Supplemental Material

Phthalate metabolite exposures among immigrants living in the United States: Findings from NHANES, 1999-2014

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Table S1. Demographic characteristics of foreign-born individuals by four-year sub-population.

	1999-2002	2003-2006	2007-2010	2011-2014
% Foreign Born	15.6%	15.7%	17.0%	18.1%
Age				
20-29	161 (19.0%)	153 (23.2%)	166 (20.7%)	146 (17.0%)
30-39	161 (27.5%)	159 (24.9%)	172 (22.2%)	209 (25.3%)
40-49	156 (21.1%)	127 (22.9%)	192 (23.3%)	221 (22.9%)
50-59	83 (13.5%)	77 (15.7%)	166 (18.3%)	196 (15.4%)
60-69	108 (10.0%)	64 (5.1%)	152 (7.8%)	202 (10.1%)
70-79	70 (6.1%)	57 (5.9%)	77 (5.4%)	88 (6.3%)
≥ 80	36 (2.8%)	30 (2.3%)	36 (2.3%)	46 (3.0%)
Sex				
Male	377 (51.2%)	345 (52.6%)	497 (52.8%)	553 (48.1%)
Female	398 (48.8%)	322 (47.4%)	464 (47.2%)	555 (51.9%)
Race/Ethnicity				
Non-Hispanic White	95 (22.1%)	99 (28.6%)	86 (17.5%)	66 (14.7%)
Non-Hispanic Black	62 (7.2%)	56 (6.0%)	65 (6.5%)	96 (6.4%)
Mexican American	448 (28.1%)	371 (31.0%)	403 (29.8%)	253 (27.8%)
Other Hispanic	112 (27.5%)	70 (16.8%)	281 (19.8%)	251 (23.5%)
Other	58 (15.1%)	71 (17.6%)	126 (26.4%)	26 (2.7%)
Non-Hispanic Asian[1]	--	--	--	416 (24.8%)
Education				
< High School	455 (42.3%)	336 (33.7%)	466 (36.3%)	372 (34.0%)
High School	98 (17.1%)	114 (18.0%)	175 (18.5%)	195 (18.3%)
Some College	113 (19.3%)	115 (23.8%)	157 (18.3%)	241 (22.8%)
$\geq$ College	107 (21.2%)	102 (24.6%)	159 (26.9%)	298 (25.0%)
Smoking				
Current	123 (19.0%)	111 (19.5%)	149 (15.3%)	114 (10.8%)
Past	156 (21.2%)	139 (21.0%)	181 (16.5%)	231 (19.7%)
Never	494 (59.8%)	414 (59.4%)	630 (68.3%)	762 (69.5%)
Income/Poverty Ratio				
0-0.99	203 (23.7%)	195 (21.8%)	258 (23.6%)	258 (27.7%)
1-1.99	234 (28.5%)	180 (24.8%)	278 (29.8%)	256 (25.0%)
2-3.99	108 (20.7%)	84 (13.1%)	104 (13.6%)	143 (15.6%)
4-4.99	79 (16.0%)	97 (24.4%)	94 (15.6%)	164 (17.0%)
≥ 5	59 (11.1%)	60 (16.0%)	83 (17.4%)	151 (14.9%)
Time in US				
0-4 years	132 (19.5%)	115 (18.8%)	98 (12.0%)	115 (11.7%)
5-9 years	110 (15.1%)	120 (17.2%)	149 (17.7%)	123 (13.4%)
10-19 years	177 (23.8%)	148 (23.7%)	193 (24.5%)	314 (32.2%)
20-29 years	152 (18.1%)	109 (18.4%)	210 (23.8%)	213 (19.8%)
≥ 30 years	184 (23.5%)	164 (21.9%)	244 (22.0%)	301 (22.9%)

[1]Non-Hispanic Asians were not reported as a separate racial/ethnic group until 2011. Before 2011, they were recorded as part of the Other group.

Table S2. Demographic characteristics of foreign-born individuals, comparing those who had lived in the US less than 10 years versus those who had lived in the US at least 10 years.

Characteristic	<10 years	≥10 years	
Percent of immigrants	30.9%	69.1%	P
Age (years)			<0.0001
20-29	388 (39.6%)	214 (11.1%)	
30-39	265 (33.3%)	404 (21.0%)	
40-49	141 (14.4%)	529 (26.3%)	
50-59	79 (7.8%)	423 (19.3%)	
60-69	54 (2.9%)	448 (10.8%)	
70-79	27 (1.7%)	257 (8.0%)	
≥ 80	8 (0.4%)	134 (3.6%)	
Sex			0.30
Male	480 (52.7%)	1218 (50.3%)	
Female	482 (47.3%)	1191 (49.7%)	
Race/Ethnicity			0.056
Non-Hispanic White	87 (17.7%)	250 (21.9%)	
Non-Hispanic Black	75 (7.1%)	198 (6.4%)	
Mexican American	439 (33.4%)	968 (26.7%)	
Other Hispanic	158 (19.6%)	506 (22.2%)	
Other	203 (22.3%)	487 (22.9%)	
Education			0.82
< High School	435 (37.1%)	1111 (35.3%)	
High School	182 (18.4%)	380 (17.9%)	
Some College	164 (20.9%)	443 (21.3%)	
≥ College	180 (23.7%)	471 (25.5%)	
Smoking			0.01
Current	148 (17.1%)	322 (15.0%)	
Past	145 (15.6%)	538 (21.2%)	
Never	665 (67.3%)	1546 (63.9%)	
Income/Poverty Ratio			<0.0001
0-0.99	307 (30.8%)	574 (20.7%)	
1-1.99	294 (33.3%)	628 (24.0%)	
2-3.99	114 (14.6%)	316 (16.2%)	
4-4.99	85 (12.8%)	339 (20.9%)	
≥5	55 (8.6%)	292 (18.1%)	

Table S3. Percent difference in phthalate metabolite levels by demographic characteristics of interest, within foreign-born individuals.

Characteristic	MEP	MnBP	MiBP	MCPP	MBzP	∑DEHP
	%Difference (95% CI)	%Difference (95% CI)	%Difference (95% CI)	%Difference (95% CI)	%Difference (95% CI)	%Difference (95% CI)
Age						
Continuous	1.7 (-1.0, 4.5)	0.30 (-1.2, 1.9)	1.4 (-0.4, 3.2)	-2.0 (-3.7, -0.2)*	-1.5 (-3.2, 0.3)	-0.4 (-2.2, 1.5)
Squared	-0.02 (-0.04, -0.01)	0.01 (-0.01, 0.02)	-0.01 (-0.03, 0.01)	0.02 (0.004, 0.04)*	0.01 (-0.01, 0.03)	0.01 (-0.01, 0.03)
Sex						
Male	--	--	--	--	--	--
Female	33.5 (16.3, 53.2)**	52.0 (38.8, 66.5)**	28.4 (16.8, 41.2)**	19.4 (7.4, 32.9)**	24.1 (12.7, 36.5)**	19.0 (7.6, 31.5)**
Race/Ethnicity						
NH White	--	--	--	--	--	--
NH Black	48.0 (8.8, 101.5)*	9.0 (-10.9, 33.4)	11.0 (-13.6, 42.5)	-24.2 (-40.8, -2.9)*	-16.3 (-35.5, 8.8)	-19.6 (-37.9, 4.3)
Mexican American	34.3 (0.8, 78.9)*	10.5 (-7.6, 32.1)	6.9 (-11.5, 29.0)	-2.3 (-18.4, 17.1)	6.7 (-12.1, 29.5)	6.1 (-15.2, 32.7)
Other Hispanic	44.8 (12.4, 86.6)**	26.0 (6.6, 48.8)**	14.3 (-5.5, 38.2)	9.1 (-10.5, 32.9)	0.1 (-19.1, 23.7)	2.6 (-19.0, 29.8)
Other	-46.6 (-59.7, -29.2)**	1.5 (-16.9, 23.9)	-0.4 (-18.4, 21.6)	-26.2 (-38.9, -10.7)**	-3.5 (-22.2, 19.8)	-5.6 (-25.0, 18.8)
Education						
< High School	--	--	--	--	--	--
High School	-2.6 (-16.8, 14.0)	-1.4 (-14.1, 13.1)	-2.5 (-13.4, 9.8)	-4.9 (-16.9, 8.8)	-0.3 (-14.4, 16.2)	-9.7 (-22.3, 4.8)
Some College	1.4 (-15.7, 22.0)	-4.9 (-18.3, 10.7)	-0.6 (-13.1, 13.7)	-0.7 (-15.3, 16.4)	2.7 (-10.3, 17.6)	3.9 (-11.00, 21.3)
≥College	-4.8 (-24.4, 19.9)	-1.4 (-17.7, 18.2)	-3.2 (-16.9, 12.9)	11.1 (-6.6, 32.2)	-24.3 (-37.4, -8.5)**	-10.9 (-24.2, 4.6)
IPR						
0-0.99	--	--	--	--	--	--
1-1.99	5.0 (-12.5, 26.1)	-2.9 (-14.1, 9.8)	7.3 (-4.7, 20.8)	-2.9 (-14.1, 9.8)	-9.1 (-19.8, 3.0)	-2.8 (-13.6, 9.4)
2-2.99	4.8 (-17.3, 32.8)	-10.7 (-23.6, 4.4)	2.8 (-14.2, 23.1)	-0.6 (-17.2, 19.3)	-6.3 (-18.7, 8.2)	24.9 (4.1, 49.8)*
3-4.99	12.2 (-9.6, 39.2)	-4.9 (-18.8, 11.3)	4.4 (-11.8, 23.6)	7.0 (-10.0, 27.2)	-0.4 (-15.3, 17.3)	15.4 (-5.9, 41.5)
≥5	-30.6 (-46.9, -9.3)**	-15.5 (-31.4, 4.2)	-7.8 (-24.0, 11.8)	14.4 (-7.9, 42.1)	-18.2 (-33.9, 1.1)	20.4 (-1.9, 47.9)

Abbreviations: NH: Non-Hispanic; ** *P <0.01, * P <0.05*

Table S4. Percent difference in urinary phthalate metabolite levels by age group, nativity, and length of time in the United States, restricted to Mexican American participants only

	<40 years old		≥40 years old	
	n	% Difference (95% CI)	n	% Difference (95% CI)
MEP				
US-born	331	Ref1[1]	532	Ref2[2]
Recent immigrant (<10 yr)	293	31.9 (4.9, 65.9)*	101	29.8 (-7.7, 82.7)
Long-term immigrant (≥10 yr)	256	49.5 (19.4, 87.2)**	601	34.3 (6.8, 68.9)*
MnBP				
US-born	330	Ref1	533	Ref2
Recent immigrant (<10 yr)	292	12.4 (-5.2, 33.4)	101	11.3 (-14.3, 44.7)
Long-term immigrant (≥10 yr)	255	14.0 (-2.0, 32.8)	600	-1.7 (-13.6, 11.9)
MiBP				
US-born	286	Ref1	445	Ref2
Recent immigrant (<10 yr)	254	21.7 (1.8, 45.4)*	85	25.4 (-3.5, 63.0)
Long-term immigrant (≥10 yr)	217	18.3 (2.8, 36.1)*	493	2.8 (-8.7, 15.8)
MCPP				
US-born	285	Ref1	445	Ref2
Recent immigrant (<10 yr)	253	-3.6 (-18.2, 13.6)	85	-3.4 (-26.0, 26.1)
Long-term immigrant (≥10 yr)	216	-10.1 (-26.4, 9.8)	492	-3.4 (-17.7, 13.5)
MBzP				
US-born	331	Ref1	533	Ref2
Recent immigrant (<10 yr)	293	-11.6 (-26.3, 6.0)	101	-29.2 (-46.6, -6.0)*
Long-term immigrant (≥10 yr)	256	-4.1 (-20.3, 15.5)	601	-22.4 (-33.5, -9.4)**
∑DEHP				
US-born	286	Ref1	445	Ref2
Recent immigrant (<10 yr)	254	7.8 (-10.9, 30.4)	85	4.3 (-22.5, 40.5)
Long-term immigrant (≥10 yr)	217	5.3 (-13.0, 27.5)	493	2.5 (-14.3, 22.7)

*P < 0.05; ** P< 0.01;* [1]Ref1: US-born individuals under age 40; [2]Ref2: US-born individuals

aged 40 and older

Table S5. Percent difference in urinary phthalate metabolite levels by age group, nativity, and length of time in the United States, restricted to years 2011-2014 only.

	<40 years old		≥40 years old	
	n	% Difference (95% CI)	n	% Difference (95% CI)
MEP				
US-born	817	Ref1[1]	1424	Ref2[2]
Recent immigrant (<10 yr)	130	64.3 (15.1, 134.5)**	80	37.9 (-10.4, 112.4)
Long-term immigrant (≥10 yr)	177	32.0 (0.1, 74.1)*	545	45.0 (11.9, 87.7)**
MnBP				
US-born	817	Ref1	1422	Ref2
Recent immigrant (<10 yr)	130	12.1 (-14.3, 46.6)	79	23.5 (-7.5, 64.8)
Long-term immigrant (≥10 yr)	177	9.3 (-7.0, 28.4)	545	27.4 (8.8, 49.1)**
MiBP				
US-born	817	Ref1	1424	Ref2
Recent immigrant (<10 yr)	130	11.4 (-14.4, 45.1)	80	76.8 (42.6, 119.2)**
Long-term immigrant (≥10 yr)	177	11.0 (-5.9, 31.0)	545	32.3 (15.8, 51.2)**
MCPP				
US-born	817	Ref1	1422	Ref2
Recent immigrant (<10 yr)	130	-29.9 (-44.9, -10.9)**	79	-29.0 (-49.9, 0.7)
Long-term immigrant (≥10 yr)	177	-10.2 (-30.6, 16.4)	545	10.5 (-11.6, 38.1)
MBzP				
US-born	817	Ref1	1424	Ref2
Recent immigrant (<10 yr)	130	-20.2 (-41.2, 8.2)	80	-22.7 (-43.8, 6.4)
Long-term immigrant (≥10 yr)	177	-7.1 (-27.4, 18.8)	545	-11.8 (-26.7, 6.3)
∑DEHP				
US-born	817	Ref1	1424	Ref2
Recent immigrant (<10 yr)	130	-7.8 (-25.7, 14.4)	80	24.1 (1.5, 51.7)*
Long-term immigrant (≥10 yr)	177	9.4 (-5.7, 26.9)	545	20.3 (5.7, 36.9)**

*P < 0.05; **P< 0.01; [1]Ref1: US-born individuals under age 40; [2]Ref2: US-born individuals aged 40 and older

Analysis Code

**making weights: 2001-2014
***,

```
data all_data; set all_data;
if sddsrvyr =2 then wtsb14yr = wtsph2yr*(1/7); /*for 2001-2002*/
else if sddsrvyr in(3,4,5,6,8) then wtsb14yr = wtsb2yr*(1/7); /*for 2003-10, 2013-14*/
else if sddsrvyr =7 then wtsb14yr = wtsa2yr*(1/7); /*for 2011-2012*/
else wtsb14yr = .;
run;
```

**making weights: 1999-2014
***,

```
data all_data; set all_data;
if sddsrvyr in (1,2) then wtsb16yr = wtsph4yr*(2/8); /*for 2001-2002*/
else if sddsrvyr in(3,4,5,6,8) then wtsb16yr = wtsb2yr*(1/8); /*for 2003-10, 2013-14*/
else if sddsrvyr =7 then wtsb16yr = wtsa2yr*(1/8); /*for 2011-2012*/
else wtsb16yr = -10;
run;
```

**making weights for each 4-year period
1999-2002 = wtsph4yr (no new variable needed)
***,

```
*2003-2006;
data all_data; set all_data;
if sddsrvyr in(3,4) then wtsb0306 = wtsb2yr*(1/2);
run;
*2007-2010;
data all_data; set all_data;
if sddsrvyr in(5,6) then wtsb0710 = wtsb2yr*(1/2);
run;
*2011-2014;
data all_data; set all_data;
if sddsrvyr = 7 then wtsb1114 = wtsa2yr*(1/2);
if sddsrvyr = 8 then wtsb1114 = wtsb2yr*(1/2);
run;
```

**making a consistent immigration status variable: yes/no
***,

```
data all_data; set all_data;
if dmdborn = . and SDDSRVYR in (1,2,3,4) then immigrant=.;
else if dmdborn = 1 and SDDSRVYR in (1,2,3,4) then immigrant=0; /*Born in US*/
else if dmdborn in (1,2,3) and SDDSRVYR in (1,2,3,4) then immigrant=1; /*Immigrant*/
```

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```
else if dmdborn2 = . and SDDSRVYR in (5,6) then immigrant=.;
else if dmdborn2 = 1 and SDDSRVYR in (5,6) then immigrant=0; /*Born in US*/
else if dmdborn2 in (2,4,5) and SDDSRVYR in (5,6) then immigrant=1; /*Immigrant*/

else if dmdborn4 = . and SDDSRVYR in (7,8) then immigrant=.;
else if dmdborn4 = 1 and SDDSRVYR in (7,8) then immigrant=0; /*Born in US*/
else if dmdborn4 = 2 and SDDSRVYR in (7,8) then immigrant=1; /*Immigrant*/

else if dmdborn = 7 or dmdborn = 9 or dmdborn2 = 7 or dmdborn4 in (77,99) then immigrant = .;
else immigrant = 3;
run;


*making studypop=1
**********************************************;
data all_data; set all_data;
if ridageyr < 20 then delete;
run;

data all_data; set all_data;
if immigrant = . or wtsb16yr = . or ridageyr <20 then studypop=0;
else studypop=1;
run;
proc freq data=all_data;
tables studypop;
run;

*years in US
**************************************************;
data all_data; set all_data;
if dmdyrsus in (77,88,99) then dmdyrsus = .;
run;

data all_data; set all_data;
if dmdyrsus = . then usyears_cat = .;
else if dmdyrsus in (1,2,3) then usyears_cat = 1; /* 0 - less than 10 yrs */
else if dmdyrsus in (4,5) then usyears_cat = 2; /* 10- less than 20 years */
else if dmdyrsus = 6 then usyears_cat = 3; /*20- less than 30 years */
else if dmdyrsus = 7 then usyears_cat = 4; /*30- less than 40 years */
else if dmdyrsus in (8,9) then usyears_cat = 5; /* 40 or more years */
else usyears_cat = 6;
run;


*age
*********************;
```

```
data all_data; set all_data;
if ridageyr = . then age_cat = .;
else if ridageyr <20 then age_cat = 0;
else if ridageyr >=20 and ridageyr <30 then age_cat=1;
else if ridageyr >=30 and ridageyr <40 then age_cat=2;
else if ridageyr >=40 and ridageyr <50 then age_cat=3;
else if ridageyr >=50 and ridageyr <60 then age_cat=4;
else if ridageyr >=60 and ridageyr <70 then age_cat=5;
else if ridageyr >=70 and ridageyr <80 then age_cat=6;
else if ridageyr >=80 then age_cat = 7;
else age_cat = 99;
run;


*education
*********************;
data all_data; set all_data;
if ridageyr <20 then edu_cat = 0;
else if dmdeduc2 in (.,7,9) then edu_cat = .;
else if dmdeduc2 in (1,2) then edu_cat =1;
else if dmdeduc2 = 3 then edu_cat = 2;
else if dmdeduc2 = 4 then edu_cat = 3;
else if dmdeduc2 = 5 then edu_cat = 4;
else edu_cat = 99;
run;


*PIR
***********************************************;
data all_data; set all_data;
if indfmpir = . then PIR_cat = .;
else if indfmpir < 1 then pir_cat = 1;
else if indfmpir >=1 then pir_cat = 2;
else pir_cat = 99;
run;



*BMI
*********************************************;
data all_data; set all_data;
if bmxbmi = . then bmi_cat = .;
else if bmxbmi <25 then bmi_cat = 1;
else if bmxbmi >=25 and bmxbmi <30 then bmi_cat = 2;
else if bmxbmi >=30 then bmi_cat = 3;
else bmi_cat = 99;
run;
```

```
*SMOKING
**********************************************;
data all_data; set all_data;
if smq020  in (.,7,9) then smoke_cat = .;
else if smq020 = 1 and smq040 in (1,2) then smoke_cat = 1;
else if smq020 = 1 and smq040 =3 then smoke_cat =2;
else if smq020 = 2 then smoke_cat = 3;
else smoke_cat = 99;
run;
data all_data; set all_data;
if smoke_cat = . then current_smoker = .;
else if smoke_cat = 1 then current_smoker = 1;
else if smoke_cat in (2,3) then current_smoker =0;
else current_smoker = 99;
run;


/*sumDEHP*/
data all_data; set all_data;
sumDEHP = ((urxmhp*(1/278.34348)) + (urxmhh*(1/294.34280)) + (urxmoh*(1/292.3286)));
run;


******* PERCENT USING AN INTERPRETER OR SPANISH;
proc surveyfreq data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight wtsb16yr;
tables sddsrvyr*(sialang siaintrp)/row;
where studypop=1;
run;

********************************************************
      TABLE 1: DEMOGRAPHICS in over 20's
********************************************************;
*numbers;
PROC SURVEYFREQ DATA= all_data;
TABLES studypop*(age_cat riagendr ridreth1 edu_cat
            smoke_cat pir_5cat)*immigrant;
RUN;

*weighted percents;
PROC SURVEYFREQ DATA= all_data;
cluster sdmvpsu;
strata sdmvstra;
weight wtsb16yr;
```

```
TABLES studypop*(age_cat riagendr ridreth1 edu_cat
            smoke_cat pir_5cat)*immigrant/chisq col;
RUN;


*numbers: years in US;
PROC SURVEYFREQ DATA= all_data;
TABLES immigrant*studypop*year_trends;
RUN;


*weighted percents;
PROC SURVEYFREQ DATA= all_data;
cluster sdmvpsu;
strata sdmvstra;
weight wtsb16yr;
TABLES immigrant*studypop*year_trends/chisq row;
RUN;




******* SENSITIVITY ANALYSIS BY SURVEY YEAR: TABLE S1 *************;
****by survey year;
*1999-2002
**************************************,
*numbers;
PROC SURVEYFREQ DATA= all_data;
TABLES studypop*(age_cat riagendr ridreth1 edu_cat
            smoke_cat pir_5cat)*immigrant;
where sddsrvyr in (1,2);
RUN;
*weighted percents;
PROC SURVEYFREQ DATA= all_data;
cluster sdmvpsu;
strata sdmvstra;
weight wtsph4yr;
TABLES studypop*(age_cat riagendr ridreth1 edu_cat
            smoke_cat pir_5cat)*immigrant/chisq col;
where sddsrvyr in (1,2);
RUN;
*percent immigrants in the study population;
PROC SURVEYFREQ DATA= all_data;
cluster sdmvpsu;
strata sdmvstra;
weight wtsph4yr;
TABLES studypop*immigrant/row;
where sddsrvyr in (1,2);
RUN;
```

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```
*years: numbers;
PROC SURVEYFREQ DATA= all_data;
TABLES immigrant*studypop*year_trends;
where sddsrvyr in (1,2);
RUN;
*years: weighted percent;
PROC SURVEYFREQ DATA= all_data;
cluster sdmvpsu;
strata sdmvstra;
weight  wtsph4yr;
TABLES immigrant*studypop*year_trends/chisq row;
where sddsrvyr in (1,2);
RUN;

*2003-2006;
****************************************;
*numbers;
PROC SURVEYFREQ DATA= all_data;
TABLES studypop*(age_cat riagendr ridreth1 edu_cat
            smoke_cat pir_5cat)*immigrant;
where sddsrvyr in (3,4);
RUN;

*weighted percents;
PROC SURVEYFREQ DATA= all_data;
cluster sdmvpsu;
strata sdmvstra;
weight wtsb0306;
TABLES studypop*(age_cat riagendr ridreth1 edu_cat
            smoke_cat pir_5cat)*immigrant/col;
where sddsrvyr in (3,4);
RUN;
*percent of immigrants in the population (weighted);
PROC SURVEYFREQ DATA= all_data;
cluster sdmvpsu;
strata sdmvstra;
weight wtsb0306;
TABLES studypop*immigrant/row;
where sddsrvyr in (3,4);
RUN;


*numbers;
PROC SURVEYFREQ DATA= all_data;
TABLES studypop*(year_trends)*immigrant;
```

```
where sddsrvyr in (3,4);
RUN;


*weighted percents;
PROC SURVEYFREQ DATA= all_data;
cluster sdmvpsu;
strata sdmvstra;
weight wtsb0306;
TABLES immigrant*studypop*year_trends/chisq row;
where sddsrvyr in (3,4);
RUN;


*2007-2010;
****************************************;
*numbers;
PROC SURVEYFREQ DATA= all_data;
TABLES studypop*(age_cat riagendr ridreth1 edu_cat
                smoke_cat pir_5cat)*immigrant;
where sddsrvyr in (5,6);
RUN;
*weighted percents;
PROC SURVEYFREQ DATA= all_data;
cluster sdmvpsu;
strata sdmvstra;
weight wtsb0710;
TABLES studypop*(age_cat riagendr ridreth1 edu_cat
                smoke_cat pir_5cat)*immigrant/col;
where sddsrvyr in (5,6);
RUN;
*percent of immigrants in the population (weighted);
PROC SURVEYFREQ DATA= all_data;
cluster sdmvpsu;
strata sdmvstra;
weight wtsb0710;
TABLES studypop*immigrant/row;
where sddsrvyr in (5,6);
RUN;


*YEAR TRENDS: comparing non-immigrants to immigrants;
data all_data; set all_data;
if immigrant = . then year_trends = .;
else if immigrant = 1 and dmdyrsus = . then year_trends= .;
else if immigrant = 0 then year_trends = 0; /* US born*/
else if immigrant = 1 and dmdyrsus in (1,2) then year_trends = 1; /*0-5 yrs*/
else if immigrant = 1 and dmdyrsus =3 then year_trends = 2; /*5-9 yrs*/
else if immigrant = 1 and dmdyrsus in (4,5) then year_trends = 3; /*10-19 yrs*/
```

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```
else if immigrant = 1 and dmdyrsus =6 then year_trends = 4; /*20-29 yrs*/
else if immigrant = 1 and dmdyrsus in (7,8,9) then year_trends = 5; /*30+ yrs*/
else year_trends = 6;
run;


*numbers by years in US;
PROC SURVEYFREQ DATA= all_data;
TABLES immigrant*studypop*year_trends;
where sddsrvyr in (5,6);
RUN;
*weighted percents by years in US;
PROC SURVEYFREQ DATA= all_data;
cluster sdmvpsu;
strata sdmvstra;
weight wtsb0710;
TABLES immigrant*studypop*year_trends/chisq row;
where sddsrvyr in (5,6);
RUN;


*2011-2014;
******************************************,
*numbers;
PROC SURVEYFREQ DATA= all_data;
TABLES studypop*(age_cat riagendr ridreth3 edu_cat
            smoke_cat pir_5cat)*immigrant;
where sddsrvyr in (7,8);
RUN;
PROC SURVEYFREQ DATA= all_data;
cluster sdmvpsu;
strata sdmvstra;
weight wtsb1114;
TABLES studypop*(age_cat riagendr ridreth3 edu_cat
            smoke_cat pir_5cat)*immigrant/col;
where sddsrvyr in (7,8);
RUN;

*weighted percent of immigrants in the study population;
PROC SURVEYFREQ DATA= all_data;
cluster sdmvpsu;
strata sdmvstra;
weight wtsb1114;
TABLES studypop*immigrant/row;
where sddsrvyr in (7,8);
RUN;
```

```
*numbers for years in US;
PROC SURVEYFREQ DATA= all_data;
TABLES immigrant*studypop*year_trends;
where sddsrvyr in (7,8);
RUN;
*weighted percents for years in US;
PROC SURVEYFREQ DATA= all_data;
cluster sdmvpsu;
strata sdmvstra;
weight wtsb1114;
TABLES immigrant*studypop*year_trends/chisq row;
where sddsrvyr in (7,8);
RUN;
```

```
***********************************************************************
                 SENSITIVITY ANALYSIS BY YEARS IN US:
                      SUPPLEMENTAL TABLE S2
***********************************************************************;
****in the us less than 10 yrs versus others: immigrants;
data all_data; set all_data;
if dmdyrsus = . then usyears_10 = .;
else if dmdyrsus in (1,2,3) then usyears_10 = 1; /* 0 - less than 10 yrs */
else if dmdyrsus in (4,5,6,7,8,9) then usyears_10 = 2; /* 10- less than 20 years */
else usyears_10 = 6;
run;
proc freq data=all_data;
tables usyears_10;
run;
*sample size;
PROC SURVEYFREQ DATA= all_data;
TABLES studypop*(age_cat riagendr ridreth1 edu_cat
              smoke_cat pir_5cat)*usyears_10/chisq col;
RUN;
*weighted percents;
PROC SURVEYFREQ DATA= all_data;
cluster sdmvpsu;
strata sdmvstra;
weight wtsb16yr;
TABLES studypop*(age_cat riagendr ridreth1 edu_cat
              smoke_cat pir_5cat)*usyears_10/chisq col;
RUN;

*weighted percent of immigrants in each category;
PROC SURVEYFREQ DATA= all_data;
cluster sdmvpsu;
```

```
strata sdmvstra;
weight wtsb16yr;
TABLES studypop*usyears_10/chisq row;
RUN;




********************************************************************
        TABLE 2: Percent detect and percentiles by immigrant status
********************************************************************;
proc univariate data=all_data plots normal;
var urxmep urxmbp urxmhp urxmzp urxmc1 urxmnm urxmnp urxmhh urxmoh urxmib;
run;

*log transform;
data all_data; set all_data;
/*MEP*/
ln_urxmep = log(urxmep);
/*MnBP*/
ln_urxmbp = log(urxmbp);
/*MEHP*/
ln_urxmhp = log(urxmhp);
/*MBzP*/
ln_urxmzp = log(urxmzp);
/*MCPP*/
ln_urxmc1 = log(urxmc1);
/*MnMP*/
ln_urxmnm = log(urxmnm);
/*MiNP*/
ln_urxmnp = log(urxmnp);
/*MnOP*/
ln_urxmop = log(urxmop);
/*MHHP*/
ln_urxmhh = log(urxmhh);
/*MOH*/
ln_urxmoh = log(urxmoh);
/*MiBP*/
ln_urxmib = log(urxmib);
/*sumDEHP*/
ln_sumDEHP = log(sumDEHP);
run;



*Need to make <LOD flag;
```

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```
proc univariate data=all_data;
var urxmbp urxmcp urxmep urxmhp urxmnp urxmop urxmzp
 urxmc1 urxmhh urxmoh urxmib urxmnm urxmnp urxmop;
where sddsrvyr =2;
run;
*1999-2000;
proc univariate data=all_data;
var  urxmep urxmhp urxmop urxmzp
urxmhh urxmoh urxmnp urxmop;
where sddsrvyr =1;
run;
proc univariate data=all_data;
var  urxmc1 ;
where sddsrvyr =2;
run;
*making comment codes;
*MBP;
data all_data; set all_data;
if sddsrvyr = 1 and urxmbp = . then URDMBPLC = .;
else if sddsrvyr = 1 and urxmbp <=0.8 then URDMBPLC = 1;
else if sddsrvyr = 1 and urxmbp >0.8 then URDMBPLC = 0;
run;
data all_data; set all_data;
if sddsrvyr = 2 and urxmbp = . then URDMBPLC = .;
else if sddsrvyr = 2 and urxmbp <=0.8 then URDMBPLC = 1;
else if sddsrvyr = 2 and urxmbp >0.8 then URDMBPLC = 0;
run;
*MCP;
data all_data; set all_data;
if sddsrvyr = 2 and urxmcp = . then URDMCPLC = .;
else if sddsrvyr = 2 and urxmcp <=0.4264 then URDMCPLC = 1;
else if sddsrvyr = 2 and urxmcp >0.4264 then URDMCPLC = 0;
run;
*MEP;
data all_data; set all_data;
if sddsrvyr = 2 and urxmEp = . then URDMEPLC = .;
else if sddsrvyr = 2 and urxmEp <=0.42 then URDMEPLC = 1;
else if sddsrvyr = 2 and urxmEp >0.42 then URDMEPLC = 0;
run;
data all_data; set all_data;
if sddsrvyr = 1 and urxmEp = . then URDMEPLC = .;
else if sddsrvyr = 1 then URDMEPLC = 0;
run;
*MHP;
data all_data; set all_data;
if sddsrvyr = 2 and urxmhp = . then URDMhPLC = .;
```

```
else if sddsrvyr = 2 and urxmhp <=0.7 then URDMhPLC = 1;
else if sddsrvyr = 2 and urxmhp >0.7 then URDMhPLC = 0;
run;
data all_data; set all_data;
if sddsrvyr = 1 and urxmhp = . then URDMhPLC = .;
else if sddsrvyr = 1 and urxmhp <=0.8 then URDMhPLC = 1;
else if sddsrvyr = 1 and urxmhp >0.8 then URDMhPLC = 0;
run;
*MNP;
data all_data; set all_data;
if sddsrvyr = 2 and urxmnp = . then URDMnPLC = .;
else if sddsrvyr = 2 and urxmnp <=0.8712 then URDMnPLC = 1;
else if sddsrvyr = 2 and urxmnp >0.8712 then URDMnPLC = 0;
run;
*MOP;
data all_data; set all_data;
if sddsrvyr = 2 and urxmop = . then URDMoPLC = .;
else if sddsrvyr = 2 and urxmop <=1.1879 then URDMoPLC = 1;
else if sddsrvyr = 2 and urxmop >1.1879 then URDMoPLC = 0;
run;
*MZP;
data all_data; set all_data;
if sddsrvyr = 2 and urxmzp = . then URDMzPLC = .;
else if sddsrvyr = 2 and urxmzp <=0.1527 then URDMzPLC = 1;
else if sddsrvyr = 2 and urxmzp >0.1527 then URDMzPLC = 0;
run;
data all_data; set all_data;
if sddsrvyr = 1 and urxmzp = . then URDMzPLC = .;
else if sddsrvyr = 1 and urxmzp <=0.4073 then URDMzPLC = 1;
else if sddsrvyr = 1 and urxmzp >0.4073 then URDMzPLC = 0;
run;


*MNP;
data all_data; set all_data;
if sddsrvyr = 2 and urxmnp = . then URDmnpLC = .;
else if sddsrvyr = 2 and urxmnp <=0.8712 then URDmnpLC = 1;
else if sddsrvyr = 2 and urxmnp >0.8712 then URDmnpLC = 0;
run;
data all_data; set all_data;
if sddsrvyr = 1 and urxmnp = . then URDmnpLC = .;
else if sddsrvyr = 1 and urxmnp <=0.8712 then URDmnpLC = 1;
else if sddsrvyr = 1 and urxmnp >0.8712 then URDmnpLC = 0;
run;

*MoP;
```

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```
data all_data; set all_data;
if sddsrvyr = 2 and urxmop = . then URDmopLC = .;
else if sddsrvyr = 2 and urxmop <=1.1879 then URDmopLC = 1;
else if sddsrvyr = 2 and urxmop >1.1879 then URDmopLC = 0;
run;
data all_data; set all_data;
if sddsrvyr = 1 and urxmop = . then URDmopLC = .;
else if sddsrvyr = 1 and urxmop <=1.0691 then URDmopLC = 1;
else if sddsrvyr = 1 and urxmop >1.0691 then URDmopLC = 0;
run;


*MnM;
data all_data; set all_data;
if sddsrvyr = 2 and urxmnm = . then URDMNMLC = .;
else if sddsrvyr = 2 and urxmnm <=0.1 then URDMNMLC = 1;
else if sddsrvyr = 2 and urxmnm >0.1 then URDMNMLC = 0;
run;
*MC1;
data all_data; set all_data;
if sddsrvyr = 2 and urxmc1 = . then URDmc1LC = .;
else if sddsrvyr = 2 and urxmc1 <=0.3 then URDmc1LC = 1;
else if sddsrvyr = 2 and urxmc1 >0.3 then URDmc1LC = 0;
run;
*MHH;
data all_data; set all_data;
if sddsrvyr = 2 and urxmhh = . then URDmhhLC = .;
else if sddsrvyr = 2 and urxmhh <=0.7 then URDmhhLC = 1;
else if sddsrvyr = 2 and urxmhh >0.7 then URDmhhLC = 0;
run;
*MOH;
data all_data; set all_data;
if sddsrvyr = 2 and urxmoh = . then URDmohLC = .;
else if sddsrvyr = 2 and urxmoh <=0.8 then URDmohLC = 1;
else if sddsrvyr = 2 and urxmoh >0.8 then URDmohLC = 0;
run;
*MIB;
data all_data; set all_data;
if sddsrvyr = 2 and urxmib = . then URDmibLC = .;
else if sddsrvyr = 2 and urxmib <=0.7 then URDmibLC = 1;
else if sddsrvyr = 2 and urxmib >0.7 then URDmibLC = 0;
run;


*2001-2002;
proc freq data=all_data;
tables urdmbplc URDMCPLC URDMEPLC URDMhPLC URDMnPLC URDMoPLC
```

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```
URDMzPLC URDMNMLC URDmc1LC URDmhhLC URDmohLC URDmibLC URDMnpLC
URDMopLC;
where sddsrvyr =2 and studypop=1;
run;
proc freq data=all_data;
tables urdmbplc URDMCPLC URDMEPLC URDMhPLC URDMnPLC URDMoPLC
URDMzPLC URDMNMLC URDmc1LC URDmhhLC URDmohLC URDmibLC URDMnpLC
URDMopLC;
where sddsrvyr =1 and studypop=1;
run;

proc freq data=all_data;
tables urdmbplc URDMCPLC URDMEPLC URDMhPLC URDMnPLC URDMoPLC
URDMzPLC URDMNMLC URDmc1LC URDmhhLC URDmohLC URDmibLC URDMnpLC
URDMopLC;
by sddsrvyr;
where studypop=1;
run;


********* Table 2 values;
*******************************************;
proc sort data=all_data;
by immigrant;
run;

proc univariate;
var urxmhp; /*0.35*/
where sddsrvyr = 6;
run;
proc print data=all_data;
var seqn sddsrvyr urdmhplc urxmhp;
where urdmhplc = 37;
run;

data all_data; set all_data;
if urdmhplc = 37 then urdmhplc = 1;
run;

*1999-2014 metabolites;
proc freq data = all_data;
tables (urdmeplc /*mep*/ URDMBPLC /*MnBP*/ urdmzplc /*MBzP*/)*immigrant;
where studypop=1;
run;
*2001-2014 metabolites;
proc freq data = all_data;
```

```
tables (urdmhplc /*MEHP*/
URDMIBLC /*MiBP*/ URDMC1LC /*MECPP*/
urdmhhlc /*MEHHP*/ urdmohlc /*MEOHP*/ )*immigrant;
where studypop=1;
run;

*percentiles;
proc sort data=all_data;
by immigrant;
run;
proc univariate data=all_data;
weight wtsb16yr;
var urxmep URXMBP urxmzp urxmib urxmc1 urxmhp urxmhh urxmoh sumDEHP;
by immigrant;
where studypop=1;
run;

*creatinine;
proc univariate data=all_data;
weight wtsb16yr;
var urxucr;
by immigrant;
where studypop=1;
run;
```

```
*********************************************************************
TABLE 3: US BORN VS FOREIGN BORN (SHORT AND LONG TERM) PHTHALATE
LEVELS
*********************************************************************;

*Survey year dummies;
data all_data; set all_data;
if sddsrvyr ne . then do;
        year_1=(sddsrvyr=1);
        year_2=(sddsrvyr=2);
        year_3=(sddsrvyr=3);
        year_4=(sddsrvyr=4);
        year_5=(sddsrvyr=5);
        year_6=(sddsrvyr=6);
        year_7=(sddsrvyr=7);
        year_8=(sddsrvyr=8);
        end;
```

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```
run;

proc freq data=all_data;
tables sddsrvyr year_1 year_2 year_3 year_4 year_5 year_6 year_7 year_8;
where studypop=1;
run;

*race;
data all_data; set all_data;
if ridreth1 ne . then do;
        mexam= (ridreth1=1);
        otherhis= (ridreth1=2);
        white= (ridreth1=3);
        black= (ridreth1=4);
        other= (ridreth1=5);
end;
run;

proc freq data=all_data;
tables ridreth1 mexam otherhis white black other;
where studypop=1;
run;

*education;
data all_data; set all_data;
if edu_cat ne . then do;
        LT_HS= (edu_cat=1);
        HS= (edu_cat=2);
        SomeColl= (edu_cat=3);
        Coll= (edu_cat=4);
end;
run;

proc freq data=all_data;
tables edu_cat lt_hs hs somecoll coll;
where studypop=1;
run;

*PIR;
data all_data; set all_data;
if pir_cat ne . then do;
        below_pov= (pir_cat=1);
        above_pov= (pir_cat=2);
end;
run;
```

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```
data all_data; set all_data;
if pir_5cat ne . then do;
        pir1= (pir_5cat=1);
        pir2= (pir_5cat=2);
        pir3= (pir_5cat=3);
        pir4= (pir_5cat=4);
        pir5= (pir_5cat=5);
end;
run;

*smoking;
data all_data; set all_data;
if current_smoker ne . then do;
        smoker= (current_smoker=1);
        nonsmoker= (current_smoker=0);
end;
run;

proc freq data=all_data;
tables pir_cat below_pov above_pov;
where studypop=1;
run;


*MODELS by age and years in US: Table 3
************************************************************,
*making an interaction for age time years in US;
data all_data; set all_data;
if immigrant = . then resident_status = .;
else if ridageyr = . then resident_status = .;
else if immigrant = 1 and usyears_10 = . then resident_status = .;
else if immigrant = 0 and ridageyr <40 then resident_status = 0; /*Young US born*/
else if immigrant = 0 and ridageyr >=40 then resident_status = 1; /*Old US born*/
else if immigrant = 1 and usyears_10 = 1 and ridageyr <40 then resident_status = 2; /*Young
recent immigrant*/
else if immigrant = 1 and usyears_10 = 1 and ridageyr >=40 then resident_status = 3; /*Older
recent immigrant*/
else if immigrant = 1 and usyears_10 = 2 and ridageyr <40 then resident_status = 4; /*Young
long-term immigrant*/
else if immigrant = 1 and usyears_10 = 2 and ridageyr >=40 then resident_status = 5; /*Older
long-term immigrant*/
else resident_status = 6;
run;

proc freq data=all_data;
tables resident_status;
```

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```
run;

*categorical;
data all_data; set all_data;
if resident_status ne . then do;
        US_Young= (resident_status=0);
        US_Old= (resident_status=1);
        Recent_Young= (resident_status=2);
        Recent_Old= (resident_status=3);
        Longer_Young= (resident_status=4);
        Longer_Old=(resident_status=5);
end;
run;

proc freq data=all_data;
tables resident_status us_young us_old recent_young recent_old longer_young longer_old;
where studypop=1;
run;

**MEP
**********************************************************;
*SAMPLE SIZES;
PROC SURVEYFREQ DATA= ALL_DATA;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
TABLES RESIDENT_STATUS;
WHERE URXMEP NE . AND URXUCR NE . AND EDU_CAT NE . AND RIDAGEYR NE .
AND RIAGENDR NE .
AND RIDRETH1 NE . AND PIR_5CAT NE . AND SDDSRVYR NE . AND STUDYPOP=1;
RUN;

*REF 1;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
model ln_urxmep = urxucr us_old recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
mexam otherhis other black
pir2 pir3 pir4 pir5
year_2 year_3 year_4 year_5 year_6 year_7 year_8/clparm;
domain studypop;
run;
*REF 2;
```

```
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
model ln_urxmep = urxucr us_young recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
mexam otherhis other black
pir2 pir3 pir4 pir5
year_2 year_3 year_4 year_5 year_6 year_7 year_8/clparm;
domain studypop;
run;

**MnBP
**************************************************,
*SAMPLE SIZES;
PROC SURVEYFREQ DATA= ALL_DATA;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
TABLES RESIDENT_STATUS;
WHERE URXMBP NE . AND URXUCR NE . AND EDU_CAT NE . AND RIDAGEYR NE .
AND RIAGENDR NE .
AND RIDRETH1 NE . AND PIR_CAT NE . AND current_smoker ne . and SDDSRVYR NE .
AND STUDYPOP=1;
RUN;
*REF 1;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
model ln_urxmbp = urxucr us_old recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
mexam otherhis other black
pir2 pir3 pir4 pir5
smoker
year_2 year_3 year_4 year_5 year_6 year_7 year_8/clparm;
domain studypop;
run;
*REF 2;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
model ln_urxmbp = urxucr us_young recent_young recent_old longer_young longer_old
```

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```
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
mexam otherhis other black
pir2 pir3 pir4 pir5
smoker
year_2 year_3 year_4 year_5 year_6 year_7 year_8/clparm;
domain studypop;
run;



**MiBP
*************************************************;
*SAMPLE SIZES;
PROC SURVEYFREQ DATA= ALL_DATA;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
TABLES RESIDENT_STATUS;
WHERE URXMIB NE . AND URXUCR NE . AND EDU_CAT NE . AND RIDAGEYR NE .
AND RIAGENDR NE .
AND RIDRETH1 NE . AND PIR_CAT NE . AND STUDYPOP=1 AND SDDSRVYR >=2;
RUN;
*REF 1;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
model ln_urxmib = urxucr us_old recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
mexam otherhis other black
pir2 pir3 pir4 pir5
year_2 year_3 year_4 year_5 year_6 year_7 year_8/clparm;
domain studypop;
where sddsrvyr >=2;
run;
*REF 2;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
model ln_urxmib = urxucr us_young recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
mexam otherhis other black
pir2 pir3 pir4 pir5
```

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```
year_2 year_3 year_4 year_5 year_6 year_7 year_8/clparm;
domain studypop;
where sddsrvyr >=2;
run;

**MCPP
*******************************************************;
*SAMPLE SIZES;
PROC SURVEYFREQ DATA= ALL_DATA;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
TABLES RESIDENT_STATUS;
WHERE URXMC1 NE . AND URXUCR NE . AND EDU_CAT NE . AND RIDAGEYR NE .
AND RIAGENDR NE .
AND RIDRETH1 NE . AND PIR_CAT NE . and current_smoker ne . AND STUDYPOP=1
AND SDDSRVYR >=2;
RUN;
*REF 1;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
model ln_urxmc1 = urxucr us_old recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
mexam otherhis other black
pir2 pir3 pir4 pir5
smoker
year_2 year_3 year_4 year_5 year_6 year_7 year_8/clparm;
domain studypop;
where sddsrvyr >=2;
run;
*REF 2;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
model ln_urxmc1 = urxucr us_young recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
mexam otherhis other black
pir2 pir3 pir4 pir5
smoker
year_2 year_3 year_4 year_5 year_6 year_7 year_8/clparm;
domain studypop;
```

```
where sddsrvyr >=2;
run;

**MBzP
***************************************************,
*SAMPLE SIZES;
PROC SURVEYFREQ DATA= ALL_DATA;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
TABLES RESIDENT_STATUS;
WHERE URXMZP NE . AND URXUCR NE . AND EDU_CAT NE . AND RIDAGEYR NE .
AND RIAGENDR NE .
AND RIDRETH1 NE . AND PIR_CAT NE . AND SDDSRVYR NE . AND STUDYPOP=1;
RUN;


*REF 1;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
model ln_urxmzp = urxucr us_old recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
mexam otherhis other black
pir2 pir3 pir4 pir5
year_2 year_3 year_4 year_5 year_6 year_7 year_8/ clparm;
domain studypop;
run;
*REF 2;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
model ln_urxmzp = urxucr us_young recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
mexam otherhis other black
pir2 pir3 pir4 pir5
year_2 year_3 year_4 year_5 year_6 year_7 year_8/clparm;
domain studypop;
run;


**DEHP
```

```
*****************************************************;
*SAMPLE SIZE;
PROC SURVEYFREQ DATA= ALL_DATA;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
TABLES RESIDENT_STATUS;
WHERE LN_SUMDEHP NE . AND URXUCR NE . AND EDU_CAT NE . AND RIDAGEYR
NE . AND RIAGENDR NE .
AND RIDRETH1 NE . AND PIR_CAT NE . AND SDDSRVYR NE . AND SDDSRVYR >=2
AND STUDYPOP=1;
RUN;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
model ln_sumDEHP = urxucr us_old recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
mexam otherhis other black
pir2 pir3 pir4 pir5
year_2 year_3 year_4 year_5 year_6 year_7 year_8/clparm;
domain studypop;
where sddsrvyr >=2;
run;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
model ln_sumDEHP = urxucr us_young recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
mexam otherhis other black
pir2 pir3 pir4 pir5
year_2 year_3 year_4 year_5 year_6 year_7 year_8/clparm;
domain studypop;
where sddsrvyr >=2;
run;
```

```
***************************************************************************
                            * TABLE 4 *
            IN 2011-2014 ONLY, LSGMS BY RACE BETWEEN FOREIGN AND US
BORN
```

29

```
********************************************************************
;
**MEP
****************************************************;
proc sort data=all_data;
by immigrant;
run;
*LSGMs: comparing immigrants to US born;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB1114;
class riagendr edu_cat pir_cat sddsrvyr immigrant;
model ln_urxmep = immigrant urxucr ridageyr ridageyr*ridageyr riagendr edu_cat pir_cat
sddsrvyr/clparm;
lsmeans immigrant;
domain studypop*ridreth3;
run;


**MnBP
****************************************************;
*LSGMs: comparing immigrants to US born;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB1114;
class riagendr edu_cat pir_cat sddsrvyr immigrant current_smoker;
model ln_urxmbp = immigrant urxucr ridageyr ridageyr*ridageyr riagendr edu_cat pir_cat
sddsrvyr current_smoker/clparm;
lsmeans immigrant;
domain studypop*ridreth3;
run;


**MiBP
****************************************************;
*LSGMs: comparing immigrants to US born;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB1114;
class riagendr edu_cat pir_cat sddsrvyr immigrant;
model ln_urxmib = immigrant urxucr ridageyr ridageyr*ridageyr riagendr edu_cat pir_cat
sddsrvyr/clparm;
lsmeans immigrant;
```

30

```
domain studypop*ridreth3;
run;



**MCPP
**************************************************.
*LSGMs: comparing immigrants to US born;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB1114;
class riagendr edu_cat  pir_cat sddsrvyr immigrant current_smoker;
model ln_urxmc1 = immigrant urxucr ridageyr ridageyr*ridageyr riagendr edu_cat  pir_cat
sddsrvyr current_smoker/clparm;
lsmeans immigrant;
domain studypop*ridreth3;
run;


**MBzP
**************************************************.
*LSGMs: comparing immigrants to US born;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB1114;
class riagendr edu_cat pir_cat sddsrvyr immigrant;
model ln_urxmzp = immigrant urxucr ridageyr ridageyr*ridageyr riagendr edu_cat pir_cat
sddsrvyr/clparm;
lsmeans immigrant;
domain studypop*ridreth3;
run;


***DEHP
**************************************************.
*LSGMs: comparing immigrants to US born;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB1114;
class riagendr edu_cat pir_cat sddsrvyr immigrant;
model ln_sumDEHP = immigrant urxucr ridageyr ridageyr*ridageyr riagendr edu_cat pir_cat
sddsrvyr/clparm;
lsmeans immigrant;
domain studypop*ridreth3;
run;
```

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```
*************************************************************************
* FIGURE 1
*************************************************************************
;
**MEP
***************************************************;
*LSGMs: comparing immigrants to US born;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
class riagendr edu_cat ridreth1 pir_5cat sddsrvyr immigrant;
model ln_urxmep = immigrant urxucr ridageyr ridageyr*ridageyr riagendr edu_cat ridreth1
pir_5cat
sddsrvyr/clparm;
lsmeans immigrant;
domain studypop;
run;
*LSGMs: year_trends among immigrants
(code uses whole study population to predict LSmeans for this subset);
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
class year_trends riagendr edu_cat ridreth1 pir_5cat sddsrvyr;
model ln_urxmep = urxucr year_trends ridageyr ridageyr*ridageyr riagendr edu_cat ridreth1
pir_5cat
sddsrvyr/clparm;
lsmeans year_trends;
domain studypop;
run;
*p-value for trend among immigrants only
(remove group 0 which is US born);
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
class riagendr edu_cat ridreth1 pir_5cat sddsrvyr;
model ln_urxmep = urxucr year_trends ridageyr ridageyr*ridageyr riagendr edu_cat ridreth1
pir_5cat
sddsrvyr/clparm;
domain studypop*immigrant;
run;
```

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```
**MnBP
****************************************************;
*LSGMs: comparing immigrants to US born;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
class riagendr edu_cat ridreth1 pir_5cat sddsrvyr immigrant current_smoker;
model ln_urxmbp = immigrant urxucr ridageyr ridageyr*ridageyr riagendr edu_cat ridreth1
pir_5cat
current_smoker sddsrvyr/clparm;
lsmeans immigrant;
domain studypop;
run;
*LSGMs: year_trends among immigrants
(code uses whole study population to predict LSmeans for this subset);
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
class year_trends riagendr edu_cat ridreth1 pir_5cat sddsrvyr current_smoker;
model ln_urxmbp = urxucr year_trends ridageyr ridageyr*ridageyr riagendr edu_cat ridreth1
pir_5cat
sddsrvyr current_smoker/clparm;
lsmeans year_trends;
domain studypop;
run;
*p-value for trend among immigrants only
(remove group 0 which is US born);
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
class riagendr edu_cat ridreth1 pir_5cat sddsrvyr current_smoker;
model ln_urxmbp = urxucr year_trends ridageyr ridageyr*ridageyr riagendr edu_cat ridreth1
pir_5cat current_smoker
sddsrvyr/clparm;
domain studypop*immigrant;
run;

**MiBP
****************************************************;
*LSGMs: comparing immigrants to US born;
proc surveyreg data=all_data;
cluster sdmvpsu;
```

33

```
strata sdmvstra;
weight WTSB14yr;
class riagendr edu_cat ridreth1 pir_5cat sddsrvyr immigrant;
model ln_urxmib = immigrant urxucr ridageyr ridageyr*ridageyr riagendr edu_cat ridreth1
pir_5cat
sddsrvyr/clparm;
lsmeans immigrant;
domain studypop;
where sddsrvyr >=2;
run;
*LSGMs: year_trends among immigrants
(code uses whole study population to predict LSmeans for this subset);
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
class year_trends riagendr edu_cat ridreth1 pir_5cat sddsrvyr;
model ln_urxmib = urxucr year_trends ridageyr ridageyr*ridageyr riagendr edu_cat ridreth1
pir_5cat
sddsrvyr/clparm;
lsmeans year_trends;
domain studypop;
where sddsrvyr >=2;
run;
*p-value for trend among immigrants only
(remove group 0 which is US born);
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
class riagendr edu_cat ridreth1 pir_5cat sddsrvyr;
model ln_urxmib = urxucr year_trends ridageyr ridageyr*ridageyr riagendr edu_cat ridreth1
pir_5cat
sddsrvyr/clparm;
domain studypop*immigrant;
where sddsrvyr >=2;
run;


**MCPP
***************************************************,
*LSGMs: comparing immigrants to US born;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
```

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```
class riagendr edu_cat ridreth1 pir_5cat sddsrvyr immigrant current_smoker;
model ln_urxmc1 = immigrant urxucr ridageyr ridageyr*ridageyr riagendr edu_cat ridreth1
current_smoker pir_5cat
sddsrvyr/clparm;
lsmeans immigrant;
domain studypop;
where sddsrvyr >=2;
run;
*LSGMs: year_trends among immigrants
(code uses whole study population to predict LSmeans for this subset);
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
class year_trends riagendr edu_cat ridreth1 pir_5cat current_smoker sddsrvyr;
model ln_urxmc1 = urxucr year_trends ridageyr ridageyr*ridageyr riagendr edu_cat ridreth1
pir_5cat current_smoker
sddsrvyr/clparm;
lsmeans year_trends;
domain studypop;
where sddsrvyr >=2;
run;
*p-value for trend among immigrants only
(remove group 0 which is US born);
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
class riagendr edu_cat ridreth1 pir_5cat sddsrvyr current_smoker;
model ln_urxmc1 = urxucr year_trends ridageyr ridageyr*ridageyr riagendr edu_cat ridreth1
pir_5cat current_smoker
sddsrvyr/clparm;
domain studypop*immigrant;
where sddsrvyr >=2;
run;


**MBzP
*****************************************************;
*LSGMs: comparing immigrants to US born;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
class riagendr edu_cat ridreth1 pir_5cat sddsrvyr immigrant;
```

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```
model ln_urxmzp = immigrant urxucr ridageyr ridageyr*ridageyr riagendr edu_cat ridreth1
pir_5cat
sddsrvyr/clparm;
lsmeans immigrant;
domain studypop;
run;
*LSGMs: year_trends among immigrants
(code uses whole study population to predict LSmeans for this subset);
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
class year_trends riagendr edu_cat ridreth1 pir_5cat sddsrvyr;
model ln_urxmzp = urxucr year_trends ridageyr ridageyr*ridageyr riagendr edu_cat ridreth1
pir_5cat
sddsrvyr/clparm;
lsmeans year_trends;
domain studypop;
run;
*p-value for trend among immigrants only
(remove group 0 which is US born);
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
class riagendr edu_cat ridreth1 pir_5cat sddsrvyr;
model ln_urxmzp = urxucr year_trends ridageyr ridageyr*ridageyr riagendr edu_cat ridreth1
pir_5cat
sddsrvyr/clparm;
domain studypop*immigrant;
run;

***DEHP
**************************************************;
*LSGMs: comparing immigrants to US born;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
class riagendr edu_cat ridreth1 pir_5cat sddsrvyr immigrant;
model ln_sumDEHP = immigrant urxucr ridageyr ridageyr*ridageyr riagendr edu_cat ridreth1
pir_5cat
sddsrvyr/clparm;
lsmeans immigrant;
domain studypop;
where sddsrvyr >=2;
```

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```
run;
*LSGMs: year_trends among immigrants
(code uses whole study population to predict LSmeans for this subset);
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
class year_trends riagendr edu_cat ridreth1 pir_5cat sddsrvyr;
model ln_sumDEHP = urxucr year_trends ridageyr ridageyr*ridageyr riagendr edu_cat ridreth1
pir_5cat
sddsrvyr/clparm;
lsmeans year_trends;
domain studypop;
where sddsrvyr >=2;
run;
*p-value for trend among immigrants only
(remove group 0 which is US born);
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
class riagendr edu_cat ridreth1 pir_5cat sddsrvyr;
model ln_sumDEHP = urxucr year_trends ridageyr ridageyr*ridageyr riagendr edu_cat ridreth1
pir_5cat
sddsrvyr/clparm;
domain studypop*immigrant;
where sddsrvyr >=2;
run;




*****************************************************************************
*
*****************************************************************************
*
               SENSITIVITY ANALYSIS: SUPPLEMENTAL TABLE S4 IN MEXICAN
AMERICANS ONLY
*****************************************************************************
*****************************************************************************
**MEP
********************************************************·
                                                       ,
*SAMPLE SIZES;
PROC SURVEYFREQ DATA= ALL_DATA;
cluster sdmvpsu;
strata sdmvstra;
```

```
weight WTSB16yr;
TABLES RESIDENT_STATUS;
WHERE URXMEP NE . AND URXUCR NE . AND EDU_CAT NE . AND RIDAGEYR NE .
AND RIAGENDR NE .
AND RIDRETH1 = 1 AND PIR_CAT NE . AND SDDSRVYR NE . AND STUDYPOP=1;
RUN;


*REF 1;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
model ln_urxmep = urxucr us_old recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
PIR2 PIR3 PIR4 PIR5
year_2 year_3 year_4 year_5 year_6 year_7 year_8/clparm;
domain studypop*ridreth1;
run;
*REF 2;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
model ln_urxmep = urxucr us_young recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
PIR2 PIR3 PIR4 PIR5 year_2 year_3 year_4 year_5 year_6 year_7 year_8/clparm;
domain studypop*ridreth1;
run;


**MnBP
**************************************************,
*SAMPLE SIZES;
PROC SURVEYFREQ DATA= ALL_DATA;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
TABLES RESIDENT_STATUS;
WHERE URXMBP NE . AND URXUCR NE . AND EDU_CAT NE . AND RIDAGEYR NE .
AND RIAGENDR NE .
AND RIDRETH1 =1 AND PIR_CAT NE . AND SDDSRVYR ne . and current_smoker ne .
AND STUDYPOP=1;
RUN;
*REF 1;
```

```
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
model ln_urxmbp = urxucr us_old recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
nonsmoker
pir2 pir3 pir4 pir5
year_2 year_3 year_4 year_5 year_6 year_7 year_8/clparm;
domain studypop*ridreth1;
run;
*REF 2;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
model ln_urxmbp = urxucr us_young recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
nonsmoker
pir2 pir3 pir4 pir5
year_2 year_3 year_4 year_5 year_6 year_7 year_8/clparm;
domain studypop*ridreth1;
run;


**MiBP
**************************************************;
*SAMPLE SIZES;
PROC SURVEYFREQ DATA= ALL_DATA;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
TABLES RESIDENT_STATUS;
WHERE URXMIB NE . AND URXUCR NE . AND EDU_CAT NE . AND RIDAGEYR NE .
AND RIAGENDR NE .
AND RIDRETH1 =1 AND PIR_CAT NE . AND STUDYPOP=1 AND SDDSRVYR ne .;
RUN;
*REF 1;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
model ln_urxmib = urxucr us_old recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
```

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```
hs somecoll coll
pir2 pir3 pir4 pir5
year_3 year_4 year_5 year_6 year_7 year_8/clparm;
domain studypop*ridreth1;
run;
*REF 2;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
model ln_urxmib = urxucr us_young recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
pir2 pir3 pir4 pir5
year_3 year_4 year_5 year_6 year_7 year_8/clparm;
domain studypop*ridreth1;
run;

**MCPP
***********************************************************,
*SAMPLE SIZES;
PROC SURVEYFREQ DATA= ALL_DATA;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
TABLES RESIDENT_STATUS;
WHERE URXMC1 NE . AND URXUCR NE . AND EDU_CAT NE . AND RIDAGEYR NE .
AND RIAGENDR NE .
AND RIDRETH1 =1 AND PIR_CAT NE . and current_smoker ne . AND STUDYPOP=1 AND
SDDSRVYr ne .;
RUN;
*REF 1;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
model ln_urxmc1 = urxucr us_old recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
nonsmoker
hs somecoll coll
pir2 pir3 pir4 pir5
year_3 year_4 year_5 year_6 year_7 year_8/clparm;
domain studypop*ridreth1;
run;
*REF 2;
proc surveyreg data=all_data;
```

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```
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
model ln_urxmc1 = urxucr us_young recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
nonsmoker
pir2 pir3 pir4 pir5
year_3 year_4 year_5 year_6 year_7 year_8/clparm;
domain studypop*ridreth1;
run;

**MBzP
*****************************************************,
*SAMPLE SIZES;
PROC SURVEYFREQ DATA= ALL_DATA;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
TABLES RESIDENT_STATUS;
WHERE URXMZP NE . AND URXUCR NE . AND EDU_CAT NE . AND RIDAGEYR NE .
AND RIAGENDR NE .
AND RIDRETH1 =1 AND PIR_CAT NE . AND SDDSRVYR ne . AND STUDYPOP=1;
RUN;

*REF 1;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
model ln_urxmzp = urxucr us_old recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
pir2 pir3 pir4 pir5
year_2 year_3 year_4 year_5 year_6 year_7 year_8/clparm;
domain studypop*ridreth1;
run;
*REF 2;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
model ln_urxmzp = urxucr us_young recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
pir2 pir3 pir4 pir5
```

```
year_2 year_3 year_4 year_5 year_6 year_7 year_8/clparm;
domain studypop*ridreth1;
run;


**DEHP
*********************************************************,
*SAMPLE SIZE;
PROC SURVEYFREQ DATA= ALL_DATA;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
TABLES RESIDENT_STATUS;
WHERE LN_SUMDEHP NE . AND URXUCR NE . AND EDU_CAT NE . AND RIDAGEYR
NE . AND RIAGENDR NE .
AND RIDRETH1 =1 AND PIR_CAT NE . AND SDDSRVYR NE . AND STUDYPOP=1;
RUN;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
model ln_sumDEHP = urxucr us_old recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
pir2 pir3 pir4 pir5
year_2 year_3 year_4 year_5 year_6 year_7 year_8/clparm;
domain studypop*ridreth1;
run;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
model ln_sumDEHP = urxucr us_young recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
pir2 pir3 pir4 pir5
year_2 year_3 year_4 year_5 year_6 year_7 year_8/clparm;
domain studypop*ridreth1;
run;




*****************************************************************************
* PERCENT DIFFERENCE BY DEMOGRAPHICS:
SUPPLEMENTAL TABLE S3
```

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```
***********************************************************************
;

**MEP
***************************************************,
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
class year_trends riagendr (ref='1') edu_cat (ref ='1') ridreth1 (ref = '3') pir_5cat (ref = '1')
sddsrvyr;
model ln_urxmep = urxucr year_trends ridageyr ridageyr*ridageyr riagendr edu_cat ridreth1
pir_5cat
sddsrvyr/clparm solution;
domain studypop*immigrant;
run;


**MnbP
***************************************************,
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
class year_trends current_smoker (ref='1') riagendr (ref='1') edu_cat (ref ='1') ridreth1 (ref = '3')
pir_5cat (ref = '1') sddsrvyr;
model ln_urxmbp = current_smoker urxucr year_trends ridageyr ridageyr*ridageyr riagendr
edu_cat ridreth1 pir_5cat
sddsrvyr/clparm solution;
domain studypop*immigrant;
run;


**MiBP
***************************************************,
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
class year_trends riagendr (ref='1') edu_cat (ref ='1') ridreth1 (ref = '3') pir_5cat (ref = '1')
sddsrvyr;
model ln_urxmib =  urxucr year_trends ridageyr ridageyr*ridageyr riagendr edu_cat ridreth1
pir_5cat
sddsrvyr/clparm solution;
domain studypop*immigrant;
run;


**MCPP
```

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```
*****************************************************,
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
class year_trends current_smoker (ref='1') riagendr (ref='1') edu_cat (ref ='1') ridreth1 (ref = '3')
pir_5cat (ref = '1') sddsrvyr;
model ln_urxmc1 = urxucr current_smoker year_trends ridageyr ridageyr*ridageyr riagendr
edu_cat ridreth1 pir_5cat
sddsrvyr/clparm solution;
domain studypop*immigrant;
run;

**MBzP
*****************************************************,
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB16yr;
class year_trends riagendr (ref='1') edu_cat (ref ='1') ridreth1 (ref = '3') pir_5cat (ref = '1')
sddsrvyr;
model ln_urxmzp = urxucr year_trends ridageyr ridageyr*ridageyr riagendr edu_cat ridreth1
pir_5cat
sddsrvyr/clparm solution;
domain studypop*immigrant;
run;

**DEHP
*****************************************************,
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB14yr;
class year_trends riagendr (ref='1') edu_cat (ref ='1') ridreth1 (ref = '3') pir_5cat (ref = '1')
sddsrvyr;
model ln_sumdehp =  urxucr  year_trends ridageyr ridageyr*ridageyr riagendr edu_cat ridreth1
pir_5cat
sddsrvyr/clparm solution;
domain studypop*immigrant;
run;

*************************************************************************
*
*************************************************************************
*
```

SENSITIVITY ANALYSIS: SUPPLEMENTAL TABLE S5 2011-2014 ONLY

```
****************************************************************
****************************************************************

**MEP
*********************************************************.
*SAMPLE SIZES;
PROC SURVEYFREQ DATA= ALL_DATA;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB1114;
TABLES RESIDENT_STATUS;
WHERE URXMEP NE . AND URXUCR NE . AND EDU_CAT NE . AND RIDAGEYR NE .
AND RIAGENDR NE .
AND RIDRETH1 NE . AND PIR_CAT NE . AND SDDSRVYR NE . AND STUDYPOP=1;
RUN;

*REF 1;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB1114;
model ln_urxmep = urxucr us_old recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
mexam otherhis other black
pir2 pir3 pir4 pir5
year_8/clparm;
domain studypop;
where sddsrvyr >=7;
run;
*REF 2;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB1114;
model ln_urxmep = urxucr us_young recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
mexam otherhis other black
pir2 pir3 pir4 pir5
year_8/clparm;
domain studypop;
where sddsrvyr >=7;
run;
```

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```
**MnBP
*************************************************;
*SAMPLE SIZES;
PROC SURVEYFREQ DATA= ALL_DATA;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB1114;
TABLES RESIDENT_STATUS;
WHERE URXMBP NE . AND URXUCR NE . AND EDU_CAT NE . AND RIDAGEYR NE .
AND RIAGENDR NE .
AND RIDRETH1 NE . AND PIR_CAT NE . and current_smoker ne . AND SDDSRVYR in
(7,8) AND STUDYPOP=1;
RUN;
*REF 1;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB1114;
model ln_urxmbp = urxucr us_old recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
mexam otherhis other black
pir2 pir3 pir4 pir5
nonsmoker
year_8/clparm;
domain studypop;
where sddsrvyr >=7;
run;
*REF 2;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB1114;
model ln_urxmbp = urxucr us_young recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
mexam otherhis other black
pir2 pir3 pir4 pir5
nonsmoker
year_8/clparm;
domain studypop;
where sddsrvyr >=7;
run;


**MiBP
```

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```
**********************************************;
*SAMPLE SIZES;
PROC SURVEYFREQ DATA= ALL_DATA;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB1114;
TABLES RESIDENT_STATUS;
WHERE URXMIB NE . AND URXUCR NE . AND EDU_CAT NE . AND RIDAGEYR NE .
AND RIAGENDR NE .
AND RIDRETH1 NE . AND PIR_CAT NE . AND STUDYPOP=1 AND SDDSRVYR >=7;
RUN;
*REF 1;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB1114;
model ln_urxmib = urxucr us_old recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
mexam otherhis other black
pir2 pir3 pir4 pir5
year_8/clparm;
domain studypop;
where sddsrvyr >=7;
run;
*REF 2;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB1114;
model ln_urxmib = urxucr us_young recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
mexam otherhis other black
pir2 pir3 pir4 pir5
year_8/clparm;
domain studypop;
where sddsrvyr >=7;
run;

**MCPP
**************************************************************;
*SAMPLE SIZES;
PROC SURVEYFREQ DATA= ALL_DATA;
cluster sdmvpsu;
strata sdmvstra;
```

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```
weight WTSB1114;
TABLES RESIDENT_STATUS;
WHERE URXMC1 NE . AND URXUCR NE . AND EDU_CAT NE . AND RIDAGEYR NE .
AND RIAGENDR NE .
AND RIDRETH1 NE . AND PIR_CAT NE . and current_smoker ne . AND STUDYPOP=1
AND SDDSRVYR >=7;
RUN;
*REF 1;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB1114;
model ln_urxmc1 = urxucr us_old recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
mexam otherhis other black
pir2 pir3 pir4 pir5
nonsmoker
year_8/clparm;
domain studypop;
where sddsrvyr >=7;
run;
*REF 2;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB1114;
model ln_urxmc1 = urxucr us_young recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
mexam otherhis other black
pir2 pir3 pir4 pir5
nonsmoker
year_8/clparm;
domain studypop;
where sddsrvyr >=7;
run;

**MBzP
***************************************************;
*SAMPLE SIZES;
PROC SURVEYFREQ DATA= ALL_DATA;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB1114;
TABLES RESIDENT_STATUS;
```

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```
WHERE URXMZP NE . AND URXUCR NE . AND EDU_CAT NE . AND RIDAGEYR NE .
AND RIAGENDR NE .
AND RIDRETH1 NE . AND PIR_CAT NE . AND SDDSRVYR >=7 AND STUDYPOP=1;
RUN;


*REF 1;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB1114;
model ln_urxmzp = urxucr us_old recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
mexam otherhis other black
pir2 pir3 pir4 pir5
year_8/ clparm;
domain studypop;
where sddsrvyr >=7;
run;
*REF 2;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB1114;
model ln_urxmzp = urxucr us_young recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
mexam otherhis other black
pir2 pir3 pir4 pir5  year_8/clparm;
domain studypop;
where sddsrvyr >=7;
run;


**DEHP
*********************************************************;
*SAMPLE SIZE;
PROC SURVEYFREQ DATA= ALL_DATA;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB1114;
TABLES RESIDENT_STATUS;
WHERE LN_SUMDEHP NE . AND URXUCR NE . AND EDU_CAT NE . AND RIDAGEYR
NE . AND RIAGENDR NE .
AND RIDRETH1 NE . AND PIR_CAT NE . AND SDDSRVYR NE . AND SDDSRVYR >=7
AND STUDYPOP=1;
```

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```
RUN;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB1114;
model ln_sumDEHP = urxucr us_old recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
mexam otherhis other black
pir2 pir3 pir4 pir5
year_8/clparm;
domain studypop;
where sddsrvyr >=7;
run;
proc surveyreg data=all_data;
cluster sdmvpsu;
strata sdmvstra;
weight WTSB1114;
model ln_sumDEHP = urxucr us_young recent_young recent_old longer_young longer_old
ridageyr ridageyr*ridageyr riagendr
hs somecoll coll
mexam otherhis other black
pir2 pir3 pir4 pir5
year_8/clparm;
domain studypop;
where sddsrvyr >=7;
run;
```