Supplementary Online Content

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This supplementary material has been provided by the authors to give readers additional information about their work.
**eTable.** Multivariable Logistic Regression Results Compared With Models Accounting for State-Level Clustering Using Generalized Estimated Equations

| Silica exposures (referent = no exposure) | RA+ corticosteroids* (excluding non-RA) | RA+ DMARDs** (excluding non-RA) | Non-RA arthritis (excluding RA*) |
|------------------------------------------|-----------------------------------------|---------------------------------|---------------------------------|
|                                           | Logistic regression | GEE | Logistic regression | GEE | Logistic regression | GEE |
| Any underground hard rock mining         | 3.21 (1.45, 7.10)  | 3.24 (2.57, 4.08) | 1.91 (0.71, 5.12) | 1.91 (1.49, 2.44) | 1.32 (0.89, 1.97) | 1.31 (1.04, 1.65) |
| Any underground soft rock mining         | 9.74 (3.89, 24.42) | 9.82 (3.47, 27.85) | 6.52 (2.26, 18.80) | 6.50 (1.50, 28.23) | 3.04 (1.71, 5.42) | 3.01 (1.81, 5.00) |
| Any surface mining, no underground       | 3.74 (2.07, 6.75)  | 3.76 (1.96, 7.22) | 3.51 (1.90, 6.48) | 3.50 (1.79, 6.82) | 1.43 (1.07, 1.90) | 1.43 (1.19, 1.72) |
| Silica only from non-mining sources       | 3.40 (1.84, 6.27)  | 3.41 (2.46, 4.72) | 3.59 (1.97, 6.54) | 3.58 (1.88, 6.84) | 1.92 (1.48, 2.48) | 1.91 (1.49, 2.45) |
Figure. Survey Participant Recruitment and Exclusions

83,014
Phone numbers attempted

19,180 (22%)
Technically unsuccessful call
(15,319 nonworking numbers; 1,603 non-residential; 377 fax numbers; 881 blocked numbers)

18,258 (22%)
Contacts made

10,413 ineligible (57% of contacts)
(9,501 age <18 or female; 33 non-English/Spanish speaker; 792 living outside catchment area; 54 never worked; 13 other)

323 (2%) eligible refusals
5,518 (30%) refusals of unknown eligibility

2,000 completed interviews
(11% of contacts made)
(26% excluding known ineligible)
(88% of known eligible)

Non-response to smoking status (n=5) or type of mining (n=7)

1,988
Final study analytic sample

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**eAppendix. Survey Instrument: Rheumatoid Arthritis Risk in Underground Hard Rock and Other Mining Industry Workers in Colorado, New Mexico, and Utah**

**Screening Questions**

Hello, my name is ____________________, and I am calling from Davis Research, an independent public opinion research organization. We are conducting an important survey for one of the nation’s leading schools of medicine about some work and health-related issues. This is a legitimate public opinion survey – we are not selling anything.

**S1.** We are only conducting this survey in certain states and counties in the U.S. In what state do you live?  
COLORADO ..........1  
NEW MEXICO ..........2  
UTAH ..................3  
ALL OTHER STATES...4→END  
REFUSED ............ REF →END

**S2.** And, in what county do you live?  

| IF COLORADO            | IF UTAH            | IF NEW MEXICO         |
|------------------------|--------------------|-----------------------|
| DELTA ................01| GRAND .............01| BERNALILLO ..........01 |
| DOLORES .............02| SAN JUAN ........02 | CIBOLA ............02 |
| GARFIELD ..........03  | UINTAH ............03| LO S ALAMOS ..........03|
| LA PLATA ..........04  | ALL OTHER ..........04| MCKINLEY ...........04 |
| MESA .............05   | REFUSED ..........REF| RIO ARRIBA ..........05|
| MONTEZUMA ..........06 |                   | SAN JUAN ..........06 |
| MONTROSE ..........07  |                   | SANDOVAL ..........07 |
| RIO BLANCO ..........08|                   | SANTA FE ...........08|
| SAN JUAN ..........09  |                   | TAOS ..............09 |
| SAN MIGUEL ..........10|                   | TORRANCE ...........10|
| ALL OTHER ..........11 |                   | VALENCIA ..........11 |
| REFUSED ...........REF|                   | ALL OTHER ..........12|

IF S2=OTHER OR REFUSED, ASK:  

**S2b.** What is your zip code?  

| CODE TO COUNTY: IF MATCHES CONTINUE. OTHERWISE END | DK/REFUSED ............ REF →END |

**S3.** RECORD GENDER: (INTERVIEWER: I F YOU HAVE ANY DOUBT AS TO RESPONDENT’S GENDER, SAY:  

Because it is sometimes difficult to determine over the phone, I am asked to confirm whether you are male or female.)  

MALE ........................................1  
FEMALE .....................................2  

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### LANDLINE SAMPLE

#### IF MAN IS ON THE TELEPHONE, SAY:

**S4a.** For this interview I need to speak to a male age 50 or older. Does a male age 50 or older live in your household? (IF YES, ASK) Is that you or someone else? (IF SOMEONE ELSE, ASK TO SPEAK TO THAT PERSON) (IF MORE THAN 1 MALE AGE 50 OR OLDER LIVING IN HOUSEHOLD, SAY: I’d like speak with the youngest male age 50 or older who is at home now.)

- SPEAKING TO ELIGIBLE MALE........1 **CONTINUE WITH S5A**
- ELIGIBLE MALE COMES TO PHONE........2 **REPEAT INTRO, THEN CONTINUE WITH S5A**
- ELIGIBLE MALE NOT AVAILABLE NOW.....3 **CALLBACK**
- NO MALES AGE 50+ IN HOUSEHOLD ...4 **END**
- REFUSED..................................REF **END**

#### IF WOMAN IS ON THE TELEPHONE, SAY:

**S4b.** For this interview I need to speak to a male age 50 or older. Does a male age 50 or older live in your household? (ASK TO SPEAK TO THAT PERSON) (IF MORE THAN 1 MALE AGE 50 OR OLDER LIVING IN HOUSEHOLD, SAY: I’d like to speak with the youngest male age 50 or older who is at home now.)

- ELIGIBLE MALE COMES TO PHONE.......1 **REPEAT INTRO, THEN CONTINUE WITH S5A**
- ELIGIBLE MALE IS NOT AVAILABLE NOW...2 **CALLBACK**
- NO MALES AGE 50+ IN HOUSEHOLD 3 **END**
- REFUSED..................................REF **END**

**S5a.** What is your age?

| UNDER AGE 50 .......... | 1 → END |
|-----------------------|---------|
| 50-54 .................. | 2 CONTINUE |
| 55-59 .................. | 3 CONTINUE |
| 60-64 .................. | 4 CONTINUE |
| 65-69 .................. | 5 CONTINUE |
| 70-74 .................. | 6 CONTINUE |
| 75 OR OLDER ........... | 7 CONTINUE |
| REFUSED ................ | REF → END |

**IF REFUSED, ASK:**

**S5b.** I don’t need to know exactly, but can you tell me if you are under age 50, age 50-54, 55-59, 60-64, 65-69, 70-74 or 75 or older?

| UNDER AGE 50 .......... | 1 → END |
|-----------------------|---------|
| 50-54 .................. | 2 CONTINUE |
| 55-59 .................. | 3 CONTINUE |
| 60-64 .................. | 4 CONTINUE |
| 65-69 .................. | 5 CONTINUE |
| 70-74 .................. | 6 CONTINUE |
| 75 OR OLDER ........... | 7 CONTINUE |
| REFUSED ................ | REF → END |

**S6a.** Did you ever work for pay or profit for one year or longer, including civilian and military duties? (IF NECESSARY, PROMPT) This includes civilian or military duties and any job that you worked at for one year or longer, even when self-employed?

| YES........................ | 1 GO TO S10 |
|--------------------------|-------------|
| NO ........................ | 2 ASK S6B   |
| NO ANSWER/REFUSED .......| REF ASK S6B|

**IF NO OR REFUSED, ASK:**

**S6b.** Did you ever work without salary or pay on a farm or family business for one year or more?

| YES........................ | 1 GO TO S10 |
|--------------------------|-------------|
| NO ........................ | 2 END       |
| NO ANSWER/REFUSED .......| REF END     |

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**CELL PHONE SAMPLE**

- **IF MALE FROM S3, GO TO S8A; IF FEMALE FROM S3, END**

  S8a.  What is your age?  

  IF REFUSED, ASK:

  S8b.  I don’t need to know exactly, but can you tell me if you are under age 50, age 50-54, 55-59, 60-64, 65-69, 70-74 or 75 or older?  

  UNDER AGE 50 .................1  \( \rightarrow \) END
  50-54 ..........................2  CONTINUE
  55-59 ..........................3  CONTINUE
  60-64 ..........................4  CONTINUE
  65-69 ..........................5  CONTINUE
  70-74 ..........................6  CONTINUE
  75 OR OLDER ..................7  CONTINUE

  IF UNDER AGE 50............X  \( \rightarrow \) END
  REFUSED......................... REF \( \rightarrow \) ASK S8b

  IF AGE 50+, GO TO S9A

  IF REFUSED, ASK S8b

  S9a.  Did you ever work for pay or profit for one year or longer, including civilian and military duties? (IF NECESSARY, PROMPT) This includes civilian or military duties and any job that you worked at for one year or longer, even when self-employed?

  YES.................................1  \( \rightarrow \) GO TO S10
  NO.................................2  ASK Q9B
  NO ANSWER/REFUSED ........... REF \( \rightarrow \) ASK Q9B

  IF NO OR REFUSED, ASK:

  S9b.  Did you ever work without salary or pay on a farm or family business for one year or more?

  YES.................................1  \( \rightarrow \) GO TO S10
  NO.................................2  END
  NO ANSWER/REFUSED ........... REF \( \rightarrow \) END

  IF ELIGIBLE FROM S6 OR S9, SAY

  S10.  You are eligible to participate in an important study about the impact of work on health. Upon completing the survey, we will send you a $5 gift card to Amazon or Starbucks or we can mail you a check . . . It will not take long, only about 15-20 minutes for most people . . . . It is completely voluntary and you can stop at any point . . . . The study’s principal investigator is Dr. Paul Blanc at the University of California, School of Medicine. Would you like to participate?

  YES, PROCEED ..................1  \( \rightarrow \) CONTINUE
  YES, BUT CALL BACK LATER ....2  \( \rightarrow \) ARRANGE CALLBACK
  UNSURE/HAS QUESTIONS .......3  \( \rightarrow \) READ TEXT BELOW
  NO, REFUSED .................... REF \( \rightarrow \) END

  (IF UNSURE OR HAS QUESTIONS, SAY) If you have any questions, we can give you the telephone number of Dr. Blanc’s office or for the Office of Research Affairs at the University. (IF REQUESTED) Dr. Blanc’s research office telephone number is 415-476-7377. The University Office of Research Affairs telephone number is 415-476-1814.

  IF CELL PHONE LISTING, ASK

  S11.  For your safety, are you currently driving a motor vehicle, operating heavy equipment or in a place that is unsafe to do the survey?

  YES,.............................1  \( \rightarrow \) ARRANGE CALLBACK
  NO, .............................2  \( \rightarrow \) CONTINUE

  IF CALLBACK FROM S10 OR S11, ASK:

  S12a.  When would be a good time for us to call back?
  S12b.  So our interviewer can ask for you to speak to (that person) (you) by name, what is (his) (your) first name?

  RECORD DAY AND TIME OF CALLBACK
  RECORD FIRST NAME FOR CALLBACK

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Main Survey

Before we begin, I need to tell you that my supervisor sometimes monitors these interviews to ensure quality and courtesy.

The first questions concern work and employment.

1. Are you currently employed for pay or profit either full or part time?  
   - YES ..........................1 (ASK Q1A)  
   - NO ..............................2 (SKIP TO Q2)  
   - NO ANSWER/REFUSED ... DK (SKIP TO Q2)  

**IF Q1=YES, ASK:**

1a. Do you currently work in underground hardrock mining?  
   - YES ..........................1 (SKIP TO Q3)  
   - NO ..............................2 (ASK Q2)  
   - NO ANSWER/REFUSED ... DK (ASK Q2)  

**IF Q1=NO OR DK OR Q1A=NO OR DK, ASK:**

2. Did you ever work in underground hardrock mining?  
   - YES ..........................1 (ASK Q3)  
   - NO ..............................2 (SKIP TO Q11)  
   - NO ANSWER/REFUSED ... DK (SKIP TO Q11)  

3. For how many years altogether did you do this work? _____ (years)  
   - DK/REF.  

4. Which of the following underground hardrock mining have you done: *(READ ITEMS IN RANDOM ORDER, ASKING)*
   - Have you done mining for *(ITEM)*?  
     - YES  
     - NO  
     - DK/REF.  

   a. Silver .................................................................1 ... 2 ... DK  
   b. Gold .................................................................1 ... 2 ... DK  
   c. Copper ...............................................................1 ... 2 ... DK  
   d. Uranium or Zircon .................................................1 ... 2 ... DK  
   e. Molybdenum (mah-LIB-duh-num) ....................................1 ... 2 ... DK  

**IF Q4A-E ALL =NO OR DK, ASK:**

f. Another mineral (other than coal)? *(IF NECESSARY)* We will be asking you a little later about coal .................................................................1 ... 2 ... DK  

**IF YES: What was that?**  

   - DK/REF.  

5. Did you work for a period as a hardrock mining apprentice or nipper?  
   - YES ..........................1 (ASK Q5a)  
   - NO ..............................2 (SKIP TO Q6)  
   - NO ANSWER/REF. ..... DK (SKIP TO Q6)  

**IF Q5=YES, ASK:**

5a. For how many years did you do this work?  
   - _____ YEARS  
   - NO ANSWER/REFUSED ....... DK  

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6. Did you work as a stope development miner?  

   YES .................................. 1  (ASK Q6a)  
   NO .................................. 2 (SKIP TO Q7)  
   NO ANSWER/REF ........ DK (SKIP TO Q7)  

**IF Q6 = YES, ASK:**  

6a. For how many years did you do this work?  

   __________ YEARS  
   NO ANSWER/REF ........ DK  

6b. Did you do your own mucking?  

   YES .............. 1  
   NO .............. 2  
   NO ANSWER/REF ... DK  

7. Did your underground hardrock work include any blasting jobs?  

   YES .................................. 1  (ASK Q7a)  
   NO .................................. 2 (SKIP TO Q8)  
   NO ANSWER/REF .... DK (SKIP TO Q8)  

**IF Q7 = YES, ASK:**  

7b. Specifically, did you work as a **ITEM**?  

   (READ IN ORDER UNTIL 1ST "YES", THEN SKIP TO Q7c)  

   YES NO DK/REF  
   (1). Blaster or blaster helper ................................................................. 1 ...... 2 .... DK  
   (7). High raise blaster ................................................................. 1 ...... 2 .... DK  
   (3). Powderman or shotman ................................................................. 1 ...... 2 .... DK  
   (4). Bench blaster ................................................................. 1 ...... 2 .... DK  
   (5). Chute blaster ................................................................. 1 ...... 2 .... DK  
   (6). Hang-up blaster ................................................................. 1 ...... 2 .... DK  
   (2). Shooter or shooter helper ................................................................. 1 ...... 2 .... DK  

**IF Q7b (1)-(7) ALL = NO OR DK, ASK:**  

   viii. Did you work in any other blasting jobs? ................................................................. 1 ...... 2 .... DK  

   IF YES: What was that? __________________________  
   DK/REF . . . . . . . .  

7c. For how many years did your hardrock mining career include blasting jobs?  

   __________ YEARS  
   NO ANSWER/REFUSED DK  

8. Did your underground hardrock work include any drilling or cutting jobs?  

   YES .................................. 1 (ASK Q8a)  
   NO .................................. 2 (SKIP TO Q9)  
   NO ANSWER/REF .... DK (SKIP TO Q9)
IF Q8=YES, ASK:

8a. Specifically, did you work as a (ITEM)? (READ IN ORDER UNTIL 1ST “YES”, THEN SKIP TO Q8d, OTHERWISE ASK Q8b)

| ITEM                                                   | YES | NO | DK/REF |
|--------------------------------------------------------|-----|----|--------|
| Drift driller or drift miner                           | 1   | 2  | DK     |
| Long-hole driller                                      | 1   | 2  | DK     |
| Block hoer                                             | 1   | 2  | DK     |
| Blast hole driller                                     | 1   | 2  | DK     |
| Rock bolter                                            | 1   | 2  | DK     |
| Diamond driller or drill runner                        | 1   | 2  | DK     |
| In the hole driller                                    | 1   | 2  | DK     |
| Stoper driller                                         | 1   | 2  | DK     |

8b. Did you work as an operator of a (ITEM)? (READ IN ORDER UNTIL 1ST “YES”, THEN SKIP TO Q8d)

| ITEM                                                   | YES | NO | DK/REF |
|--------------------------------------------------------|-----|----|--------|
| Bolter                                                 | 1   | 2  | DK     |
| Core-drill                                             | 1   | 2  | DK     |
| Raise driller or boring machine                        | 1   | 2  | DK     |
| Ring drill                                             | 1   | 2  | DK     |
| Road header                                            | 1   | 2  | DK     |
| In-hole drill                                          | 1   | 2  | DK     |
| Jack leg drill                                         | 1   | 2  | DK     |
| Jumbo drill                                            | 1   | 2  | DK     |
| Wagon drill                                            | 1   | 2  | DK     |
| Undercutter                                            | 1   | 2  | DK     |

IF Q8a(1)-(8) AND Q8b (1)-(10) ALL = NO OR DK, ASK:

8c. Did you work in any other driller or drill machine operator job? ........................................1 ...... 2 ... DK

IF YES: What was that? .................................................. DK/REF. . . DK

8d. For how many years did your hard rock mining career include drilling jobs?

| YEARS | NO ANSWER/REFUSED | DK |
|-------|-------------------|----|
|       |                   |    |

8e. For how much of the time did this drilling work use water to control dust – almost none of the time, sometimes, most of the time, or almost always?

| TIME                             | 1 | 2 | 3 | 4 | DK |
|----------------------------------|---|---|---|---|----|
| Almost none of the time          | 1 |
| Sometimes                       | 2 |
| Most of the time                | 3 |
| Almost always                   | 4 |
| No answer/refused               |  |   |   |   |

9. Did your underground hardrock work include any mined material handling, loading or hauling jobs?

| YES   | 1 (ASK Q9a) |
|-------|-------------|
| NO    | 2 (SKIP TO Q11) |
| No answer/refused                          | DK (SKIP TO Q11) |
13. Have you ever worked in a quarry or sand pit?  

**NOTE: Q10 AND Q10A HAVE BEEN DELETED**

### Q11: Did you work in open-pit hardrock mining?  

**IF Q11=NO, ASK:**  

**IF Q11=YES, ASK:**

### Q12: Did you work in ore processing or metal refining?  

**IF Q12=NO, ASK:**

**IF Q12=YES, ASK:**

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IF Q13=YES, ASK:

13a. Did this include granite, quartz, sandstone or sand?  
YES ........................................ 1  
NO ........................................  2  
DON'T KNOW/REFUSED ............... DK

13b. Considering all quarrying or sand pit work, for how many years did you do this work?  
_____ YEARS  
NO ANSWER/REF ...............DK

14. Have you ever worked in coal mining?  
YES.............................. 1 (ASK Q15)  
NO.............................. 2 (SKIP TO Q17)  
NO ANSWER/REF ...............DK (SKIP TO Q17)

IF Q14=YES, ASK:

15. Did this include underground coal mining?  
YES.................................. 1 (ASK Q15a)  
NO.............................. 2 (SKIP TO Q16)  
NO ANSWER/REF ...DK (SKIP TO Q16)

IF Q15=YES, ASK:

15a. Were you ever a coal mine roof bolter?  
YES .................................................. 1  
NO .................................................. 2  
NO ANSWER/REFUSED ....................... DK

15b. Did you ever work in underground coal mine construction or development?  
YES.................................. 1 (ASK Q15bi)  
NO.............................. 2 (GO TO Q15c)  
NO ANSWER/REFUSED ...............DK (GO TO Q15c)

IF Q15b = YES, ASK:

15b(1). Did you cut through rock, for example in coal mine slope or shaft construction?  
YES .................................................. 1  
NO .................................................. 2  
NO ANSWER/REFUSED .......................DK

15c. Considering all underground coal mining, for how many years in total did you do this work?  
_____ YEARS  
NO ANSWER/REFUSED .......................DK

15d. What percentage of these years did you work at the coal face?  
_____ PERCENT (0%-100%)  
NO ANSWER/REFUSED .......................DK
### 16. Did your coal mining work ever include surface or strip mining?

| Option          | Code |
|-----------------|------|
| Yes             | 1    |
| No              | 2    |
| No Answer/Refused | DK  |

**IF Q16=Yes, Ask:**

#### 16a. In this work did you operate a bulldozer, dragline, or scraper?

| Option          | Code |
|-----------------|------|
| Yes             | 1    |
| No              | 2    |
| No Answer/Refused | DK  |

#### 16b. Were you a high wall or auger operator or helper?

| Option          | Code |
|-----------------|------|
| Yes             | 1    |
| No              | 2    |
| No Answer/Refused | DK  |

#### 16c. Considering all surface or strip coal mining, for how many years in total did you do this work?

| Code |
|------|
| _____ YEARS |

### 17. Has a medical doctor ever told you that you have pneumoconiosis, silicosis or black lung?

| Option          | Code |
|-----------------|------|
| Yes             | 1    |
| No              | 2    |
| No Answer/Refused | DK  |

### 18. Thinking about all of the types of work other than hardrock or coal mining that you have done for one year or more during your career, did any non-mining job involve regular exposure to breathing dusty air?

**IF Q18=Yes, Ask:**

#### 18a. For how many years did any non-mining job regularly expose you to breathing dusty air?

| Code |
|------|
| _____ YEARS |

#### 18b. Did you ever have regular contact on a non-mining job with any of the following? *(READ ITEMS ONE AT A TIME IN RANDOM ORDER)*

| Item                          | Code |
|-------------------------------|------|
| (1). Silica, sand, or concrete dust | 1... 2... DK |
| (2). Sandblasting             | 1... 2... DK |
| (3). Explosives or blasting fumes | 1... 2... DK |
| (4). Foundry work             | 1... 2... DK |
| (5). Concrete finishing, cutting, or drilling | 1... 2... DK |
| (6). Masonry work or tip-pointing | 1... 2... DK |
| (7). Metal grinding or polishing | 1... 2... DK |
| (8). Construction dust        | 1... 2... DK |
| (9). Soil or agricultural dust | 1... 2... DK |
19. Thinking about all of the types of work that you have done for five years or longer during your career… Did this include (ITEM) on an almost daily basis? (READ ITEMS ONE AT A TIME IN RANDOM ORDER)

| Item                                                                 | YES | NO | DK/REF |
|----------------------------------------------------------------------|-----|----|--------|
| (1) lifting, carrying, bending, stooping, pulling or pushing          | 1   | 2  | DK     |
| (2) bending, kneeling, squatting, treadle work or extensive standing or walking | 1   | 2  | DK     |
| (3) using vibrating, pneumatic (noo-mat-ik) or hand tools             | 1   | 2  | DK     |
| (4) working with your arms overhead or reaching, or your neck twisted or bent | 1   | 2  | DK     |
| (5) gripping, bending or pinching work with your hands                | 1   | 2  | DK     |

Now, some questions about your health.

20. In general, would you say your health is excellent, very good, good, fair, or poor?

| Response                      | Code |
|-------------------------------|------|
| EXCELLENT                     | 1    |
| VERY GOOD                     | 2    |
| GOOD                          | 3    |
| FAIR                          | 4    |
| POOR                          | 5    |
| NO ANSWER/DON’T KNOW          | DK   |

21. Are you limited in any way in any activities because of a long-term physical condition? (DO NOT COUNT RETIREMENT AS A LONG-TERM HEALTH PROBLEM)

| Response                      | Code |
|-------------------------------|------|
| YES                           | 1    |
| NO                            | 2    |
| DON’T KNOW/REFUSED            | DK   |

22. Has a doctor, nurse, or other health professional EVER told you that you have arthritis?

| Response | Code |
|----------|------|
| YES      | 1    |
| NO       | 2    |
| NO ANS/REF | DK |

(IF Q22 = YES, ASK:)

| Question                                                                 | YES | NO | DK/REF |
|--------------------------------------------------------------------------|-----|----|--------|
| a. Was this osteoarthritis (os-tee-oh-arh-right-us) or degenerative arthritis? | 1   | 2  | DK     |
| b. Was this rheumatoid (rue-ma-toyed) arthritis?                         | 1   | 2  | DK     |
| c. Was this arthritis due to psoriasis (sor-eye-ah-sis)?                 | 1   | 2  | DK     |
| d. Was this arthritis due to gout?                                       | 1   | 2  | DK     |
| e. At what age did your arthritis first start?                           | AGE |     |        |
|                                                            | NO ANSWER/REFUSED | DK |

23. Has a doctor, nurse or other health professional EVER told you that you have any of the following medical conditions? (READ IN RANDOM ORDER)

| Condition                          | YES | NO | DK/REF |
|------------------------------------|-----|----|--------|
| a. Lupus (LOOP-us) or SLE?         | 1   | 2  | DK     |
| b. Scleroderma (sklare-oh-DERM-ah)? | 1   | 2  | DK     |

24. Does pain, swelling, stiffness or aching regularly affect your (READ IN RANDOM ORDER)?

| Location           | YES | NO | DK/REF |
|--------------------|-----|----|--------|
| a. Hands or wrists | 1   | 2  | DK     |
| b. Hips            | 1   | 2  | DK     |
| c. Knees           | 1   | 2  | DK     |
| d. Back            | 1   | 2  | DK     |
| e. Neck            | 1   | 2  | DK     |
| f. Ankles or feet  | 1   | 2  | DK     |

(IF YES TO ANY Q25A-F, ASK:)

25. For the pain, swelling or stiffness you just identified, have you ever been given . . . ?
a. Prednisone (PRED-nuh-zone) or steroid pills? .......................................................... 1 ......2...... DK

(b) Was this at least 3 times a week for 3 months or more?

Yes ...................................................... 1
No .................................................................. 2
No answer/refused .................. DK

b. Steroid injections into your muscles or joints? ................................................. 1 ......2...... DK

(IF Q22B-C OR Q23A-B OR (Q22 = YES AND Q25A OR Q25B = YES), ASK Q26A-F AND Q27A;)

26. Have you ever been given any of the following medicines...(READ ALL ITEMS IN RANDOM ORDER)?

| YES | NO | DK/REF |
|-----|----|--------|
| a. Methotrexate (meth-oh-TREX-ate), Rheumatrex (ROOM-ah-trex), Trexall (TREX-all), Otrexup (oh-TREX-up), or Rasuvo (rah- SOOV-oh).............. 1 ......2 ...... DK |
| b. Sulfasalazine (sulf-ah-SAL-uh-zeen) or Azulfidine (ay-ZUL-fih-deen)..... 1 ......2 ...... DK |
| c. Plaquenil (PLA-kwen-ill) or Hydroxychloroquine (hi-drox-ee-KLOR- oh-kwin) ................................................................. 1 ......2 ...... DK |
| d. Azathioprine (AY-zah-THIGH-oh-prin), Imuran (IM-your-an), or Azasan (AY-zah-sahn) ............................................................. 1 ......2 ...... DK |
| e. Arava (uh-RAVE-uh) or Leflunomide (leh-FLOON-oh-mide) .................... 1 ......2 ...... DK |
| f. Xeljanz (ZEL-janz) or Tofacitinib (TOE-fah-SIT-in-ib) ......................... 1 ......2 ...... DK |
| g. Rinvoq (RIN-vok) or Upadacitinib (up-ada-CIT-in-ib) .............................. 1 ......2 ...... DK |
| h. Olumiant (OL-um-eh-ant) ................................................................. 1 ......2 ...... DK |
27a. (IF Q25b=YES, ADD: Other than the steroid injections you mentioned earlier) have you ever been treated with any injectable medications for arthritis or autoimmune disease? ……………………………1 ...... 2 ...... DK

(IF Q27a = YES, ASK:)

27b. Has this included . . . (READ IN ORDER UNTIL 1ST “YES”, THEN SKIP TO Q28)?

| YES | NO | DK/REF |
|-----|----|--------|
| 1.  |    |        |
| 2.  |    |        |
| 3.  |    |        |
| 4.  |    |        |
| 5.  |    |        |
| 6.  |    |        |
| 7.  |    |        |
| 8.  |    |        |
| 9.  |    |        |

28. Have you smoked at least 100 cigarettes in your entire life? YES………………………………………1 NO………………………………………2 NO ANSWER/REFUSED …………………….DK

IF Q.28 = YES, ASK:

| YES | NO | DK/REF |
|-----|----|--------|
| a.  |    |        |
| b.  |    |        |
| c.  |    |        |
| d.  |    |        |

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And finally, some questions about yourself for classification purposes.

29. What is the highest level of school that you have completed or the highest degree that you have received? (READ LIST ONLY IF NECESSARY)

| Level                                      | Code |
|--------------------------------------------|------|
| 4th Grade or less                         | 1    |
| 5th-8th Grade                             | 2    |
| 9th-12th Grade (No High School Degree)     | 3    |
| High School Graduate                      | 4    |
| Some College / No Degree                   | 5    |
| Assoc. Degree / Trade or Vocational School | 6    |
| College Graduate or Higher                | 7    |
| No Answer / Refused                       | DK   |

30. Are you married, separated or divorced, widowed, never been married, or are you a member of an unmarried couple?

| Status                      | Code |
|-----------------------------|------|
| Married                     | 1    |
| Separated/Divorced          | 2    |
| Widowed                     | 3    |
| Never Been Married          | 4    |
| Unmarried Couple            | 5    |
| No Answer / Refused         | DK   |

31. How many people, including yourself, live in your household?

| Number | Code |
|--------|------|
| No Answer / Refused          | DK   |

32. For classification purposes, are you Latino or of Hispanic origin or descent?

| Yes            | 1 |
| No             | 2 |
| No Answer / Refused | DK |

33. What is your racial background? Are you white, black or African-American, Asian or Pacific Islander, Native American or are you a member of another race? (ANSWER CAN BE A MULTIPLE)

| Race                                      | Code |
|-------------------------------------------|------|
| White/Caucasian                           | 1    |
| Black/African-American                    | 2    |
| Asian/Pacific Islander                    | 3    |
| Latino/Hispanic (Volunteered)             | 4    |
| Native American                           | 5    |
| Other (Specify)                           | 6    |
| No Answer / Refused                       | DK   |

34. About how tall are you without shoes?

| Height | Code |
|--------|------|
| Feet   |      |
| Inches |      |
| No Answer / Refused                       | DK   |

35. About how much do you weigh without shoes?

| Weight | Code |
|--------|------|
| Lbs.   |      |
| No Answer / Refused                       | DK   |

36. We don’t need to know exactly, but just roughly could you tell me if your annual household income from all sources before taxes in 2020 was less than $20,000, $20,000 through $40,000, $40,000 through $60,000, $60,000 through $80,000, $80,000 through $100,000, or $100,000 or more?

| Income Range     | Code |
|------------------|------|
| Less than $20,000| 1    |
| $20,000 - $39,999| 2    |
| $40,000 - $59,999| 3    |
| $60,000 - $79,999| 4    |
| $80,000 - $99,999| 5    |
| $100,000 or more | 6    |
| No Answer / Refused | DK  |
37. Is the telephone that I dialed to reach you a landline phone or a cell phone?

|                | LANDLINE PHONE | CELL PHONE | OTHER | DON'T KNOW/REFUSED |
|----------------|----------------|------------|-------|--------------------|
| IS THE PHONE   | 1              | 2          | 3     | DK                 |

**IF Q37=LANDLINE, OTHER OR DK, ASK:**

37a. Do you make and receive personal calls from a cell phone?

|                | YES | NO | DON'T KNOW/REFUSED |
|----------------|-----|----|--------------------|
| IS THE PHONE   | 1   | 2  | DK                 |

**IF Q37=CELL PHONE, ASK:**

37b. Is there a telephone inside your home that you use to make and receive personal calls that is not a cell phone?

|                | YES | NO | DON'T KNOW/REFUSED |
|----------------|-----|----|--------------------|
| IS THE PHONE   | 1   | 2  | DK                 |

**IF Q37a OR Q37b =YES, ASK:**

37c. Of all the personal telephone calls that you receive, do you get most of them on a landline phone or on a cell phone?

|                | MOST ON LANDLINE PHONE | MOST ON CELL PHONE | ABOUT EQUAL (VOLUNTEERED) | DON'T KNOW/REFUSED |
|----------------|------------------------|--------------------|---------------------------|--------------------|
| IS THE PHONE   | 1                      | 2                  | 3                         | DK                 |

38. These are all the questions I have. To thank you for your participation, we would like to send you a $5 gift card from Amazon or Starbucks. What email address should we send that to?

**IF Q38=1 (PROVIDES EMAIL), ASK:**

38a. ENTER EMAIL ADDRESS (READ BACK SLOWLY TO CONFIRM)

**IF Q38=2 (DOES NOT PROVIDE EMAIL), ASK:**

38c. Then we can mail you your $5 gift card or a check. Which would you prefer – a $5 Amazon gift card, a $5 Starbucks gift card or a check?

|                | AMAZON GIFT CARD | STARBUCKS GIFT CARD | CHECK |
|----------------|------------------|---------------------|-------|
| IS THE PHONE   | 1                | 2                   | 3     |

38d. What is your name and mailing address? (ENTER ADDRESS, READ BACK SLOWLY TO CONFIRM)

- NAME: ________________________________
- ADDRESS: ________________________________
- CITY: ________________________________ (CATI DISPLAYS STATE)
- ZIP CODE: ________________________________ (ACCEPT ELIGIBLE ZIP CODES)

Thank you very much for participating in this important survey.