of-fit test

(Table collapsed on quantiles of estimated probabilities)

number of observations =	179
number of groups =	10
Hosmer-Lemeshow chi2(8) =	9.56
Prob > chi2 =	0.2972

. estat gof, group(20)

Logistic model for Reg no treatment, goodness-of-fit test

(Table collapsed on quantiles of estimated probabilities)

(There are only 14 distinct quantiles because of ties)

number of observations =	179
number of groups =	14
Hosmer-Lemeshow chi2(12) =	13.38
Prob > chi2 =	0.3417

. estat gof, group(30)

Logistic model for Reg no treatment, goodness-of-fit test

(Table collapsed on quantiles of estimated probabilities)

(There are only 15 distinct quantiles because of ties)

number of observations =	179
number of groups =	15
Hosmer-Lemeshow chi2(13) =	13.44
Prob > chi2 =	0.4144

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```
. do "C:\Users\Watinee\AppData\Local\Temp\STD00000000.tmp"

.**Conduct logistic regression for IP unmet need**
. logistic Reg_no_admit i.New_country i.New_sex i.New_age ///
> i.Divided_hh_income i.New_past_sick i.New_chronic_disease
```

```
Logistic regression          Number of obs =      172
                             LR chi2(8)      =      37.80
                             Prob > chi2     =      0.0000
Log likelihood = -83.873532   Pseudo R2      =      0.1839
```

Reg_no_admit	Odds Ratio	Std. Err.	z	P> z	[95% Conf. Interval]	
New_country						
ARAB	12.93422	7.874273	4.20	0.000	3.922239	42.65269
OTHERS	2.23776	1.055119	1.71	0.088	.8881087	5.638464
New_sex						
Female	1.341427	.530545	0.74	0.458	.6178886	2.912219
New_age						
More than 15 years but not over than 60 years	1.067697	.452857	0.15	0.877	.4649608	2.451771
Over than 60 years	.454485	.5784961	-0.62	0.536	.0375024	5.50783
Divided_hh_income						
Income<=45707	.7243369	.4767044	-0.49	0.624	.1994084	2.631103
New_past_sick						
Yes	3.488072	1.703107	2.56	0.011	1.339592	9.082349
New_chronic_disease						
Yes	2.840068	1.426245	2.08	0.038	1.061369	7.599604
_cons	.0560475	.0445077	-3.63	0.000	.0118198	.2657675

```
. logit Reg_no_admit i.New_country i.New_sex i.New_age ///
> i.Divided_hh_income i.New_past_sick i.New_chronic_disease
```

```
Iteration 0: log likelihood = -102.77118
Iteration 1: log likelihood = -84.936208
Iteration 2: log likelihood = -83.879466
Iteration 3: log likelihood = -83.873533
Iteration 4: log likelihood = -83.873532
```

```
Logistic regression          Number of obs =      172
                             LR chi2(8)      =      37.80
                             Prob > chi2     =      0.0000
Log likelihood = -83.873532   Pseudo R2      =      0.1839
```

Reg_no_admit	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
New_country						
ARAB	2.559877	.6087937	4.20	0.000	1.366663	3.75309
OTHERS	.8054752	.4715068	1.71	0.088	-.1186612	1.729612
New_sex						
Female	.2937341	.3955079	0.74	0.458	-.4814471	1.068915
New_age						
More than 15 years but not over than 60 years	.0655042	.4241437	0.15	0.877	-.7658021	.8968105
Over than 60 years	-.7885904	1.272861	-0.62	0.536	-3.283352	1.706171
Divided_hh_income						
Income<=45707	-.3224986	.6581252	-0.49	0.624	-1.6124	.9674031
New_past_sick						
Yes	1.249349	.488266	2.56	0.011	.2923655	2.206333
New_chronic_disease						
Yes	1.043828	.5021868	2.08	0.038	.0595599	2.028096
_cons	-2.881556	.7941076	-3.63	0.000	-4.437978	-1.325133

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```

. **Then check probability that should be lined between 0 and 1***
. predict predLOGISTIC
(option pr assumed; Pr(Reg_no_admit))
(5 missing values generated)

```

```

. summ predLOGISTIC

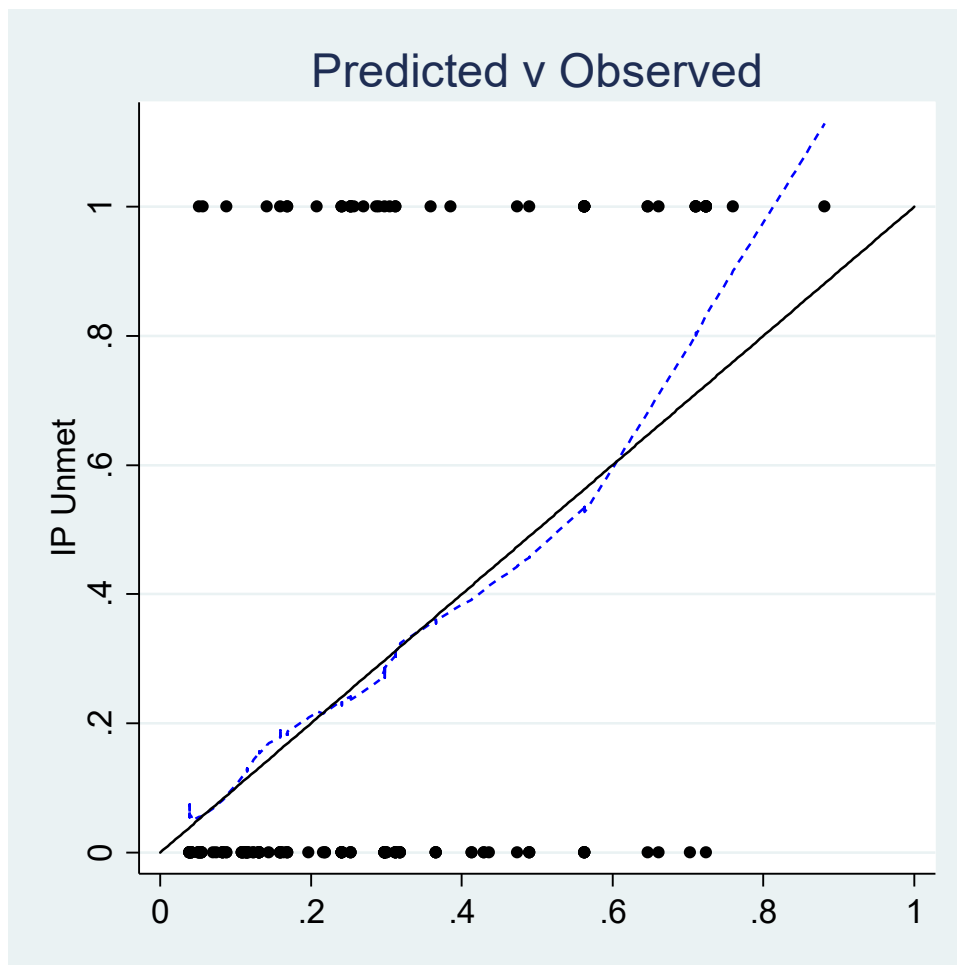
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Variable	Obs	Mean	Std. Dev.	Min	Max
predLOGISTIC	178	.2848995	.2070495	.0390134	.8816593

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end of do-file

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```

. **Check linear probability model**
. regress Reg_no_admit i.New_country i.New_sex i.New_age ///
> i.Divided_hh_income i.New_past_sick i.New_chronic_disease

```

Source	SS	df	MS	Number of obs =	172
Model	7.27825804	8	.909782255	F(8, 163) =	5.34
Residual	27.7624396	163	.170321716	Prob > F =	0.0000
Total	35.0406977	171	.204916361	R-squared =	0.2077
				Adj R-squared =	0.1688
				Root MSE =	.4127

	Reg_no_admit	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
	New_country						
	ARAB	.486319	.101525	4.79	0.000	.2858454	.6867927
	OTHERS	.1115636	.0708073	1.58	0.117	-.0282543	.2513814
	New_sex						
	Female	.0437014	.0646008	0.68	0.500	-.0838609	.1712637
	New_age						
More than 15 years but not over than 60 years		.0083513	.0680394	0.12	0.902	-.126001	.1427036
Over than 60 years		-.146606	.2123527	-0.69	0.491	-.5659229	.2727109
	Divided_hh_income						
Income<=-45707		-.039988	.1018335	-0.39	0.695	-.2410709	.1610949
	New_past_sick						
Yes		.1746409	.0693757	2.52	0.013	.03765	.3116318
	New_chronic_disease						
Yes		.1998674	.0893358	2.24	0.027	.0234628	.3762719
_cons		.0126931	.1112152	0.11	0.909	-.2069151	.2323013

```

. **Predict the probability of linear model**
. predict predLPM
(option xb assumed; fitted values)
(5 missing values generated)

```

```

. summ predLPM

```

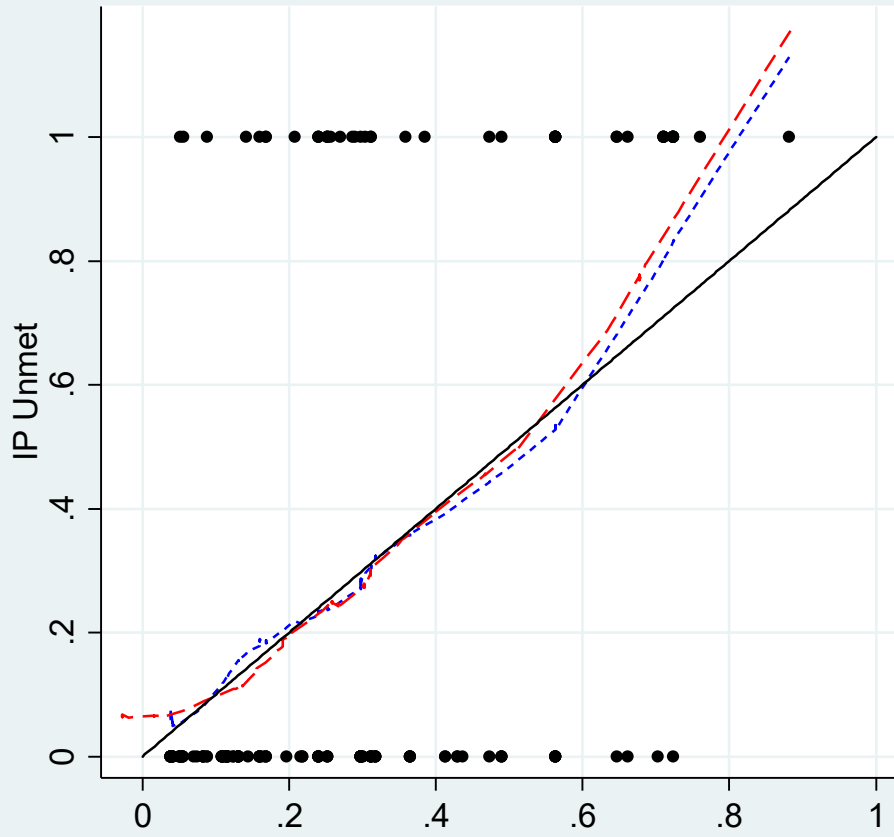
Variable	Obs	Mean	Std. Dev.	Min	Max
predLPM	178	.2861857	.2044262	-.0272949	.8855851

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Predicted v Observed



```
. **Check Statistical tests of Fit for IP by using Hosmer-Lemeshow Statistic(H-L)**
. quietly logistic Reg_no_admit i.New_country i.New_sex i.New_past_sick ///
> i.New_chronic_disease
```

```
. estat gof, group(8)
```

Logistic model for Reg_no_admit, goodness-of-fit test

(Table collapsed on quantiles of estimated probabilities)

number of observations =	172
number of groups =	8
Hosmer-Lemeshow chi2(6) =	7.84
Prob > chi2 =	0.2498

```
. estat gof, group(10)
```

Logistic model for Reg_no_admit, goodness-of-fit test

(Table collapsed on quantiles of estimated probabilities)
(There are only 9 distinct quantiles because of ties)

number of observations =	172
number of groups =	9
Hosmer-Lemeshow chi2(7) =	10.79
Prob > chi2 =	0.1481

```
. estat gof, group(20)
```

Logistic model for Reg_no_admit, goodness-of-fit test

(Table collapsed on quantiles of estimated probabilities)
(There are only 14 distinct quantiles because of ties)

number of observations =	172
number of groups =	14
Hosmer-Lemeshow chi2(12) =	13.23
Prob > chi2 =	0.3529

```
. estat gof, group(30)
```

Logistic model for Reg_no_admit, goodness-of-fit test

(Table collapsed on quantiles of estimated probabilities)
(There are only 16 distinct quantiles because of ties)

number of observations =	172
number of groups =	16
Hosmer-Lemeshow chi2(14) =	15.23
Prob > chi2 =	0.3627

```
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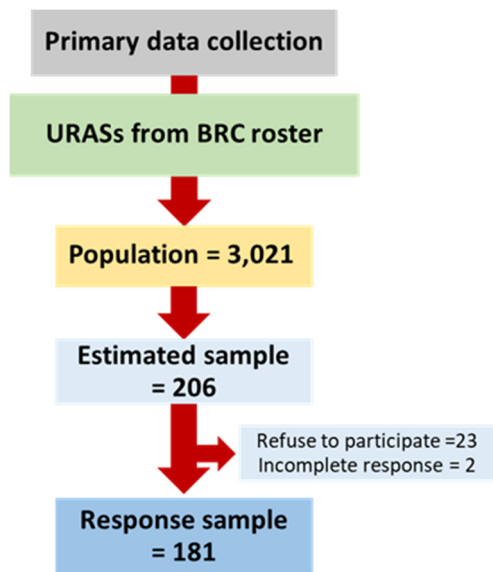


Figure 1. Participant recruitment process