

Skin Cancer Diagnosis among People with Disabilities

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Appendix Table 1. Variables used in study analyses.

Construct	NHIS Variable Name	Question	Responses	Recoding
Disability status	DISAB3_A	NHIS recode for composite score using VISIONDF_A; HEARINGDF_A; DIFF_A; COMDIFF_A; UPPSLFCR_A; COGMEMDF_A	1. Yes 2. No	Combines responses of a lot of difficulty and cannot do at all (yes) and combined responses of no difficulty and some difficulty (no). Refused, not ascertained, don't know set to missing.
Vision	VISIONDF_A	Do you have difficulty seeing, even when wearing glasses or contact lenses/seeing? Would you say...	1. No difficulty 2. Some difficulty 3. A lot of difficulty 4. Cannot do at all	Refused, not ascertained, don't know set to missing
Hearing	HEARINGDF_A	Do you have difficulty hearing, even when using your hearing aid(s)? Would you say...	1. No difficulty 2. Some difficulty 3. A lot of difficulty 4. Cannot do at all	Refused, not ascertained, don't know set to missing
Mobility	DIFF_A	Do you have difficulty walking or climbing steps? Would you say...	1. No difficulty 2. Some difficulty 3. A lot of difficulty 4. Cannot do at all	Refused, not ascertained, don't know set to missing
Communication	COMDIFF_A	Using your usual language, do you have difficulty communicating, for example, understanding or being understood?	1. No difficulty 2. Some difficulty 3. A lot of difficulty 4. Cannot do at all	Refused, not ascertained, don't know set to missing
Cognition	COGMEMDF_A	Do you have difficulty remembering or concentrating?	1. No difficulty 2. Some difficulty 3. A lot of difficulty 4. Cannot do at all	Refused, not ascertained, don't know set to missing
Self-care	UPPSLFCR_A	Do you have difficulty with self care, such as washing all over or dressing? Would you say	1. No difficulty 2. Some difficulty 3. A lot of difficulty 4. Cannot do at all	Refused, not ascertained, don't know set to missing

Skin cancer diagnosis	CANEV_A ; CANKIND1_A; MELANCAN_A, SKNMCAN_A, SKNNMCAN_A, SKNDKCAN_A	Recode to combine malignancies identified from CANEV_A: Have you EVER been told by a doctor or other health professional that you had ...Cancer or a malignancy of any kind? And CANKIND1_A: What kind of cancer was it?	Mentioned, Not mentioned, Refused, Not ascertained, Don't know	Refused, not ascertained, don't know set to missing
Age of skin cancer diagnosis	CANAGE1_A	How old were you when a doctor or other health professional first told you that you had ^CANKIND1?	001-120	Refused, not ascertained, don't know set to missing
Health insurance status	COVER_A COVER65_A	What kinds of health insurance or health care coverage do you have?	Private, Medicaid and other public, Dual eligible, Medicare Advantage, Medicare only excluding Medicare Advantage, Other coverage, Uninsured, Don't Know	Collapsed together across age groups: Private, Medicaid, Other, Uninsured; Combined: Medicare Advantage and Medicare; "Don't know" coded to missing
Age category	AGEP_A	NHIS calculated from Date of Birth and top-coded		Five groups: 18-29, 30-39, 40-49, 50-65, 66+. Refused, not ascertained, don't know set to missing.
Race	RACEALLP_A	Please select 1 or more of these categories: White, Black, African American, American Indian, Alaska Native, Native Hawaiian, Pacific Islander, Asian, or some other race?	White only, Black/African American only, Asian only, AIAN only, AIAN and any other group, Other single and multiple races, Refused, Not Ascertained, Don't know	Combined AIAN only, AIAN and any other group, Other single and multiple races. Refused, not ascertained, don't know set to missing.
Education	EDUC_A	What is the HIGHEST level of school you have completed or the highest degree you have received?	00 Never attended/kindergarten only 01 Grade 1-11 02 12th grade, no diploma 03 GED or equivalent 04 High School Graduate 05 Some college, no degree 06 Associate degree: occupational,	Combined to create three levels: 00-04; 05-07; 08-11. Refused, not ascertained, don't know set to missing.

			technical, or vocational program 07 Associate degree: academic program 08 Bachelor's degree (Example: BA, AB, BS, BBA) 09 Master's degree (Example: MA, MS, MEng, MEd, MBA) 10 Professional School degree (Example: MD, DDS, DVM, JD) 11 Doctoral degree (Example: PhD, EdD) 97 Refused 99 Don't Know	
Sex	SEX_A	Are you male or female?	Male, Female	Refused, not ascertained, don't know set to missing.
Region	REGION	N/A	Northeast, Midwest, South, West	N/A
Ethnicity	HISP_A	Do you consider yourself to be Hispanic or Latino?	Yes, No	Refused, not ascertained, don't know set to missing.
Sunburn past 12 months	ANYSBURN_A	During the past 12 months, did you ever have a sunburn?	Yes, No, Refused, Not ascertained, Don't know	Refused, not ascertained, don't know set to missing
Sunscreen use	SUNSCREEN_A	When you go outside on a sunny day, for more than one hour, how often do you use sunscreen?	Always, Most of the time, Sometimes, Rarely, Never, Don't go outside on a sunny day for more than one hour, Refused, Not ascertained, don't know	Combined responses of always, most of the time, and don't go outside (protected using sunscreen) and combined responses of sometimes, rarely, and never (not protected using sunscreen). Refused, not ascertained, don't know set to missing.
Long-sleeved shirt	SUNSHIRT_A	When you go outside on a sunny day, for more than one hour, how often do you wear a long-sleeved shirt?	Always, Most of the time, Sometimes, Rarely, Never, Don't go outside on a sunny day for more than one hour, Refused, Not ascertained, don't know	Combined responses of always, most of the time, and don't go outside (protected using shirt) and combined responses of sometimes, rarely, and never (not protected using shirt). Refused, not

				ascertained, don't know set to missing.
Wide-brimmed hat	SUNHAT_A	When you go outside on a sunny day, for more than one hour, how often do you wear a hat that shades your face, ears AND neck such as a hat with a wide brim all around?	Always, Most of the time, Sometimes, Rarely, Never, Don't go outside on a sunny day for more than one hour, Refused, Not ascertained, don't know	Combined responses of always, most of the time, and don't go outside (protected using hat) and combined responses of sometimes, rarely, and never (not protected using hat). Refused, not ascertained, don't know set to missing.
Shade	SUNSHADE_A	When you go outside on a sunny day, for more than one hour, how often do you stay in the shade?	Always, Most of the time, Sometimes, Rarely, Never, Don't go outside on a sunny day for more than one hour, Refused, Not ascertained, don't know	Combined responses of always, most of the time, and don't go outside (protected using shade) and combined responses of sometimes, rarely, and never (not protected using shade). Refused, not ascertained, don't know set to missing.
Sunburn propensity	SUNSKIN_A	After several months of not being in the sun, if you THEN went out into the sun without sunscreen or protective clothing for one hour, which of these would happen to your skin?	Get a severe sunburn with blisters, Have a moderate sunburn with peeling, Burn mildly with some or no darkening or tanning, Turn darker without sunburn, Nothing happen to your skin, Don't spend time outdoors, Other, Refused, Not ascertained, don't know	Combined severe sunburn with blisters and moderate sunburn with peeling. Refused, not ascertained, Don't know, Other set to missing.
Outdoor tanning	SUNTAN_A	When spending time outdoors, how often do you try to get some sun for the purpose of developing a tan?	Always, Most of the time, Sometimes, Rarely, Never, Don't go outside on a sunny day for more than one hour, Refused, Not ascertained, don't know	Combined responses of rarely, never, and don't spend time outdoors (protected). Combined responses of always, most of the time, and sometimes (protected) Refused, not ascertained, don't know set to missing.

Appendix Table 2. Weighted proportions of skin cancer risk factors among PWD compared to PwoD.

Variable	PWD (n = 3,116)		PwoD (n = 28,451)		P-value ^a
	n	Weighted %/ mean (95% CI)	n	Weighted %/ mean (95% CI)	
Sunscreen use					
Always/most of the time	670	22.0 (20.1, 24.0)	10,831	36.6 (35.7, 37.4)	<0.001
Sometimes	394	13.8 (12.2, 15.5)	5,669	20.8 (20.2, 21.5)	
Rarely/never	1,566	53.1 (50.7, 55.4)	10,598	41.0 (40.1, 41.9)	
Don't go outside on sunny day	378	11.2 (9.9, 12.7)	586	1.6 (1.4, 1.9)	
Stay in shade					
Always/most of the time	1,430	47.7 (45.4, 50.1)	10,529	37.4 (36.5, 38.3)	<0.001
Sometimes	721	25.3 (23.2, 27.5)	10,383	38.3 (37.5, 39.2)	
Rarely/never	474	15.3 (13.7, 17.1)	5,976	21.9 (21.2, 22.7)	
Don't go outside on sunny day	375	11.6 (10.2, 13.3)	755	2.3 (2.1, 2.6)	
Wear wide brim hat					
Always/most of the time	924	30.4 (28.2, 32.6)	9,148	30.8 (30.0, 31.7)	<0.001
Sometimes	316	10.8 (9.4, 12.4)	4,631	17.1 (16.5, 17.7)	
Rarely/never	1,374	46.9 (44.4, 49.4)	13,228	50.1 (49.1, 51.1)	
Don't go outside on sunny day	393	11.9 (10.5, 13.5)	673	2.0 (1.8, 2.2)	
Wear long-sleeved shirt					
Always/most of the time	583	17.4 (15.8, 19.2)	4,618	15.9 (15.3, 16.6)	<0.001
Sometimes	464	16.2 (14.4, 18.1)	5,841	20.3 (19.6, 21.1)	
Rarely/never	1,574	54.6 (52.1, 57.1)	16,557	61.9 (60.9, 62.8)	
Don't go outside on sunny day	384	11.8 (10.3, 13.3)	653	1.9 (1.7, 2.1)	
Intentional outdoor tanning					
Always/most of the time	159	5.5 (4.5, 6.6)	1,743	6.7 (6.3, 7.1)	<0.001
Sometimes	204	7.1 (6.1, 8.3)	3,689	14.2 (13.6, 14.8)	
Rarely/never	2,315	77.5 (75.6, 79.4)	21,776	77.7 (77.0, 78.5)	
Don't spend time outdoors	330	9.9 (8.6, 11.4)	464	1.4 (1.2, 1.6)	
Sunburn past 12 months					
Yes	431	16.2 (14.4, 18.1)	7,508	28.6 (27.7, 29.5)	<0.001
No	2,578	83.8 (81.9, 85.6)	20,160	71.4 (70.5, 72.3)	
Skin reactions to the sun (1-hr)					
Severe/moderate sunburn	828	28.0 (25.9, 30.2)	7,320	25.8 (25.0, 26.6)	<0.001
Burn mildly w/ some/no tanning	529	17.7 (16.1, 19.5)	7,109	24.3 (23.6, 25.1)	
Turn darker w/no burning	638	23.8 (21.7, 26.0)	6,928	26.7 (25.9, 27.5)	
Nothing would happen	512	17.1 (15.3, 19.0)	4,764	19.1 (18.2, 19.9)	
Don't go out in the sun	443	13.4 (11.8, 15.1)	1,283	4.1 (3.7, 4.5)	

Notes: PWD=Person with disability; PwoD=Person without disability.

Boldface indicates statistical significance (p<0.05).

^a Design-corrected Pearson Chi-square test with second order correction by Rao and Scott for categorical variables and Adjusted Wald test for continuous variables.

Appendix Table 3. Adjusted odds for skin cancer risk factor among PWD compared to PWoD

Variable	Not adjusted for Age ^a		Adjusted for Age ^b	
	OR (95% CI)	P-value	OR (95% CI)	P-value
Sunburn past 12 months	0.581 (0.500, 0.674)	<0.001	0.814 (0.697, 0.951)	0.001
Infrequent ^c sunscreen use	1.461 (1.299, 1.643)	<0.001	1.344 (1.195, 1.513)	<0.001
Infrequent ^c staying in shade	0.720 (0.623, 0.831)	<0.001	0.754 (0.651, 0.872)	<0.001
Infrequent ^c wear wide-brimmed hat	0.942 (0.845, 1.051)	0.283	1.069 (0.956, 1.195)	0.243
Infrequent ^c long-sleeved shirt	0.790 (0.706, 0.885)	<0.001	0.884 (0.788, 0.990)	0.033
Frequent ^c outdoor suntanning	0.808 (0.638, 1.023)	0.077	0.947 (0.747, 1.201)	0.654

Notes: Boldface indicates statistical significance (p<0.05).

^a Adjusted for sex, region, health insurance, sunburn propensity, race, ethnicity, and education.

^b Adjusted for age, sex, region, health insurance, sunburn propensity, race, ethnicity, and education.

^c Infrequent=rarely/never; Frequent: always/most of the time & sometimes.

Appendix S1. SAS 9.4 Program (code) for study analyses.

```
proc format library=&formatcat; *formats;
value yesno
1='Yes'
2='No';
value protected
1='Protected'
0='Not protected';
value sex
1='Male'
2='Female';
value agecat
1='18 to 29'
2='30 to 39'
3='40 to 49'
4='50 to 65'
5='66 to 85';
value race
1='White'
2='Black'
3='Asian'
4='AIAN only, AIAN and any other group, other single and multiple races';
value educ
1='None thru HS graduate'
2='Some college, Associate degree'
3='Bachelors, Masters, professional, doctorate';
value skinrxn
1='Severe or moderate burn'
2='Burn mildly with some or no darkening/tanning'
3='Turn darker without sunburn '
4='Nothing would happen to my skin'
5='Do not go out in the sun';
value insurance
1='Private'
2='Medicaid'
3='Dual eligible'
4='Medicare'
5='Other'
6='Not insured';
run;
data NHIS;
set NHIS.adult20; *data file from https://www.cdc.gov/nchs/nhis/2020nhis.htm;
if DISAB3_A in (7,8,9) then DISAB = .; *recoding Refused, Not Ascertained, and Don't Know as missing;
if DISAB3_A in (1) then DISAB = 1; *otherwise keeping the coding the same as the WG-SS scoring;
if DISAB3_A in (2) then DISAB = 2;
if VISIONDF_A in (7,8,9) then VISION = .; *recoding to missing;
if VISIONDF_A in (3,4) then VISION = 1; *recoding to match WG-SS scoring;
if VISIONDF_A in (1,2) then VISION = 2;
if HEARINGDF_A in (7,8,9) then HEARING = .;
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if HEARINGDF_A in (3,4) then HEARING = 1;
 if HEARINGDF_A in (1,2) then HEARING = 2;
 if DIFF_A in (7,8,9) then DIFF = .;
 if DIFF_A in (3,4) then DIFF = 1;
 if DIFF_A in (1,2) then DIFF = 2;
 if COMDIFF_A in (7,8,9) then COMDIFF = .;
 if COMDIFF_A in (3,4) then COMDIFF = 1;
 if COMDIFF_A in (1,2) then COMDIFF = 2;
 if UPPSLFCR_A in (7,8,9) then SELFCARE = .;
 if UPPSLFCR_A in (3,4) then SELFCARE = 1;
 if UPPSLFCR_A in (1,2) then SELFCARE = 2;
 if COGMEMDFF_A in (7,8,9) then COGDIFF = .;
 if COGMEMDFF_A in (3,4) then COGDIFF = 1;
 if COGMEMDFF_A in (1,2) then COGDIFF = 2;
 if SUNSCREEN_A in (7,8,9) then SUNSCREEN = .; *Missing;
 if SUNSCREEN_A in (1,2) then SUNSCREEN = 1; *Always, most of the time / protected;
 if SUNSCREEN_A in (3) then SUNSCREEN = 2; *Sometimes / protected;
 if SUNSCREEN_A in (4,5) then SUNSCREEN = 3; *Rarely, never / not protected;
 if SUNSCREEN_A in (6) then SUNSCREEN = 4; *Don't go outside / protected
 _D = dichotomized by protected vs. not protected;
 IF SUNSCREEN IN (1,2,4) THEN SUNSCREEN_D = 1; *Protected;
 IF SUNSCREEN IN (3) THEN SUNSCREEN_D = 0; *Not protected;
 if SUNSHADE_A in (7,8,9) then SHADE = .;
 if SUNSHADE_A in (1,2) then SHADE = 1;
 if SUNSHADE_A in (3) then SHADE = 2;
 if SUNSHADE_A in (4,5) then SHADE = 3;
 if SUNSHADE_A in (6) then SHADE = 4;
 IF SHADE IN (1,2,4) THEN SHADE_D = 1;
 IF SHADE IN (3) THEN SHADE_D = 0;
 if SUNHAT_A in (7,8,9) then HAT = .;
 if SUNHAT_A in (1,2) then HAT = 1;
 if SUNHAT_A in (3) then HAT = 2;
 if SUNHAT_A in (4,5) then HAT = 3;
 if SUNHAT_A in (6) then HAT = 4;
 IF HAT IN (1,2,4) THEN HAT_D = 1;
 IF HAT IN (3) THEN HAT_D = 0;
 if SUNSHIRT_A in (7,8,9) then SHIRT = .;
 if SUNSHIRT_A in (1,2) then SHIRT = 1;
 if SUNSHIRT_A in (3) then SHIRT = 2;
 if SUNSHIRT_A in (4,5) then SHIRT = 3;
 if SUNSHIRT_A in (6) then SHIRT = 4;
 IF SHIRT IN (1,2,4) THEN SHIRT_D = 1;
 IF SHIRT IN (3) THEN SHIRT_D = 0;
 *For this variable we do the inverse coding pattern since it is asking about trying to tan when outside;
 if SUNTAN_A in (7,8,9) then OUTDOORTAN = .;
 if SUNTAN_A in (1,2) then OUTDOORTAN = 1; *Always, most of the time / not protected;
 if SUNTAN_A in (3) then OUTDOORTAN = 2; *Sometimes / not protected;
 if SUNTAN_A in (4,5) then OUTDOORTAN = 3; *Rarely, never / protected;
 if SUNTAN_A in (6) then OUTDOORTAN = 4; *Don't go outside / protected;
 IF OUTDOORTAN IN (3,4) THEN OUTDOORTAN_D = 1; *Protected;
 IF OUTDOORTAN IN (1,2) THEN OUTDOORTAN_D = 0; *Not protected;
 if ANYSBURN_A in (7,8,9) then BURN = .;
 if ANYSBURN_A in (1) then BURN = 1;


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if ANYSBURN_A in (2) then BURN = 2;
if SEX_A in (7,8,9) then SEX = .;
if SEX_A in (1) then SEX = 1;
if SEX_A in (2) then SEX = 2;
if AGEP_A in (97, 98, 99) then AGECA = .;
if 18 <= AGEP_A <= 29 then AGECA = 1;
if 30 <= AGEP_A <= 39 then AGECA = 2;
if 40 <= AGEP_A <= 49 then AGECA = 3;
if 50 <= AGEP_A <= 65 then AGECA = 4;
if 66 <= AGEP_A <= 85 then AGECA = 5;
if RACEALLP_A in (7, 8, 9) then RACE = .;
if RACEALLP_A = 1 then RACE = 1;
if RACEALLP_A = 2 then RACE = 2;
if RACEALLP_A = 3 then RACE = 3;
if RACEALLP_A in (4, 5, 6) then RACE = 4;
if HISP_A in (7,8,9) then ETHNICITY = .;
if HISP_A in (1) then ETHNICITY = 1;
if HISP_A in (2) then ETHNICITY = 2;
if EDUC_A in (97, 98, 99) then EDUC = .;
if EDUC_A in (00, 01, 02, 03, 04) then EDUC = 1;
if EDUC_A in (05, 06, 07) then EDUC = 2;
if EDUC_A in (08, 09, 10, 11) then EDUC = 3;
*Region - no recode needed
1 Northeast
2 Midwest
3 South
4 West;
if SUNSKIN_A in (97,98,99,07) then SKINRXN = .;
if SUNSKIN_A in (01,02) then SKINRXN = 1;
if SUNSKIN_A in (03) then SKINRXN = 2;
if SUNSKIN_A in (04) then SKINRXN = 3;
if SUNSKIN_A in (05) then SKINRXN = 4;
if SUNSKIN_A in (06) then SKINRXN = 5;
if NUMBRNTC_A in (997,998,999) then NUMBRNTC_A = .;
if NUMBRNTC_A in (001) then BURNS = 1;
if NUMBRNTC_A in (002) then BURNS = 2;
if NUMBRNTC_A in (003) then BURNS = 3;
if 004 <= NUMBRNTC_A <= 013 then BURNS = 4;
if AGEP_A in (97, 98, 99) then AGEP_A = .;
*****,
if CANEV_A = 1 then cancer = 1;
if CANEV_A = 2 then cancer = 2;
if CANEV_A in (7,8,9) then cancer = .;
*Coding respondents without cancer;
if CANEV_A in (2) then MELANCAN_A = 6; *creating a new level - 6 - No Melanoma;
if CANEV_A in (2) then MELANAGETC_A = 98; *age of Dx not ascertained from non-cancer respondents;
if CANEV_A in (2) then SKNMCAN_A = 6; *No Skin Melanoma;
if CANEV_A in (2) then SKNMAGETC_A = 98;
if CANEV_A in (2) then SKNNMCAN_A = 6; *No Skin Non-Melanoma;
if CANEV_A in (2) then SKNNMAGETC_A = 98;
if CANEV_A in (2) then SKNDKCAN_A = 6; *No Skin Cancer (don't know what kind);
if CANEV_A in (2) then SKNDKAGETC_A = 98;
if SKNMAGETC_A in (97,98,99) then SKNMAGETC_A = .; *age of diagnosis;

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if SKNNMAGETC_A in (97,98,99) then SKNNMAGETC_A = .;
if SKNDKAGETC_A in (97,98,99) then SKNDKAGETC_A = .;
if MELANAGETC_A in (97,98,99) then MELANAGETC_A = .;
if MELANCAN_A in (7,8,9) then MALMEL = .; *MAL MEL refers to malignant melanocytes anywhere on body;
if MELANCAN_A in (1) then MALMEL = 1;
if MELANCAN_A in (2,6) then MALMEL = 2;
if SKNMCAN_A in (7,8,9) then MELANOMA = .; *MELANOMA refers to melanoma skin cancer;
if SKNMCAN_A in (1) then MELANOMA = 1;
if SKNMCAN_A in (2,6) then MELANOMA = 2;
if SKNNMCAN_A in (7,8,9) then NONMELANOMA = .; *NONMELANOMA refers to squamous and basal cell;
if SKNNMCAN_A in (1) then NONMELANOMA = 1;
if SKNNMCAN_A in (2,6) then NONMELANOMA = 2;
if SKNDKCAN_A in (7,8,9) then MALDK = .; *MALDK refers to skin cancer, don't know what kind;
if SKNDKCAN_A in (1) then MALDK = 1;
if SKNDKCAN_A in (2,6) then MALDK = 2;
if MALMEL = 1 then SC_A = 1;
if MALMEL = 2 then SC_A = 0;
if MELANOMA = 1 then SC_B = 1;
if MELANOMA = 2 then SC_B = 0;
if NONMELANOMA = 1 then SC_C = 1;
if NONMELANOMA = 2 then SC_C = 0;
if MALDK = 1 then SC_D = 1;
if MALDK = 2 then SC_D = 0;
skincancer = sum(SC_A, SC_B, SC_C, SC_D);
if skincancer = 1 then skincancertotal = 1; *yes;
if skincancer = 2 then skincancertotal = 1; *yes;
if skincancer = 3 then skincancertotal = 1; *yes;
if skincancer = 0 then skincancertotal = 2; *no;
lowest_age = min(MELANAGETC_A, SKNMAGETC_A, SKNNMAGETC_A, SKNDKAGETC_A); *age of diagnosis;
if DLYCARE_A in (7,8,9) then delayed_care = .;
if DLYCARE_A = 1 then delayed_care = 1;
if DLYCARE_A = 2 then delayed_care = 2;
*Health Insurance;
if NOTCOV_A in (7,8,9) then insuranceyn = .; *missing;
if NOTCOV_A = 1 then insuranceyn = 0; *not covered;
if NOTCOV_A = 2 then insuranceyn = 1; *covered;
if cover_A = 1 then insurance = 1; *private;
if cover_A = 2 then insurance = 2; *medicaid;
if cover_A = 3 then insurance = 5; *other;
if cover_A = 4 then insurance = 6; *uninsured;
if cover_A = 5 then insurance = .; *don't know/missing;
if COVER65_A = 1 then insurance = 1; *private;
if COVER65_A = 2 then insurance = 3; *dual eligible;
if COVER65_A = 3 then insurance = 4; *medicare adv;
if COVER65_A = 4 then insurance = 4; *medicare only;
if COVER65_A = 5 then insurance = 5; *other;
if COVER65_A = 6 then insurance = 6; *uninsured;
if COVER65_A = 7 then insurance = .; *don't know/missing;
label disab = 'WG-SS Composite Disability Indicator'
BURN = 'Any sunburn in the past 12 months'
ETHNICITY = 'Hispanic ethnicity'
cancer = 'Ever had cancer'
MALMEL = 'Malignant melanocytes anywhere on body'

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MELANOMA = 'Melanoma skin cancer'
NONMELANOMA = 'Non-melanoma skin cancer'
MALDK = 'Skin cancer, do not know what kind'
skincancertotal = 'Any history of skin cancer'
SUNSCREEN_D = 'Sunscreen use'
SHADE_D = 'Shade use'
HAT_D = 'Hat use'
SHIRT_D = 'Shirt use'
OUTDOORTAN_D = 'Try to get a tan'
sex = 'Sex'
agecat = 'Age by category'
race = 'Race'
educ = 'Highest education attained'
skinrxn = 'Skin reaction to the sun'
insurance = 'Health insurance';
format DISAB VISION HEARING DIFF COMDIFF SELFCARE COGDIFF
BURN ETHNICITY cancer MELANOMA MALMEL NONMELANOMA MALDK IT delayed_care skincancertotal yesno.
SUNSCREEN_D SHADE_D HAT_D SHIRT_D OUTDOORTAN_D protected.
sex sex. agecat agecat. race race. educ educ. skinrxn skinrxn. insurance insurance.;
run;
*frequencies;
*disab;
proc surveyfreq data=NHIS;
weight WTFA_A; stratum pstrat; cluster ppsu;
tables DISAB VISION HEARING DIFF COMDIFF SELFCARE COGDIFF /cl;
title1 'Frequency report for Sample Adult file';
title2 '(weighted)';
run;
*sc;
proc surveyfreq data=NHIS;
weight WTFA_A; stratum pstrat; cluster ppsu;
tables skincancertotal melanoma/cl;
title1 'Frequency report for Sample Adult file';
title2 '(weighted)';
run;
*disab x sc;
proc surveyfreq data=NHIS;
weight WTFA_A; stratum pstrat; cluster ppsu;
tables disab*skincancertotal disab*melanoma/row col cl;
title1 'Frequency report for Sample Adult file';
title2 '(weighted)';
run;
*delayed care;
proc surveyfreq data=NHIS;
weight WTFA_A; stratum pstrat; cluster ppsu;
tables disab*delayed_care /row col cl;
title1 'Frequency report for Sample Adult file';
title2 '(weighted)';
run;
*means;
*age of Dx;
proc surveymeans data=NHIS t mean;
weight WTFA_A; stratum pstrat; cluster ppsu;

```

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var lowest_age;
domain disab;
run;
*age comparison;
proc surveymeans data=NHIS t mean;
weight WTFA_A; stratum pstrat; cluster ppsu;
var AGEP_A;
domain disab;
run;
*Fully adjusted models;
*skin cancer;
proc surveylogistic data=NHIS;
weight WTFA_A; stratum pstrat; cluster ppsu;
class disab (ref=last) agecat (ref = first) sex (ref = first)
insurance (ref = last) race (ref = first) ethnicity (ref = last)
region (ref = first) educ (ref = first) skinrxn (ref = first) skincancertotal/Desc;
model skincancertotal = disab agecat sex insurance race ethnicity region educ skinrxn;
run;
*melanoma;
proc surveylogistic data=NHIS;
weight WTFA_A; stratum pstrat; cluster ppsu;
class disab (ref=last) agecat (ref = first) sex (ref = first)
insurance (ref = last) race (ref = first) ethnicity (ref = last)
region (ref = first) educ (ref = first) skinrxn (ref = first) melanoma/Desc;
model melanoma = disab agecat sex insurance race ethnicity region educ skinrxn;
run;
*age of Dx - linear regression;
proc surveyreg data=NHIS;
weight WTFA_A; stratum pstrat; cluster ppsu;
class disab (ref = last) agecat (ref = first) sex (ref = first)
insurance (ref = last) race (ref = first) ethnicity (ref = last)
region (ref = first) educ (ref = first) skinrxn (ref = first) lowest_age;
model lowest_age = disab agecat sex insurance race ethnicity region educ skinrxn;
run;
/*Tests of Model Effects */
/*Effect Num DF F Value Pr > F */
/*Model 24 70.95 <.0001 */
/*Intercept 1 538.26 <.0001 */
/*DISAB 1 11.67 0.0007 */
*delayed care;
proc surveylogistic data=NHIS;
weight WTFA_A; stratum pstrat; cluster ppsu;
class disab (ref=last) agecat (ref = first) sex (ref = first)
insurance (ref = last) race (ref = first) ethnicity (ref = last)
region (ref = first) educ (ref = first) skinrxn (ref = first) delayed_care/Desc;
model delayed_care = disab agecat sex insurance race ethnicity region educ skinrxn;
run;
*Analyses for Tables;
*Table 1;
proc surveyfreq data=NHIS;
weight WTFA_A; stratum pstrat; cluster ppsu;
tables disab*(AGECAT SEX EDUC RACE ETHNICITY REGION INSURANCE)/cl row;
title1 'Frequency report for Sample Adult file';

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title2 '(weighted)';
run;
*Table 2 - Adjusted models minus age;
proc surveylogistic data=NHIS;
weight WTFA_A; stratum pstrat; cluster ppsu;
class disab (ref=last) sex (ref = first)
insurance (ref = last) race (ref = first) ethnicity (ref = last)
region (ref = first) educ (ref = first) skinrxn (ref = first) skincancertotal/Desc;
model skincancertotal = disab sex insurance race ethnicity region educ skinrxn;
run;
proc surveylogistic data=NHIS;
weight WTFA_A; stratum pstrat; cluster ppsu;
class disab (ref=last) sex (ref = first)
insurance (ref = last) race (ref = first) ethnicity (ref = last)
region (ref = first) educ (ref = first) skinrxn (ref = first) melanoma/Desc;
model melanoma = disab sex insurance race ethnicity region educ skinrxn;
run;
proc surveylogistic data=NHIS;
weight WTFA_A; stratum pstrat; cluster ppsu;
class disab (ref=last) sex (ref = first)
insurance (ref = last) race (ref = first) ethnicity (ref = last)
region (ref = first) educ (ref = first) skinrxn (ref = first) delayed_care/Desc;
model delayed_care = disab sex insurance race ethnicity region educ skinrxn;
run;
*eTable 2*;
proc surveyfreq data=NHIS;
weight WTFA_A; stratum pstrat; cluster ppsu;
tables disab*(SUNSCREEN SHADE HAT
SHIRT OUTDOORTAN BURN SKINRXN) /row cl(TYPE=LOGIT) CHISQ(SECONDORDER);
title1 'Frequency report for Sample Adult file';
title2 '(weighted)';
run;
*eTable 3;
*Age adjusted;
proc surveylogistic data=NHIS;
weight WTFA_A; stratum pstrat; cluster ppsu;
class disab (ref=last) agecat (ref = first) sex (ref = first)
insurance (ref = last) race (ref = first) ethnicity (ref = last)
region (ref = first) educ (ref = first) skinrxn (ref = first) burn/desc;
model burn(event = first) = disab agecat sex insurance race ethnicity region educ skinrxn;
run;
proc surveylogistic data=NHIS;
weight WTFA_A; stratum pstrat; cluster ppsu;
class disab (ref=last) agecat (ref = first) sex (ref = first)
insurance (ref = last) race (ref = first) ethnicity (ref = last)
region (ref = first) educ (ref = first) skinrxn (ref = first) sunscreen_d/desc;
model sunscreen_d(event = last) = disab agecat sex insurance race ethnicity region educ skinrxn;
run;
proc surveylogistic data=NHIS;
weight WTFA_A; stratum pstrat; cluster ppsu;
class disab (ref=last) agecat (ref = first) sex (ref = first)
insurance (ref = last) race (ref = first) ethnicity (ref = last)
region (ref = first) educ (ref = first) skinrxn (ref = first) shade_d/desc;

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model shade_d(event = last) = disab agecat sex insurance race ethnicity region educ skinrxn;
run;
proc surveylogistic data=NHIS;
weight WTFA_A; stratum pstrat; cluster ppsu;
class disab (ref=last) agecat (ref = first) sex (ref = first)
insurance (ref = last) race (ref = first) ethnicity (ref = last)
region (ref = first) educ (ref = first) skinrxn (ref = first) hat_d/desc;
model hat_d(event = last) = disab agecat sex insurance race ethnicity region educ skinrxn;
run;
proc surveylogistic data=NHIS;
weight WTFA_A; stratum pstrat; cluster ppsu;
class disab (ref=last) agecat (ref = first) sex (ref = first)
insurance (ref = last) race (ref = first) ethnicity (ref = last)
region (ref = first) educ (ref = first) skinrxn (ref = first) shirt_d/desc;
model shirt_d(event = last) = disab agecat sex insurance race ethnicity region educ skinrxn;
run;
proc surveylogistic data=NHIS;
weight WTFA_A; stratum pstrat; cluster ppsu;
class disab (ref=last) agecat (ref = first) sex (ref = first)
insurance (ref = last) race (ref = first) ethnicity (ref = last)
region (ref = first) educ (ref = first) skinrxn (ref = first) outdoortan_d/desc;
model outdoortan_d(event = last) = disab agecat sex insurance race ethnicity region educ skinrxn;
run;
*Not age adjusted;
proc surveylogistic data=NHIS;
weight WTFA_A; stratum pstrat; cluster ppsu;
class disab (ref=last) sex (ref = first)
insurance (ref = last) race (ref = first) ethnicity (ref = last)
region (ref = first) educ (ref = first) skinrxn (ref = first) burn/desc;
model burn(event = first) = disab sex insurance race ethnicity region educ skinrxn;
run;
proc surveylogistic data=NHIS;
weight WTFA_A; stratum pstrat; cluster ppsu;
class disab (ref=last) sex (ref = first)
insurance (ref = last) race (ref = first) ethnicity (ref = last)
region (ref = first) educ (ref = first) skinrxn (ref = first) sunscreen_d/desc;
model sunscreen_d(event = last) = disab sex insurance race ethnicity region educ skinrxn;
run;
proc surveylogistic data=NHIS;
weight WTFA_A; stratum pstrat; cluster ppsu;
class disab (ref=last) sex (ref = first)
insurance (ref = last) race (ref = first) ethnicity (ref = last)
region (ref = first) educ (ref = first) skinrxn (ref = first) shade_d/desc;
model shade_d(event = last) = disab sex insurance race ethnicity region educ skinrxn;
run;
proc surveylogistic data=NHIS;
weight WTFA_A; stratum pstrat; cluster ppsu;
class disab (ref=last) sex (ref = first)
insurance (ref = last) race (ref = first) ethnicity (ref = last)
region (ref = first) educ (ref = first) skinrxn (ref = first) hat_d/desc;
model hat_d(event = last) = disab sex insurance race ethnicity region educ skinrxn;
run;
proc surveylogistic data=NHIS;

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weight WTFA_A; stratum pstrat; cluster ppsu;
class disab (ref=last) sex (ref = first)
insurance (ref = last) race (ref = first) ethnicity (ref = last)
region (ref = first) educ (ref = first) skinrxn (ref = first) shirt_d/desc;
model shirt_d(event = last) = disab sex insurance race ethnicity region educ skinrxn;
run;
proc surveylogistic data=NHIS;
weight WTFA_A; stratum pstrat; cluster ppsu;
class disab (ref=last) sex (ref = first)
insurance (ref = last) race (ref = first) ethnicity (ref = last)
region (ref = first) educ (ref = first) skinrxn (ref = first) outdoortan_d/desc;
model outdoortan_d(event = last) = disab sex insurance race ethnicity region educ skinrxn;
run;
```