

**Overview of MOST Calculated Variables and SAS Code by Measurement and Study Visit
May 2015**

TYPE	MEASURE
Macro	Score Missing, Don't Know, or Don't Do
	Calculate Extreme Value or Average of Non-Extreme Values
	Average Measure
Standard Measure	Standing Height (mm)
	Knee Height (sitting) (cm)
	Leg Length (supine) – Absolute Difference Between Right and Left Leg (cm)
	Weight (lbs)
	Body Mass Index (BMI) – Continuous and Categorical
Instrument	CES-D Depression Scale Score and Indicator
	Modified Charlson Comorbidity – Serious Diseases and Conditions, and Comorbidity Score
	Modified Late Life FDI: Disability Component
	Physical Activity Scale for the Elderly (PASE)
	Modified SF-12 Health Survey and PF-10
	Modified KOOS: Function, Sports and Recreational Activities
	Modified WOMAC Osteoarthritis Index
	Cognitive Assessment – Fillit Cognitive Screen, Callahan 6-Item Screener, and Mini-Mental State Examination (MMSE-2)
	Activities-Specific Balance Confidence (ABC) Score
Joint Pain, Aching or Stiffness (Past 30 Days)	Frequent Knee Pain (FKP)
	Foot, Hand, and Back Pain
	Widespread Pain (Whole Body)
History and Status	Difference Between Telephone Interview and Clinic Visit (weeks)
	Height, Weight, and Body Mass Index (BMI) at 25-Years-Old
	Knee Injuries and Knee Surgery
	Hip and Spine Fractures
	Work History
	Tobacco Use History
	Medication Inventory (MIF): IDIS Ingredient Database – Use in Past 30 Days
	Assistive Devices Currently Used
Exam	20-Meter Walk – Number of Steps and Time (sec)
	Chair Stands (sec)
	Maximal Step Length (MSL) (inches)
	Isokinetic Thigh Muscle Strength (Flexion and Extension)
	Greater Trochanteric Pain Score (GTPS) from Knee and Hip Joint Exams
	Hand Exam for Bony Enlargements of the Joints
	Vibration Perception Threshold (VPT) (volts)
	Pain Sensitivity – Touch Test (2g and 26g von Frey Filament), Brush Test, Pinprick Test
	Pressure Pain Threshold (PPT) (kg)

Overview of MOST Calculated Variables and SAS Code by Measurement and Study Visit, February 2015

Macro	Name				
Score Missing, Don't Know, or Don't Do	%macro score				
Calculate Extreme Value or Average of Non-Extreme Values	%macro extreme_ave_max				
Average Measure	%macro avgmeas				
Measure	Baseline Variables (V0)	15M Variables (V1)	30M Variables (V2)	60M Variables (V3)	84M Variables (V5)
Standing Height (mm)	V0HT Derived from Clinic Visit: V0HT1 - V0HT4: Q2-3 and 6-7 p3	Measurement not done at this time point	Measurement not done at this time point	V3HT Derived from Clinic Visit: V3HT1 - V3HT4: Q2-3 and 6-7 p33	V5HT Derived from Clinic Visit: V5HT1 - V5HT4: Q2-3 and 6-7 CV p33
Knee Height (sitting) (cm)	V0KHT Derived from from Clinic Visit: V0KHT1 - V0KHT4: Q2-3 and 6-7 p14	Measurement not done at this time point	Measurement not done at this time point	Measurement not done at this time point	Measurement not done at this time point
Leg Length (supine) - Absolute Difference Between Right and Left Leg (cm)	V0LLDIFF Derived from Clinic Visit: V0LLR, V0LLL: Q3-4 p14	Measurement not done at this time point	Measurement not done at this time point	Measurement not done at this time point	Measurement not done at this time point
Weight (lbs)	V0WT Derived from Clinic Visit weight in kg: V0WGHT: p3	V1WT Derived from Clinic Visit weight in kg: V1WGHT: p6	V2WT Derived from Clinic Visit weight in kg: V2WGHT: p19	V3WT Derived from Clinic Visit weight in kg: V3WGHT: p33	V5WT Derived from Clinic Visit weight in kg: V5WGHT: p32
Body Mass Index (KG/M**2) - Continuous and Categorical	V0BMI Derived from: V0HT (or V3HT if HT missed at BL but done at 60M) and Clinic Visit p3: V0WGHT	V1BMI Derived from: V0HT (HT not done at 15M) and Clinic Visit p6: V1WGHT	V2BMI Derived from: V0HT (HT not done at 30m) and Clinic Visit p19: V2WGHT	V3BMI Derived from: V0HT (if HT not done at 60M) or V3HT and Clinic Visit p33: V3WGHT	V5BMI Derived from: V0HT (if HT not done at 60M) or V5HT and Clinic Visit p32: V5WGHT
	V0BMICAT Derived from V0BMI	V1BMICAT Derived from V1BMI	V2BMICAT Derived from V2BMI	V3BMICAT Derived from V3BMI	V5BMICAT Derived from V5BMI
CES-D Depression Scale Score and Indicator	V0CES_D Derived from SAQ-Home: V0CESDA - V0CESDT: Q68a-t p23-24	Instrument not done at this time point	V2CES_D Derived from SAQ-Home: V2CESDA - V2CESDT: Q46a-t p17-18	V3CES_D Derived from SAQ-Home: V3CESDA - V3CESDT: Q36a-t p18-19	V5CES_D Derived from SAQ-Home: V5CESDA - V5CESDT: Q36a-t p18-19
	V0_DEP Derived from V0CES_D		V2_DEP Derived from V2CES_D	V3_DEP Derived from V3CES_D	V5_DEP Derived from V5CES_D

Note: Gray shading indicates data not publicly released at this time.

Overview of MOST Calculated Variables and SAS Code by Measurement and Study Visit, February 2015

Measure	Baseline Variables (V0)	15M Variables (V1)	30M Variables (V2)	60M Variables (V3)	84M Variables (V5)
Modified Charlson Comorbidity	V0_DX Derived from SAQ Home: V0ALZHE, V0LIVER, V0LEUKE, V0LIMPH, V0CANCER, V0AIDS: Q23a-f p11	Instrument not done at this time point	V2_DX Derived from SAQ Home: V2ALZHE, V2LIVER, V2LEUKE, V2LIMPH, V2CANCER, V2AIDS: Q16a-f p10	V3_DX Derived from SAQ Home: V3ALZHE, V3LIVER, V3LEUKE, V3LIMPH, V3CANCER, V3AIDS: Q12a-f p4	V5_DX Derived from SAQ Home: V5ALZHE, V5LIVER, V5LEUKE, V5LIMPH, V5CANCER, V5AIDS: Q12a-f p4
	V0_RADXR Derived from V0RAME and x-ray reading data and SAQ Home: V0ARTH, V0RA: Q11-11a p7		V2_RADXR Derived from V2RAME and x-ray reading data and SAQ Home: V2ARTH, V2RA: Q3-3a p3	V3_RADXR Derived from V3RAME and x-ray reading data and SAQ Home: V3ARTH, V3RA: Q1-1a p1	V5_RADXR Derived from V5RAME and x-ray reading data and SAQ Home: V5ARTH, V5RA: Q1-1a p1
	V0MCOMOR Derived from V0_RADXR and SAQ Home: V0HRTAT, V0UNCLOG, V0HRTFA, V0BYPASS, V0STROKE, V0MOVE, V0ASTHMA, V0ASTRX, V0WHEN, V0COPD, V0LUNRX, V0LWHEN, V0ULCER, V0ULCDX, V0DIABT, V0DIET, V0DRX, V0INJ, V0KID, V0EYE, V0KIDNY, V0POORF, V0TRANS, V0DIALY, V0ALZHE, V0LIVER, V0LEUKE, V0LIMPH, V0CANCER, V0CANCERS, V0AIDS: Q13-23 p9-11		V2MCOMOR Derived from V2_RADXR and SAQ Home: V2HRTAT, V2UNCLOG, V2HRTFA, V2BYPASS, V2STROKE, V2MOVE, V2ASTHMA, V2ASTRX, V2WHEN, V2COPD, V2LUNRX, V2LWHEN, V2ULCER, V2ULCDX, V2DIABT, V2DIET, V2DRX, V2INJ, V2KID, V2EYE, V2KIDNY, V2POORF, V2TRANS, V2DIALY, V2ALZHE, V2LIVER, V2LEUKE, V2LIMPH, V2CANCER, V2CANCERS, V2AIDS: Q6-16 p6-10	V3MCOMOR Derived from V3_RADXR and SAQ Home: V3HRTAT, V3UNCLOG, V3HRTFA, V3BYPASS, V3STROKE, V3MOVE, V3ASTHMA, V3ASTRX, V3WHEN, V3COPD, V3LUNRX, V3LWHEN, V3ULCER, V3ULCDX, V3DIABT, V3DIET, V3DRX, V3INJ, V3KID, V3EYE, V3KIDNY, V3POORF, V3TRANS, V3DIALY, V3ALZHE, V3LIVER, V3LEUKE, V3LIMPH, V3CANCER, V3CANCERS, V3AIDS: Q2-12 p2-4	V5MCOMOR Derived from V5_RADXR and SAQ Home: V5HRTAT, V5UNCLOG, V5HRTFA, V5BYPASS, V5STROKE, V5MOVE, V5ASTHMA, V5ASTRX, V5WHEN, V5COPD, V5LUNRX, V5LWHEN, V5ULCER, V5ULCDX, V5DIABT, V5DIET, V5DRX, V5INJ, V5KID, V5EYE, V5KIDNY, V5POORF, V5TRANS, V5DIALY, V5ALZHE, V5LIVER, V5LEUKE, V5LIMPH, V5CANCER, V5CANCERS, V5AIDS: Q2-12 p2-4
	No cumulative score at baseline		V2MCOMOR_CUM (cumulative) Derived from comorbidity score components at baseline and 30M	V3MCOMOR_CUM (cumulative) Derived from comorbidity score components at baseline, 30M and 60M	V5MCOMOR_CUM (cumulative) Derived from comorbidity score components at baseline, 30M, 60M and 84M
Modified Late Life FDI: Disability Component	V0LLDIIR Derived from SAQ Home: V0FDI1 - V0FDI12: Q44-55 p19-20	V1LLDIIR Derived from SAQ-Clinic: V1FDI1 - V1FDI12: Q14-25 p10-11	V2LLDIIR Derived from SAQ Home: V2FDI1 - V2FDI12: Q22-33 p13-14	V3LLDIIR Derived from SAQ Home: V3FDI1 - V3FDI12: Q39-50 p21-22	V5LLDIIR Derived from SAQ Home: V5FDI1 - V5FDI12: Q39-50 p21-22

Overview of MOST Calculated Variables and SAS Code by Measurement and Study Visit, February 2015

Measure	Baseline Variables (V0)	15M Variables (V1)	30M Variables (V2)	60M Variables (V3)	84M Variables (V5)
Physical Activity Scale for the Elderly (PASE)	V0PASE01 Derived from Clinic Interview: V0WALK, V0WALKT: Q2 p1	Instrument not done at this time point	Instrument not done at this time point	V3PASE01 Derived from Clinic Interview: V3WALK, V3WALKT: Q41 p20	V5PASE01 Derived from Clinic Interview: V5WALK, V5WALKT: Q41 p20
	V0PASE02 Derived from Clinic Interview: V0LTE, V0LTET: Q3 p2			V3PASE02 Derived from Clinic Interview: V3LTE, V3LTET: Q42 p21	V5PASE02 Derived from Clinic Interview: V5LTE, V5LTET: Q42 p21
	V0PASE03 Derived from Clinic Interview: V0MOD, V0MODT: Q5 p3			V3PASE03 Derived from Clinic Interview: V3MOD, V3MODT: Q44 p22	V5PASE03 Derived from Clinic Interview: V5MOD, V5MODT: Q44 p22
	V0PASE04 Derived from Clinic Interview: V0STR, V0STRT: Q6 p3			V3PASE04 Derived from Clinic Interview: V3STR, V3STRT: Q45 p22	V5PASE04 Derived from Clinic Interview: V5STR, V5STRT: Q45 p22
	V0PASE05 Derived from Clinic Interview: V0WGT, V0WGTT: Q7 p4			V3PASE05 Derived from Clinic Interview: V3WGT, V3WGTT: Q46 p23	V5PASE05 Derived from Clinic Interview: V5WGT, V5WGTT: Q46 p23
	V0PASE06 Derived from Clinic Interview: V0LHW: Q8 p4			V3PASE06 Derived from Clinic Interview: V3LHW: Q47 p23	V5PASE06 Derived from Clinic Interview: V5LHW: Q47 p23
	V0PASE07 Derived from Clinic Interview: V0HHW: Q9 p4			V3PASE07 Derived from Clinic Interview: V3HHW: Q48 p23	V5PASE07 Derived from Clinic Interview: V5HHW: Q48 p23
	V0PASE08 Derived from Clinic Interview: V0HOME: Q10a p4			V3PASE08 Derived from Clinic Interview: V3HOME: Q49a p23	V5PASE08 Derived from Clinic Interview: V5HOME: Q49a p23
	V0PASE09 Derived from Clinic Interview: V0LAWN: Q10b p4			V3PASE09 Derived from Clinic Interview: V3LAWN: Q49b p23	V5PASE09 Derived from Clinic Interview: V5LAWN: Q49b p23
	V0PASE10 Derived from Clinic Interview: V0GARDN: Q10c p4			V3PASE10 Derived from Clinic Interview: V3GARDN: Q49c p23	V5PASE10 Derived from Clinic Interview: V5GARDN: Q49c p23
	V0PASE11 Derived from Clinic Interview: V0CARE: Q10d p4			V3PASE11 Derived from Clinic Interview: V3CARE: Q49d p23	V5PASE11 Derived from Clinic Interview: V5CARE: Q49d p23
	V0PASE12 Derived from Clinic Interview: V0WK, V0WKHR, V0WKPA: Q11 p5			V3PASE12 Derived from Clinic Interview: V3WK, V3WKHR, V3WKPA: Q50 p24	V5PASE12 Derived from Clinic Interview: V5WK, V5WKHR, V5WKPA: Q50 p24
	V0PASE Derived from V0PASE01 - V0PASE12			V3PASE Derived from V3PASE01 - V3PASE12	V5PASE Derived from V5PASE01 - V5PASE12
Modified SF-12 Health Survey	V0SF12MP V0SF12MM Derived from SAQ-Home: V0SF1 - V0SF12: Q56-57 p21-22	V1SF12MP V1SF12MM Derived from SAQ-Clinic: V1SF1 - V1SF12: Q26-37 p12-13	V2SF12MP V2SF12MM Derived from SAQ-Home: V2SF1 - V2SF12: Q34-35 p15-16	V3SF12MP V3SF12MM Derived from SAQ-Home: V3SF1 - V3SF12: Q25-34 p15-16	V5SF12MP V5SF12MM Derived from SAQ-Home: V5SF1 - V5SF12: Q25-34 p15-16

Overview of MOST Calculated Variables and SAS Code by Measurement and Study Visit, February 2015

Measure	Baseline Variables (V0)	15M Variables (V1)	30M Variables (V2)	60M Variables (V3)	84M Variables (V5)
Modified PF-10	Instrument not done at this time point	Instrument not done at this time point	Instrument not done at this time point	Calculated variable for this instrument not currently available	Calculated variable for this instrument not currently available
Modified KOOS: Function, Sports and Recreational Activities	V0KOOSSP Derived from SAQ-Clinic: V0SP1K - V0SP5K: Q10a-e p6	V1KOOSSP Derived from SAQ-Clinic: V1SP1K - V1SP5K: Q17a-e p7	V2KOOSSP Derived from SAQ-Clinic: V2SP1K - V2SP5K: Q10a-e p6	V3KOOSSP Derived from SAQ-Clinic: V3SP1K - V3SP5K: Q10a-e p6	V5KOOSSP Derived from SAQ-Clinic: V5SP1K - V5SP5K: Q10a-e p6
Modified WOMAC Osteoarthritis Index - Knee Pain and Stiffness	V0Q2KR Derived from SAQ-Clinic: V0UPR, V0DOWNR: Q1b-c p1 V0Q2KL V0UPL, V0DOWNL: Q5b-c p2	V1Q2KR Derived from SAQ-Clinic: V1UPR, V1DOWNR: Q2b-c p2 V1Q2KL V1UPL, V1DOWNL: Q6b-c p3	V2Q2KR Derived from SAQ-Clinic: V2UPR, V2DOWNR: Q1b-c p1 V2Q2KL V2UPL, V2DOWNL: Q5b-c p2	V3Q2KR Derived from SAQ-Clinic: V3UPR, V3DOWNR: Q1b-c p1 V3Q2KL V3UPL, V3DOWNL: Q5b-c p2	V5Q2KR Derived from SAQ-Clinic: V5UPR, V5DOWNR: Q1b-c p1 V5Q2KL V5UPL, V5DOWNL: Q5b-c p2
	V0WOPNKR Derived from SAQ-Clinic: V0Q1KR - V0Q5KR: Q1a-f p1 V0WOPNKL V0Q1KL - V0Q5KL: Q5a-f p3	V1WOPNKR Derived from SAQ-Clinic: V1Q1KR - V1Q5KR: Q2a-f p1 V1WOPNKL V1Q1KL - V1Q5KL: Q6a-f p3	V2WOPNKR Derived from SAQ-Clinic: V2Q1KR - V2Q5KR: Q1a-f p1 V2WOPNKL V2Q1KL - V2Q5KL: Q5a-f p3	V3WOPNKR Derived from SAQ-Clinic: V3Q1KR - V3Q5KR: Q1a-f p1 V3WOPNKL V3Q1KL - V3Q5KL: Q5a-f p3	V5WOPNKR Derived from SAQ-Clinic: V5Q1KR - V5Q5KR: Q1a-f p1 V5WOPNKL V5Q1KL - V5Q5KL: Q5a-f p3
	V0WOSTKR Derived from SAQ-Clinic: V0Q6KR, V0Q7KR: Q3-4 p2 V0WOSTKL V0Q6KL, V0Q7KL: Q7-8 p3	V1WOSTKR Derived from SAQ-Clinic: V1Q6KR, V1Q7KR: Q4-5 p3 V1WOSTKL V1Q6KL, V1Q7KL: Q8-9 p4	V2WOSTKR Derived from SAQ-Clinic: V2Q6KR, V2Q7KR: Q3-4 p2 V2WOSTKL V2Q6KL, V2Q7KL: Q7-8 p3	V3WOSTKR Derived from SAQ-Clinic: V3Q6KR, V3Q7KR: Q3-4 p2 V3WOSTKL V3Q6KL, V3Q7KL: Q7-8 p3	V5WOSTKR Derived from SAQ-Clinic: V5Q6KR, V5Q7KR: Q3-4 p2 V5WOSTKL V5Q6KL, V5Q7KL: Q7-8 p3
	V0WOPASK Derived from SAQ-Clinic: V0Q8K - V0Q24K: Q9a-q p4-5	V1WOPASK Derived from SAQ-Clinic: V1Q8K - V1Q24K: Q10a-q p5-6	V2WOPASK Derived from SAQ-Clinic: V2Q8K - V2Q24K: Q9a-q p3-4	V3WOPASK Derived from SAQ-Clinic: V3Q8K - V3Q24K: Q9a-q p3-4	V5WOPASK Derived from SAQ-Clinic: V5Q8K - V5Q24K: Q9a-q p3-4
	V0WOTOTR Derived from V0WOPNKR, V0WOSTKR, V0WOPASK V0WOTOTL V0WOPNKL, V0WOSTKL, V0WOPASK	V1WOTOTR Derived from V1WOPNKR, V1WOSTKR, V1WOPASK V1WOTOTL V1WOPNKL, V1WOSTKL, V1WOPASK	V2WOTOTR Derived from V2WOPNKR, V2WOSTKR, V2WOPASK V2WOTOTL V2WOPNKL, V2WOSTKL, V2WOPASK	V3WOTOTR Derived from V3WOPNKR, V3WOSTKR, V3WOPASK V3WOTOTL V3WOPNKL, V3WOSTKL, V3WOPASK	V5WOTOTR Derived from V5WOPNKR, V5WOSTKR, V5WOPASK V5WOTOTL V5WOPNKL, V5WOSTKL, V5WOPASK
Modified WOMAC Osteoarthritis Index - Hip Pain	V0WOPNHR Derived from SAQ-Clinic: V0Q1HR - V0Q5HR: Q11a-e p7 V0WOPNHL V0Q1HL - V0Q5HL: Q12a-e p8	V1WOPNHR Derived from SAQ-Clinic: V1Q1HR - V1Q5HR: Q11a-e p8 V1WOPNHL V1Q1HL - V1Q5HL: Q12a-e p9	V2WOPNHR Derived from SAQ-Clinic: V2Q1HR - V2Q5HR: Q11a-e p7 V2WOPNHL V2Q1HL - V2Q5HL: Q12a-e p8	V3WOPNHR Derived from SAQ-Clinic: V3Q1HR - V3Q5HR: Q11a-e p7 V3WOPNHL V3Q1HL - V3Q5HL: Q12a-e p8	V5WOPNHR Derived from SAQ-Clinic: V5Q1HR - V5Q5HR: Q11a-e p7 V5WOPNHL V5Q1HL - V5Q5HL: Q12a-e p8
	V0WOPHRM Derived from SAQ-Clinic: V0Q1HR - V0Q8HR: Q11a-h p7 V0WOPHLM V0Q1HL - V0Q8HL: Q12a-h p8	V1WOPHRM Derived from SAQ-Clinic: V1Q1HR - V1Q8HR: Q11a-h p8 V1WOPHLM V1Q1HL - V1Q8HL: Q12a-h p9	V2WOPHRM Derived from SAQ-Clinic: V2Q1HR - V2Q8HR: Q11a-h p7 V2WOPHLM V2Q1HL - V2Q8HL: Q12a-h p8	V3WOPHRM Derived from SAQ-Clinic: V3Q1HR - V3Q8HR: Q11a-h p7 V3WOPHLM V3Q1HL - V3Q8HL: Q12a-h p8	V5WOPHRM Derived from SAQ-Clinic: V5Q1HR - V5Q8HR: Q11a-h p7 V5WOPHLM V5Q1HL - V5Q8HL: Q12a-h p8

Overview of MOST Calculated Variables and SAS Code by Measurement and Study Visit, February 2015

Measure	Baseline Variables (V0)	15M Variables (V1)	30M Variables (V2)	60M Variables (V3)	84M Variables (V5)
Cognitive Assessment - Fillit Cognitive Screen	Instrument not done at this time point	Instrument not done at this time point	Instrument not done at this time point	V3COGSCORE Derived from Clinic Visit: V3COGFRQ, V3COGNMD, V3COGTRP, V3COG2AP, V3COG2TB, V3COG2PN: Q3-5 p30-31	Instrument not done at this time point
				V3_COG Derived from V3COGSCORE and Clinic Visit: V3COGFRQ, V3COGNMD: Q3 p30	
Cognitive Assessment - Callahan 6-Item Screener	Instrument not done at this time point	Instrument not done at this time point	Instrument not done at this time point	Instrument not done at this time point	Calculated variable for this instrument not currently available
Cognitive Assessment - Mini-Mental State Examination (MMSE-2)	Instrument not done at this time point	Instrument not done at this time point	Instrument not done at this time point	Instrument not done at this time point	Calculated variable for this instrument not currently available
Activities-Specific Balance Confidence (ABC) Score	Instrument not done at this time point	Instrument not done at this time point	Instrument not done at this time point	V3ABCScore Derived from SAQ-Home: V3ABCA - V3ABCP: Q16a-p p7-8	V5ABCScore Derived from SAQ-Home: V5ABCA - V5ABCP: Q16a-p p7-8
Joint Pain, Aching or Stiffness - Frequent Knee Pain (FKP)	V0R_FKP Derived from Telephone Screening Interview: TSKNPN, TSKNPNR: Q12 p4; and from Clinic Interview: V0KPN12R, V0PN30R, V0KPN30R: Q12-13 p6 V0L_FKP Derived from Telephone Screening Interview: TSKNPN, TSKNPNL: Q12 p4; and from Clinic Interview: V0KPN12L, V0PN30L, V0KPN30L: Q14-15 p7	V1R_FKP Derived from Telephone Interview: V112MR, V130DR, V130MSR: Q1-2 p1; and from Clinic Interview: V1KPN12R, V1PN30R, V1KPN30R: Q1-2 p2 V1L_FKP Derived from Telephone Interview: V112ML, V130DL, V130MSL: Q3-4 p2; and from Clinic Interview: V1KPN12L, V1PN30L, V1KPN30L: Q3-4 p3	V2R_FKP Derived from Telephone Interview: V212MR, V230DR, V230MSR: Q1-2 p1; and from Clinic Interview: V2KPN12R, V2PN30R, V2KPN30R: Q1-2 p2 V2L_FKP Derived from Telephone Interview: V212ML, V230DL, V230MSL: Q3-4 p2; and from Clinic Interview: V2KPN12L, V2PN30L, V2KPN30L: Q3-4 p3	V3R_FKP Derived from Telephone Interview: V312MR, V330DR, V330MSR: Q1-2 p1; and from Clinic Interview: V3KPN12R, V3PN30R, V3KPN30R: Q1-2 p2 V3L_FKP Derived from Telephone Interview: V312ML, V330DL, V330MSL: Q3-4 p2; and from Clinic Interview: V3KPN12L, V3PN30L, V3KPN30L: Q3-4 p3	V5R_FKP Derived from Telephone Interview: V512MR, V530DR, V530MSR: Q1-2 p1; and from Clinic Interview: V5KPN12R, V5PN30R, V5KPN30R: Q1-2 p2 V5L_FKP Derived from Telephone Interview: V512ML, V530DL, V530MSL: Q3-4 p2; and from Clinic Interview: V5KPN12L, V5PN30L, V5KPN30L: Q3-4 p3
	V0R_SX Derived from V0R_FKP and x-ray reading data V0L_SX Derived from V0L_FKP and x-ray reading data	V1R_SX Derived from V1R_FKP and x-ray reading data V1L_SX Derived from V1L_FKP and x-ray reading data	V2R_SX Derived from V2R_FKP and x-ray reading data V2L_SX Derived from V2L_FKP and x-ray reading data	V3R_SX Derived from V3R_FKP and x-ray reading data V3L_SX Derived from V3L_FKP and x-ray reading data	V5R_SX Derived from V5R_FKP and x-ray reading data V5L_SX Derived from V5L_FKP and x-ray reading data
	V0_FKPSX Derived from V0R_SX and V0L_SX	V1_FKPSX Derived from V1R_SX and V1L_SX	V2_FKPSX Derived from V2R_SX and V2L_SX	V3_FKPSX Derived from V3R_SX and V3L_SX	V5_FKPSX Derived from V5R_SX and V5L_SX

Overview of MOST Calculated Variables and SAS Code by Measurement and Study Visit, February 2015

Measure	Baseline Variables (V0)	15M Variables (V1)	30M Variables (V2)	60M Variables (V3)	84M Variables (V5)
Joint Pain, Aching or Stiffness - Foot Pain	V0R_FFOOT Derived from SAQ-Home: V0JPAIN: Q9 p3 V0FF1R - V0FF9R: Q9 p4 V0L_FFOOT V0JPAIN: Q9 p3 V0FF1L - V0FF9L: Q9 p4	Data not collected at this time point	Data not collected at this time point	V3R_FFOOT Derived from SAQ-Home: V3JPAIN: Q21 p10 V3FF1R - V3FF9R: Q21 p11 V3L_FFOOT V3JPAIN: Q21 p10 V3FF1L - V3FF9L: Q21 p11	V5R_FFOOT Derived from SAQ-Home: V5JPAIN: Q21 p10 V5FF1R - V5FF9R: Q21 p11 V5L_FFOOT V5JPAIN: Q21 p10 V5FF1L - V5FF9L: Q21 p11
	V0R_BFOOT Derived from SAQ-Home: V0JPAIN: Q9 p3 V0BF1R - V0BF9R: Q9 p4 V0L_BFOOT V0JPAIN: Q9 p3 V0BF1L - V0BF9L: Q9 p4			V3R_BFOOT Derived from SAQ-Home: V3JPAIN: Q21 p10 V3BF1R - V3BF9L: Q21 p11 V3L_BFOOT V3JPAIN: Q21 p10 V3BF1L - V3BF9L: Q21 p11	V5R_BFOOT Derived from SAQ-Home: V5JPAIN: Q21 p10 V5BF1R - V5BF9L: Q21 p11 V5L_BFOOT V5JPAIN: Q21 p10 V5BF1L - V5BF9L: Q21 p11
Joint Pain, Aching or Stiffness - Hand Pain	V0R_HAND Derived from SAQ-Home: V0JPAIN: Q9 p3 V0F1R - V0F15R: Q9 p5 V0L_HAND V0JPAIN: Q9 p3 V0F1L - V0F15L: Q9 p5	Data not collected at this time point	Data not collected at this time point	Data not collected at this time point	Data not collected at this time point
Joint Pain, Aching or Stiffness - Back Pain	V0_LBP Derived from SAQ-Home: V0PAIN: Q10 p6 V0LB: Q10c p6 V0FREQ: Q10a p6	Data not collected at this time point	V2_LBP Derived from SAQ-Home: V2PAIN: Q2 p2 V2LB: Q2c p2 V2FREQ: Q2a p2	V3_LBP Derived from SAQ-Home: V3PAIN: Q22 p12 V3LB: Q22c p12 V3FREQ: Q22a p12	V5_LBP Derived from SAQ-Home: V5PAIN: Q22 p12 V5LB: Q22c p12 V5FREQ: Q22a p12
Joint Pain, Aching or Stiffness - Widespread Pain (Whole Body)	V0_WSPA (definition A) V0_WSPB (definition B) V0_WSPC (definition C) Derived from SAQ-Home p3-6: all variables from diagrams of body, feet, hands, and back	V1_WSPA (definition A) V1_WSPB (definition B) Derived from SAQ-Clinic p1: all variables from diagrams of body	V2_WSPA (definition A) V2_WSPB (definition B) V2_WSPC (definition C) Derived from SAQ-Home p1-2: all variables from diagrams of body and back	V3_WSPA (definition A) V3_WSPB (definition B) V3_WSPC (definition C) Derived from SAQ-Home p10- 12: all variables from diagrams of body, feet, and back	V5_WSPA (definition A) V5_WSPB (definition B) V5_WSPC (definition C) Derived from SAQ-Home p10-12: all variables from diagrams of body, feet, and back
Difference from Telephone Interview to Clinic Visit (Weeks)	V0_DATEDIFF Derived from: V0_TIDATE: Telephone Screening Interview p1 V0_CVDATE: Clinic Visit p1	V1_DATEDIFF Derived from: V1_TIDATE: Telephone Interview p1 V1_CVDATE: Clinic Visit p1	V2_DATEDIFF Derived from: V2_TIDATE: Telephone Interview p1 V2_CVDATE: Clinic Visit p1	V3_DATEDIFF Derived from: V3_TIDATE: Telephone Interview p1 V3_CVDATE: Clinic Visit p1	V5_DATEDIFF Derived from: V5_TIDATE: Telephone Interview p1 V5_CVDATE: Clinic Visit p1
Height, Weight, and Body Mass Index (BMI) at 25-Years-Old	V0_HT25 Derived from SAQ-Home: V0HTFT, V0HTIN: Q6 p2 V0_WGHT25 Derived from SAQ-Home: V0WGT25: Q7 p2 V0_BMI25 Derived from: V0_HT25, V0_WGHT25	Measurement not done at this time point	Measurement not done at this time point	Measurement not done at this time point	Measurement not done at this time point

Overview of MOST Calculated Variables and SAS Code by Measurement and Study Visit, February 2015

Measure	Baseline Variables (V0)	15M Variables (V1)	30M Variables (V2)	60M Variables (V3)	84M Variables (V5)
Knee Injuries (Years since last event)	VOR_INJYR Derived from TSAGE and Clinic Interview: VOLAR and V0WAG1R - V0WAG3R: Q22 p9 VOL_INJYR VOLAL and V0WAG1L - V0WAG3L: Q29 p12	Data not collected at this time point	Data not collected at this time point	Data not collected at this time point	Data not collected at this time point
Knee Surgeries - Total Knee Replacement (Years since first event)	VOR_TKRYR Derived from TSAGE and Clinic Interview: V0KNRR, V0KAG1R: Q24 p9 VOL_TKRYR V0KNRL, V0KAG1L: Q31 p12	Data not collected at this time point	Data not collected at this time point	Data not collected at this time point	Data not collected at this time point
Knee Surgeries (Years since last event)	VOR_ARTYR Derived from TSAGE and Clinic Interview: V0ARTR and V0AAG1R - V0AAG3R: Q25 p10 VOL_ARTYR V0ARTL and V0AAG1L - V0AAG3L: Q32 p13	Data not collected at this time point	Data not collected at this time point	Data not collected at this time point	Data not collected at this time point
	VOR_MENYR Derived from TSAGE and Clinic Interview: V0MENR and V0MAG1R - V0MAG3R: Q26 p10 VOL_MENYR V0MENL and V0MAG1L - V0MAG3L: Q33 p13	Data not collected at this time point	Data not collected at this time point	Data not collected at this time point	Data not collected at this time point
	VOR_LIGYR Derived from TSAGE and Clinic Interview: V0LIGR and V0LAG1R - V0LAG3R: Q27 p11 VOL_LIGYR V0LIGL and V0LAG1L - V0LAG3L: Q34 p14				
	VOR_OTHYR Derived from TSAGE and Clinic Interview: V0SOTHR and V0SAG1R - V0SAG3R: Q28 p11 VOL_OTHYL V0SOTHL and V0SAG1L - V0SAG3L: Q35 p14				

Overview of MOST Calculated Variables and SAS Code by Measurement and Study Visit, February 2015

Measure	Baseline Variables (V0)	15M Variables (V1)	30M Variables (V2)	60M Variables (V3)	84M Variables (V5)
Hip and Spine Fractures	V0_FXHIPSP Derived from SAQ-Home: V0BONE, V0FXHIP, V0SPINE: Q24-25 p12	V1_FXHIPSP Derived from Telephone Interview: V1BONE, V1FXHIP, V1SPINE: Q23 p12	V2_FXHIPSP Derived from SAQ-Home: V2BONE, V2FXHIP, V2SPINE: Q17 p11	V3_FXHIPSP Derived from SAQ-Home: V3BONE, V3FXHIP, V3SPINE: Q13 p5	V5_FXHIPSP Derived from SAQ-Home: V5BONE, V5FXHIP, V5SPINE: Q13 p5
Work History	V0_DRYRCAT Derived from SAQ-Home: V0DRIVE, V0DRYR: Q35 p16	Data not collected at this time point	Data not collected at this time point	Data not collected at this time point	Data not collected at this time point
	V0_BNYRCAT Derived from SAQ-Home: V0BEND, V0BNYR: Q36 p16				
	V0_WAYRCAT Derived from SAQ-Home: V0WLKA, V0WAYR: Q37 p16				
	V0_WBYRCAT Derived from SAQ-Home: V0WLKB, V0WBYR: Q38 p17				
	V0_STYRCAT Derived from SAQ-Home: V0STAND, V0STYR: Q39 p17				
	V0_KLYRCAT Derived from SAQ-Home: V0WKNEEL, V0KLYR: Q40 p17				
	V0_SQYRCAT Derived from SAQ-Home: V0SQUAT, V0SQYR: Q41 p18				
	V0_CLYRCAT Derived from SAQ-Home: V0CLIMB, V0CLYR: Q42 p18				
	V0_LFYRCAT Derived from SAQ-Home: V0LIFT, V0LFYR: Q43 p18				
Tobacco Use History	V0SMK Derived from SAQ-Home: V0SMOKE: Q26 on p13	Data not collected at this time point	Data not collected at this time point	Data not collected at this time point	Current smoking status collected (See SAQ Home, V5SKNOW: Q55 p23a)
	V0PACKYR Derived from SAQ-Home: V0SMOKE, V0SKAGE, V0SKAVE, V0SKNOW, V0SKAMT, V0SKSTP: Q26a-b p13				Data not collected at this time point
	V0_SMK3 Derived from SAQ-Home: V0SMOKE, V0CHEW, V0PIPE: Q26-28 p13				Calculated variable for this instrument not currently available

Overview of MOST Calculated Variables and SAS Code by Measurement and Study Visit, February 2015

Measure	Baseline Variables (V0)	15M Variables (V1)	30M Variables (V2)	60M Variables (V3)	84M Variables (V5)
Medication Inventory (MIF) IDIS Ingredient Database - Use in Past 30 Days	Medication ingredients coded from medication names - on Clinic Interview p24:	Medication ingredients coded from medication names - on Clinic Interview p4:	Medication ingredients coded from medication names - on Clinic Interview p17:	Medication ingredients coded from medication names - on Clinic Interview p29:	Medication ingredients coded from medication names - on Clinic Interview p29:
	V0SAME V0SAME_RX	V1SAME V1SAME_RX	V2SAME V2SAME_RX	V3SAME- V3SAME_RX	V5SAME- V5SAME_RX
	V0ALENDR V0ALENDR_RX	V1ALENDR V1ALENDR_RX	V2ALENDR V2ALENDR_RX	V3ALENDR- V3ALENDR_RX	V5ALENDR- V5ALENDR_RX
	V0ANALGS V0ANALGS_RX	V1ANALGS V1ANALGS_RX	V2ANALGS V2ANALGS_RX	V3ANALGS- V3ANALGS_RX	V5ANALGS- V5ANALGS_RX
	V0BISPHOS V0BISPHOS_RX	V1BISPHOS V1BISPHOS_RX	V2BISPHOS V0BISPHOS_RX	V3BISPHOS- V3BISPHOS_RX	V5BISPHOS- V5BISPHOS_RX
	V0CALCIT V0CALCIT_RX	V1CALCIT V1CALCIT_RX	V2CALCIT V2CALCIT_RX	V3CALCIT- V3CALCIT_RX	V5CALCIT- V5CALCIT_RX
	V0CALCUM V0CALCUM_RX	V1CALCUM V1CALCUM_RX	V2CALCUM V2CALCUM_RX	V3CALCUM- V3CALCUM_RX	V5CALCUM- V5CALCUM_RX
	V0CHONDR V0CHONDR_RX	V1CHONDR V1CHONDR_RX	V2CHONDR V2CHONDR_RX	V3CHONDR- V3CHONDR_RX	V5CHONDR- V5CHONDR_RX
	V0CSTERD V0CSTERD_RX	V1CSTERD V1CSTERD_RX	V2CSTERD V2CSTERD_RX	V3CSTERD- V3CSTERD_RX	V5CSTERD- V5CSTERD_RX
	V0COXII V0COXII_RX	V1COXII V1COXII_RX	V2COXII V2COXII_RX	V3COXII- V3COXII_RX	V5COXII- V5COXII_RX
	V0MSM V0MSM_RX	V1MSM V1MSM_RX	V2MSM V2MSM_RX	V3MSM- V3MSM_RX	V5MSM- V5MSM_RX
	V0DOXY V0DOXY_RX	V1DOXY V1DOXY_RX	V2DOXY V2DOXY_RX	V3DOXY- V3DOXY_RX	V5DOXY- V5DOXY_RX
	V0FLUOR V0FLUOR_RX	V1FLUOR V1FLUOR_RX	V2FLUOR V2FLUOR_RX	V3FLUOR- V3FLUOR_RX	V5FLUOR- V5FLUOR_RX
	V0GLCSMN V0GLCSMN_RX	V1GLCSMN V1GLCSMN_RX	V2GLCSMN V2GLCSMN_RX	V3GLCSMN- V3GLCSMN_RX	V5GLCSMN- V5GLCSMN_RX
	V0ESTROG V0ESTROG_RX	V1ESTROG V1ESTROG_RX	V2ESTROG V2ESTROG_RX	V3ESTROG- V3ESTROG_RX	V5ESTROG- V5ESTROG_RX
	V0HYALUR V0HYALUR_RX	V1HYALUR V1HYALUR_RX	V2HYALUR V2HYALUR_RX	V3HYALUR V3HYALUR_RX	V5HYALUR V5HYALUR_RX
	V0NARCAN V0NARCAN_RX	V1NARCAN V1NARCAN_RX	V2NARCAN V2NARCAN_RX	V3NARCAN V3NARCAN_RX	V5NARCAN V5NARCAN_RX
	V0NSAID V0NSAID_RX	V1NSAID V1NSAID_RX	V2NSAID V2NSAID_RX	V3NSAID V3NSAID_RX	V5NSAID V5NSAID_RX
	V0PROGST V0PROGST_RX	V1PROGST V1PROGST_RX	V2PROGST V2PROGST_RX	V3PROGST V3PROGST_RX	V5PROGST V5PROGST_RX

Overview of MOST Calculated Variables and SAS Code by Measurement and Study Visit, February 2015

Measure	Baseline Variables (V0)	15M Variables (V1)	30M Variables (V2)	60M Variables (V3)	84M Variables (V5)
Medication Inventory (MIF) IDIS Ingredient Database - Use in Past 30 Days (continued)	<p>V0RALOX V0RALOX_RX</p> <p>V0RISEDR V0RISEDR_RX</p> <p>V0SALICY V0SALICY_RX</p> <p>V0TPTD V0TPTD_RX</p> <p>V0VITMND V0VITMND_RX</p> <p>V0OSTEOP V0OSTEOP_RX</p> <p>V0DIABMED V0DIABMED_RX</p> <p>V0RAMED V0RAMED_RX</p>	<p>V1RALOX V1RALOX_RX</p> <p>V1RISEDR V1RISEDR_RX</p> <p>V1SALICY V1SALICY_RX</p> <p>V1TPTD V1TPTD_RX</p> <p>V1VITMND V1VITMND_RX</p> <p>V1OSTEOP V1OSTEOP_RX</p> <p>V1DIABMED V1DIABMED_RX</p> <p>V1RAMED V1RAMED_RX</p>	<p>V2RALOX V2RALOX_RX</p> <p>V2RISEDR V2RISEDR_RX</p> <p>V2SALICY V2SALICY_RX</p> <p>V2TPTD V2TPTD_RX</p> <p>V2VITMND V2VITMND_RX</p> <p>V2OSTEOP V2OSTEOP_RX</p> <p>V2DIABMED V2DIABMED_RX</p> <p>V2RAMED V2RAMED_RX</p>	<p>V3RALOX V3RALOX_RX</p> <p>V3RISEDR V3RISEDR_RX</p> <p>V3SALICY V3SALICY_RX</p> <p>V3TPTD V3TPTD_RX</p> <p>V3VITMND V3VITMND_RX</p> <p>V3OSTEOP V3OSTEOP_RX</p> <p>V3DIABMED V3DIABMED_RX</p> <p>V3RAMED V3RAMED_RX</p>	<p>V5RALOX V5RALOX_RX</p> <p>V5RISEDR V5RISEDR_RX</p> <p>V5SALICY V5SALICY_RX</p> <p>V5TPTD V5TPTD_RX</p> <p>V5VITMND V5VITMND_RX</p> <p>V5OSTEOP V5OSTEOP_RX</p> <p>V5DIABMED V5DIABMED_RX</p> <p>V5RAMED V5RAMED_RX</p>
Assistive Devices Currently Used	Data not collected at this time point	Data not collected at this time point	Data not collected at this time point	<p>V3DEVICE Derived from SAQ-Home: V3AICANE, V3AICRUT, V3AIWLK, V3AIWHL, V3AIOTH: Q51 p23 V3AOCANE, V3AOCRUT, V3AOWLK, V3AOWHL, V3Aooth: Q52 p23 V3ASCANE, V3ASLIFT, V3ASELEV, V3ASOTH: Q53 p23 V3AUCHR, V3AUCANE, V3AUWLK, V3AUCRUT, V3AUTLT, V3AUGRAB, V3AUOTH: Q54 p23</p>	<p>V5DEVICE Derived from SAQ-Home: V5AICANE, V5AICRUT, V5AIWLK, V5AIWHL, V5AIOTH, V5AISCOT, V5AIMWH: Q51 p23 V5AOCANE, V5AOCRUT, V5AOWLK, V5AOWHL, V5Aooth, V5AOSCOT, V5AOMWH: Q52 p23 V5ASCANE, V5ASLIFT, V5ASELEV, V5ASOTH: Q53 p23 V5AUCHR, V5AUCANE, V5AUWLK, V5AUCRUT, V5AUTLT, V5AUGRAB, V5AUOTH: Q54 p23</p>
20-Meter Walk - Number of Steps and Time (sec)	<p>V0_STEP Derived from Clinic Visit: V0WALK1, V0STEP1, V0WALK2, V0STEP2: Q1-2 p6</p> <p>V0_WALKT V0WALK1, V0WALKT1, V0WALK2, V0WALKT2: Q1-2 p6</p>	Exam not done at this time point	<p>V2_STEP Derived from Clinic Visit: V2WALK1, V2STEP1, V2WALK2, V2STEP2: Q1-2 p20</p> <p>V2_WALKT V2WALK1, V2WALKT1, V2WALK2, V2WALKT2: Q1-2 p20</p>	<p>V3_STEP Derived from Clinic Visit: V3WALK1, V3STEP1, V3WALK2, V3STEP2: Q1-2 p34</p> <p>V3_WALKT V3WALK1, V3WALKT1, V3WALK2, V3WALKT2: Q1-2 p34</p>	<p>V5_STEP Derived from Clinic Visit: V5WALK1, V5STEP1, V5WALK2, V5STEP2: Q1-2 p34</p> <p>V5_WALKT V5WALK1, V5WALKT1, V5WALK2, V5WALKT2: Q1-2 p34</p>
Chair Stands (sec)	<p>V0_CTIME Derived from Clinic Visit: V0CHAIR: Q1 p7 V0TR1, V0CTIME1, V0TR2, V0CTIME2: Q2-3 p8</p>	Exam not done at this time point	Time not calculated at this time point (see V2CTIME1 in V2ENROLL)	Time not calculated at this time point (see V3CTIME1 in V3ENROLL)	Time not calculated at this time point (see V5CTIME1 in V5ENROLL)

Overview of MOST Calculated Variables and SAS Code by Measurement and Study Visit, February 2015

Measure	Baseline Variables (V0)	15M Variables (V1)	30M Variables (V2)	60M Variables (V3)	84M Variables (V5)
Maximal Step Length (MSL) (in)	Exam not done at this time point	Exam not done at this time point	Exam not done at this time point	V3R_MX Derived from Clinic Visit: V3MXT1R, V3MXT2R: Q6 p47 V3L_MX V3MXT1L, V3MXT2L: Q7 p47	Exam not done at this time point
Isokinetic Thigh Muscle Strength (Flexion and Extension)	V0R_FLXMAX Derived from Clinic Visit: V0FLX1R - V0FLX4R: Q15b p12 V0L_FLXMAX V0FLX1L - V0FLX4L: Q12b p11	Exam not done at this time point	Exam not done at this time point	V3R_FLXMAX Derived from Clinic Visit: V3FLX1R - V3FLX4R: Q17b p43 V3L_FLXMAX V3FLX1L - V3FLX4L: Q13b p41	Exam not done at this time point
	V0R_EXTMAX Derived from Clinic Visit: V0EXT1R - V0EXT4R: Q15b p12 V0L_EXTMAX V0EXT1L - V0EXT4L: Q12b p11			V3R_EXTMAX Derived from Clinic Visit: V3EXT1R - V3EXT4R: Q17b p43 V3L_EXTMAX V3EXT1L - V3EXT4L: Q13b p41	
	V0R_HSQ Derived from V0R_FLXMAX, V0R_EXTMAX V0L_HSQ V0L_FLXMAX, V0L_EXTMAX			V3R_HSQ Derived from V3R_FLXMAX, V3R_EXTMAX V3L_HSQ V3L_FLXMAX, V3L_EXTMAX	
Greater Trochanteric Pain Score (GTPS) from Knee and Hip Joint Exams	V0GTPS_R Derived from Clinic Interview: V0KPN30R: Q13a p6 V0HPN30R, V0OTLGR: Q36 p15; and from Clinic Visit: V0PN1R: Q1 p19 V0GTPS_L Derived from Clinic Interview: V0KPN30L: Q15a p7 V0HPN30L, V0OTLGL: Q37 p16; and from Clinic Visit: V0PN15L: Q15 p22	V1GTPS_R Derived from Telephone Interview: V1HPN30R Q12a p6; from Clinic Interview: V1KPN30R Q2a p2; and from Clinic Visit: V1PN1R Q1 p13 V1GTPS_L Derived from Telephone Interview: V1HPN30L Q13a p6; from Clinic Interview: V1KPN30L Q4a p3; and from Clinic Visit: V1PN15L Q17 p16	V2GTPS_R Derived from Clinic Interview: V2KPN30R Q2a p2 V2HPN30R, V2OTLGR: Q17 p8; and from Clinic Visit: V2PN1R Q1 p24 V2GTPS_L Derived from Clinic Interview: V2KPN30L Q4a p3 V2HPN30L, V2OTLGL: Q18a p9; and from Clinic Visit: V2PN15L Q17 p27	Exam not done at this time point	Exam not done at this time point
	V0GTPS_PS Derived from V0GTPS_R and V0GTPS_L	V1GTPS_PS Derived from V1GTPS_R and V1GTPS_L	V2GTPS_PS Derived from V2GTPS_R and V2GTPS_L	Exam not done at this time point	Exam not done at this time point

Overview of MOST Calculated Variables and SAS Code by Measurement and Study Visit, February 2015

Measure	Baseline Variables (V0)	15M Variables (V1)	30M Variables (V2)	60M Variables (V3)	84M Variables (V5)
Hand Exam for Bony Enlargements of the Joints	V0R_HJMIS V0R_HJOA Derived from Clinic Visit: V0H1R - V0H10R: p18 V0L_HJMIS V0L_HJOA V0H1L - V0H10L: p18	Exam not done at this time point	Exam not done at this time point	Exam not done at this time point	Exam not done at this time point
Vibration Perception Threshold (VPT) (volts)	Exam not done at this time point	Exam not done at this time point	Exam not done at this time point	V3VMTPR_AVE V3VMTPR_MAX V3VMTPR_CV Derived from Clinic Visit: V3VMTP1R - V3VMTP4R: Q1-6 p58 V3VMTPL_AVE V3VMTPL_MAX V3VMTPL_CV V3VMTP1L - V3VMTP4L: Q19-24 p59	Exam not done at this time point
				V3VTIBR_AVE V3VTIBR_MAX V3VTIBR_CV Derived from Clinic Visit: V3VTIB1R - V3VTIB4R: Q7-12 p58 V3VTIBL_AVE V3VTIBL_MAX V3VTIBL_CV V3VTIB1L - V3VTIB4L: Q25-30 p59	
				V3VRADR_AVE V3VRADR_MAX V3VRADR_CV Derived from Clinic Visit: V3VRAD1R - V3VRAD4R: Q13-18 p58 V3VRADL_AVE V3VRADL_MAX V3VRADL_CV V3VRAD1L - V3VRAD4L: Q31-36 p59	
Pain Sensitivity - Touch Test (2g von Frey Filament)	Exam not done at this time point	Exam not done at this time point	Exam not done at this time point	V3P21 - V3P25 Derived from Clinic Visit: V3P211 - V3P214, V3P221 - V3P224, V3P231 - V3P234, V3P241 - V3P244, V3P251 - V3P254: Q1-5 p60	V5P21 - V5P25 Derived from Clinic Visit: V5P211 - V5P214, V5P221 - V5P224, V5P231 - V5P234, V5P241 - V5P244, V5P251 - V5P254: Q1-5 p60

Overview of MOST Calculated Variables and SAS Code by Measurement and Study Visit, February 2015

Measure	Baseline Variables (V0)	15M Variables (V1)	30M Variables (V2)	60M Variables (V3)	84M Variables (V5)
Pain Sensitivity - Touch Test (26g von Frey Filament)	Exam not done at this time point	Exam not done at this time point	Exam not done at this time point	V3P61 - V3P65 Derived from Clinic Visit: V3P611-V3P614, V3P621-V3P624, V3P631-V3P634, V3P641-V3P644, V3P651-V3P654: Q1-5 p61	V5P61 - V5P65 Derived from Clinic Visit: V5P611-V5P614, V5P621-V5P624, V5P631-V5P634, V5P641-V5P644, V5P651-V5P654: Q1-5 p61
Pain Sensitivity - Brush Test	Exam not done at this time point	Exam not done at this time point	Exam not done at this time point	V3PB1 - V3PB5 Derived from Clinic Visit: V3PB11-V3PB14, V3PB21-V3PB24, V3PB31-V3PB34, V3PB41-V3PB44, V3PB51-V3PB54: Q1-5 p60	Exam not done at this time point
Pain Sensitivity - Pinprick Test	Exam not done at this time point	Exam not done at this time point	Exam not done at this time point	V3PP1 - V3PP5 Derived from Clinic Visit: V3PP11-V3PP14, V3PP21-V3PP24, V3PP31-V3PP34, V3PP41-V3PP44, V3PP51-V3PP54: Q1 p60	V5PP1 - V5PP5 Derived from Clinic Visit: V5PP11-V5PP14, V5PP21-V5PP24, V5PP31-V5PP34, V5PP41-V5PP44, V5PP51-V5PP54: Q1 p60
Pressure Pain Threshold (PPT) (kg)	Exam not done at this time point	Exam not done at this time point	Exam not done at this time point	V3ARM_AVE V3ARM_MAX V3ARM_CV Derived from Clinic Visit: V3ARM1 - V3ARM3: Q1 p65	V5ARM_AVE V5ARM_MAX V5ARM_CV Derived from Clinic Visit: V5ARM1 - V5ARM3: Q1 p65
				V3RPA_AVE V3RPA_MAX V3RPA_CV Derived from Clinic Visit: V3RPA1 - V3RPA3: Q2 p65	V5RPA_AVE V5RPA_MAX V5RPA_CV Derived from Clinic Visit: V5RPA1 - V5RPA3: Q2 p65
				V3LPA_AVE V3LPA_MAX V3LPA_CV V3LPA1 - V3LPA3: Q4 p65	V5LPA_AVE V5LPA_MAX V5LPA_CV V5LPA1 - V5LPA3: Q4 p65
				V3RTT_AVE V3RTT_MAX V3RTT_CV Derived from Clinic Visit: V3RTT1 - V3RTT3: Q3 p65	V5RTT_AVE V5RTT_MAX V5RTT_CV Derived from Clinic Visit: V5RTT1 - V5RTT3: Q3 p65
				V3LTT_AVE V3LTT_MAX V3LTT_CV V3LTT1 - V3LTT3: Q5 p65	V5LTT_AVE V5LTT_MAX V5LTT_CV V5LTT1 - V5LTT3: Q5 p65

MOST SAS CODE DOCUMENTATION
May 2015

MACROS

***Measurement: SCORE MISSING, DON'T KNOW, AND DON'T DO**

Study: MOST
 Source name: %macro score
 Source type: Macro
 Author: I Tolstykh (macro adapted for MOST)
 Created: 2007

Input: Note: array name has to be unique;
 (&i=identification,
 _c&i=name of array with original variables)

- &arr - array of original variables (or re-scaled, or other preparation)
 &llim and &ulim - lower limit and upper limit to set up missing values
 (.z - for default any missing,
 8 - for "Don't know",
 5 - "Don't do" for WOMAC and KOOS)

Output: &nmiss - limit number, if there are more then &nmiss missing values in array, then score=.M
 &score - name of score
 &ave - indicator, if missing values then substituted by average of non-missing

Summary: Intended to calculate several scores in one data step,

References: Not available

Revisions: None

Note: This code will turn into missing values the pre-specified collected variables that are below and above the set limits.

*****,

```
%macro score(i=1, arr=, llim=0, ulim=8, nmiss=1, score=, ave=Y);
array _c&i &arr;
do over _c&i; if (_c&i<&llim or _c&i>&ulim) then _c&i=.;
end;
nmiss&i=nmiss(of &arr);
n&i=dim( _c&i);
if nmiss&i>&nmiss then &score=.M; else do;
%if &ave=Y %then &score=round(mean(of &arr)*n&i , 0.01);
%else &score=sum(of &arr);;
end;
label nmiss&i="Number of missings for &score";
drop n&i;

%mend score;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

***Measurement: CALCULATE EXTREME VALUE OR AVERAGE OF NON-EXTREME VALUES**

Study: MOST
 Source name: %macro extreme_ave_max
 Source type: Macro
 Author: I Tolstykh
 Created: 2010

Input: (Note: array name has to be unique, &i=identification, _c&i-name of array with original variables);
 - &arr - array of original variables (or re-scaled, or other preparation)
 - &llim and &ulim - lower limit and upper limit to set up missing values

Output: - &nmiss - limit number, if there are more then &nmiss missing values in array, then score=.M
 - &max – maximum value

- &ave - indicator, if missing values then substituted by average of non-missing

Summary: Intended to calculate maximum average value in one data step

References: Not available

Revisions: None

*****,

```
%macro extreme_ave_max(i=1, arr=, uplim= , ave=, max=, cv=);
array _c&i{*} &arr;
nmiss&i=nmiss(of _c&i{*});
n&i=dim(_c&i.);

if nmiss&i<n&i. then do;
%if %length(&ave.)>0 %then %do;
if n&i=4 and nmiss&i=0 then &ave=round(mean(_c&i.{3}, _c&i.{4}),0.001);
if n&i=4 and nmiss&i>0 and &ave=. then &ave=round(mean(of _c&i.{*}), 0.001);
if n&i<4 and &ave=. then &ave=round(mean(of _c&i.{*}), 0.001);
do i=1 to n&i.; if ( _c&i{&i}>=&uplim) then &ave=&uplim.; end;
drop i ;
%end;

%if %length(&cv.)>0 %then %do;
if mean(of _c&i.{*})>0 then &cv=round(std(of _c&i.{*})/mean(of _c&i.{*}), 0.001);
%end;

%if %length(&max)>0 %then %do; &max=max(of _c&i.{*}); %end;
end;

label nmiss&i="Number of missings for &ave. &max.";
drop n&i;
%mend extreme_ave_max;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

***Measurement: AVERAGE MEASURE**

Study: MOST
 Source name: %macro avgmeas
 Source type: Macro
 Author: F Harris, I Tolstykh (macro adapted for MOST from HealthABC)
 Created: 2007

Input: &var.1-&var.4

Output: &var.

Summary: Calculates the average value for up to four measurements, depending on the data collection protocol. If collected variables meet the name convention, then this macro can be used to calculate the measurement for release and look up the outliers.

For Standing Height:

If only the first two measurements of height are available, use the average of #1 and #2 for the height.

If the diff between the first two measurements is >3 mm, measurements 3 and 4 are taken then use the average of the #3 and #4 for the height.

For Knee Height:

If only the first two measurements of knee height are available, use the average of #1 and #2 for the knee height.

If the diff between the first two measurements is >0.4 cm, measurements 3 and 4 are taken then use the average of the #3 and #4 for the knee height.

References: Not available

Revisions: None

*****;

```
%macro avgmeas(var,NUM);
nmissstot=nmiss(of &var.1-&var.4);
```

```
if nmissstot=0 then do;
&var=mean(&var.3,&var.4);
```

```
if max(&var.3,&var.4)>min(&var.3,&var.4)*&NUM then
put mostid '09'x "&var.1" '09'x &var.1 '09'x
"&var.2" '09'x &var.2 '09'x
"&var.3" '09'x &var.3 '09'x
"&var.4" '09'x &var.4 '09'x;
end; else
if nmissstot=1 then do;
&var=mean(&var.1,&var.2,&var.3,&var.4);
if max(&var.1,&var.2,&var.3,&var.4)>min(&var.1,&var.2,&var.3,&var.4)*&NUM then
put mostid '09'x "&var.1" '09'x &var.1 '09'x
"&var.2" '09'x &var.2 '09'x
"&var.3" '09'x &var.3 '09'x
"&var.4" '09'x &var.4 '09'x ;
end; else
if nmissstot=2 then do;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

```
&var=mean(&var.1,&var.2,&var.3,&var.4);  
if max(&var.1,&var.2,&var.3,&var.4)>min(&var.1,&var.2,&var.3,&var.4)*&NUM then  
  put mostid '09'x "&var.1" '09'x &var.1 '09'x  
  "&var.2" '09'x &var.2 '09'x  
  "&var.3" '09'x &var.3 '09'x  
  "&var.4" '09'x &var.4 '09'x ;  
end; else  
  if nmissstot=3 then &var=max(&var.1,&var.2,&var.3,&var.4);
```

```
DROP NMISSTOT;  
%mend avgmeas;
```

STANDARD MEASURES

***Measurement: WEIGHT, HEIGHT, KNEE HEIGHT, AND BODY MASS INDEX (BMI)**

Study: MOST
Source name: &_V.CalculatedVariables.sas
Source type: Program
Author: J Niu, Yun Yi Hung (original) | Tolstykh (macro adapted for MOST)
Created: 2006

Input: Input datasets: &_V.ENROLL

Input variables:

&_V.WGHT: Weight;
&_V.HT1 - &_V.HT4: Height;
&_V.KHT1 - &_V.KHT4: Knee height.

Output: &_V.HT: Standing height, mm (Only at Baseline and 60M Visit)
&_V.WT: Weight at baseline clinic visit, lbs
&_V.BMI: Body Mass Index (BMI) CURRENT, kg/m**2
&_V.BMICAT: Body Mass Index Category, 1 (BMI under 25),
2 (25 to under 30),
3 (30 or more)
&_V.KHT: Knee height, cm (only at Baseline visit)

Summary: Weight, height and knee height data were collected during the baseline and 60M clinic visit.
&_V.KHT: Average knee height (cm) - the average taken of two measurements, where two measurements must not differ by more than 0.4cm.
&_V.HT: Average standing height (mm) - average taken of two measurements, where two measurements must not differ by more than 3mm.
&_V.WT: Weight converted to pounds (weight is collected in kg)
&_V.BMI: Weight/height**2 (kg/m**2)

References: Not available

Revisions: None

*****,

* &_v. stands for visit: V0(baseline), V1(15M), V2(30M), etc ;

data all; set all;

%avgmeas(&_V.kht,3);***baseline only***;

%avgmeas(&_V.ht,4);***baseline and 60M visit only***;

/*&_V.WT all visits*/

if &_v.wght>0 then &_v.wt=round(&_v.WGHT / 0.454,0.01);

/*&_v.BMI &_v.BMICAT – Baseline, 15M, 30M */

if &_v.bmi=. and &_v.wght>0 and V0HT>0 then do;

&_v.bmi=round(&_v.WGHT / ((V0HT / 1000) **2),0.01);

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

```
&_v.bmicat=(&_v.bmi<25)+2*(25<=&_v.bmi<30)+3*(&_v.bmi>=30); end;
```

```
end;
```

```
/*V3BMI V3BMICAT – 60M */
```

```
if &_v.wght>0 then do;
```

```
if v3ht>0 then &_v.bmi=round(&_v.WGHT / (( V3HT / 1000 )**2 ),0.01);
```

```
if v3ht<0 and v0ht>0 then &_v.bmi=round(&_v.WGHT/(( V0HT/1000 ) **2 ),0.01);
```

```
&_v.bmicat=(&_v.bmi<25)+2*(25<=&_v.bmi<30)+3*(&_v.bmi>=30); end;
```

```
run;
```

INSTRUMENTS

***Measurement: CES-D DEPRESSION SCALE SCORE AND INDICATOR**

Study: MOST
Source name: CESD.SAS
Source type: Program
Author: E Kenyon L Akin F Harris (original) I Tolstykh (adapted for MOST)
Created: 2006

Input dataset: &_V.ENROLL
Input variables: &_V.CESDA-&_V.CESDT

Output: &_V.CES_D: CESD Score
&_V._DEP: CESD Depression Indicator

Summary: The Center for Epidemiologic Studies (CES) of the National Institute of Mental Health was developed for research in the general population. It can be used to monitor a person before, during and after intervention.
Responses are for how the person felt that way during the past 7D:
0 -rarely or none of the time (less than 1 day)
1 -some or a little of the time (1-2 days)
2 -occasionally or a moderate amount of time (3-4 days)
3 -most or all of the time (5-7 days)
questions 4, 8, 12 and 16 were positive in content (scale from 3 to 0)
score = = SUM (points for all 20 questions)
If more then 4 answers are missing, set the score as missing.
Interpretation: minimum score: 0 maximum score: 60
A score > 16 was considered "at risk" for depression.
No score was set to indicate depression, but the higher the score the more likely it would be

References: McDowell I, Newell C. Measuring Health. A Guide to Rating Scales and Questionnaires, Second Edition. Oxford University Press. 1996. pages 254-259
Radloff LS. The CES-D scale: A self-report depression scale for research in the general population. Appl Psychol Measure. 1977, 1: 385-401.

Revisions: None

Note: Collected answers were formatted from 1 to 4 – all have to be rescaled before the score calculation.

```
*****
data all; set all;
array _c(20) c1-c20;
array _f(20) &_v.cesda -- &_v.cesdt ;
do i=1 to 20;
if _f[i]>4 or _f[i]<1 then _c[i]=.; else do;
if i in (4,8,12,16) then _c[i]=4-_f[i]; else _c[i]=_f[i]-1; end;
end;
%score(i=1, arr=c1 - c20, llim=0, ulim=3, nmiss=4, score=&_v.ces_d, ave=Y);
drop i c1-c20;
if &_v.ces_d<=.Z then &_v._DEP = &_v.ces_d; else &_v._DEP =( &_v.ces_d>=16);
FORMAT &_V._DEP YNDK.; run;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

***Measurement: CHARLSON COMORBIDITY
(SELF-REPORTED SERIOUS DISEASES AND CONDITIONS)**

Study: MOST
 Source name: V0MCOMOR.SAS
 Source type: Program
 Author: J Keysor (original) I Tolstykh (macro adapted for MOST)
 Created: February 2007

Input: Input dataset is &_V.ENROLL
 Input variables are: &_V.HRTAT, &_V.UNCLOG, &_V.HRTFA, &_V.BYPASS,
 &_V.STROKE, &_V.MOVE, &_V.ASTHMA, &_V.ASTRX, &_V.WHEN, &_V.COPD,
 &_V.LUNRX, &_V.LWHEN, &_V.ULCER, &_V.ULCDX, &_V.DIABT, &_V.DIET, &_V.DRX,
 &_V.INJ, &_V.KID, &_V.EYE, &_V.KIDNY, &_V.POORF, &_V.TRANS, &_V.DIALY,
 &_V.ALZHE, &_V.LIVER, &_V.LEUKE, &_V.LIMPH, &_V.CANCR, &_V.CANCRS,
 &_V.AIDS

Output: &_V.MCOMOR: Charlson Comorbidity Score, Modified
 &_V._RADXRX derived from self reported medications and self reported diagnosis
 &_V._DX: Counts number of self-reported &_V.ALZHE, &_V.LIVER, &_V.LEUKE,
 &_V.LIMPH, &_V.CANCR or &_V.AIDS

Summary: Calculates self-reported diseases and conditions for the Charlson Comorbidity score. The Modified Charlson Comorbidity Index was calculated based on code from Julie Keysor at Boston University. Questions assessing rheumatoid arthritis are not included in the Modified Charlson questionnaire, because rheumatoid arthritis is an exclusion criteria for the MOST study. Participants are given the option to answer "Don't know". If any question in the Modified Charlson Comorbidity questionnaire was answered this way then that question is assigned a zero value. The overall Charlson Comorbidity calculated variable is considered invalid, if there are three or more questions with missing values.

References: Katz JN, Chang LC, Sangha O. Can comorbidity be measured by questionnaire rather than medical record review? Med Care, Volume 34(1). Pages 73-84. January 1996. Modified Charlson COMORBIDITY SCORE, Instrument created by Jeffrey Katz.

Revisions: None

 ,

```
%macro com_skip_out(var1=, var2=one, ind=, wt=1);
select (&var1);
when (1) &ind=&wt*(&var2=1);
when (0) &ind=0;
when (8) &ind=0;
otherwise &ind=. ;
end;
%mend com_skip_out;
```

```
%macro radrx;
%if &_V=V0 %then %do; &_v._RADXRX=(&_v._excl=1); %end; %else
%if &_V=V1 %then %do; &_v._RADXRX=(&_v._excl=1); %end; %else
%do; if nmiss(&_v.ramed, &_v.ra)<2 or &_v._excl=1 then &_v._RADXRX=(&_v._excl=1 or (&_v.ramed=1 and &_v.ra=1)); %end;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

```
%mend radrx;

data all; set all;
one=1;
%radrx;
***label &_v._RADRX="Rheumatoid Arthritis reported and RX recorded ";
%com_skip_out(var1=&_v._radrx , var2=one , ind=&_v._comq0, wt=1);
label &_v._comq0="Rheumatoid Arthritis ";

%com_skip_out(var1=&_v.hrtat , var2=one , ind=cc1a, wt=1);
%com_skip_out(var1=&_v.unclog , var2=one , ind=cc1b, wt=1);
&_v._comq1=max(cc1a,cc1b);
label &_v._comq1="Heart attack or bypass surgery on heart";

%com_skip_out(var1=&_v.hrtfa , var2=one , ind=&_v._comq2, wt=1);
label &_v._comq2="Heart failure";

%com_skip_out(var1=&_v.bypass , var2=one , ind=&_v._comq3, wt=1);
label &_v._comq3="PVD";

%com_skip_out(var1=&_v.stroke , var2=one , ind=&_v._comq4, wt=1);
if &_v._comq4=1 and &_v.move=1 then &_v._comq4=2;
label &_v._comq4="Stroke (if 1) or hemiplegia (if 2)";

%com_skip_out(var1=&_v.asthma, var2=&_v.astrx , ind=cc2a, wt=1);
if cc2a=1 and &_v.awhen not in (1,2) then cc2a=0;
%com_skip_out(var1=&_v.copd , var2=&_v.lunrx , ind=cc2b, wt=1);
if cc2b=1 and &_v.lwhen not in (1,2) then cc2b=0;
&_v._comq5=max(cc2a,cc2b);
label &_v._comq5="Asthma or COPD (if medicines=Yes)";

%com_skip_out(var1=&_v.ulcer, var2=&_v.ulcdx , ind=&_v._comq7, wt=1);
label &_v._comq7="Ulcer (if dx by endoscopy)";

%com_skip_out(var1=&_v.diabt, var2=&_v.drx , ind=cc3a, wt=1);
%com_skip_out(var1=&_v.diabt, var2=&_v.inj , ind=cc3b, wt=1);
&_v._comq8=max(cc3a,cc3b);
if &_v._comq8=1 and (&_v.kid=1 or &_v.deye=1) then &_v._comq8=2;
label &_v._comq8="Diabetes (if medications or insulin injections)";

%com_skip_out(var1=&_v.kidny, var2=&_v.poorf, ind=cc4a, wt=2);
%com_skip_out(var1=&_v.kidny, var2=&_v.trans, ind=cc4b, wt=2);
%com_skip_out(var1=&_v.kidny, var2=&_v.dialy, ind=cc4c, wt=2);
&_v._comq9=max(cc4a,cc4b,cc4c);
label &_v._comq9="Kidney problem";

%com_skip_out(var1=&_v.alzhe , var2=one , ind=&_v._comq14, wt=1);
label &_v._comq14="Alzheimer's disease";

%com_skip_out(var1=&_v.liver , var2=one , ind=&_v._comq15, wt=2);
label &_v._comq15="Liver damage (weight=2, not 3)";
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

```
%com_skip_out(var1=&_v.leuke , var2=one , ind=&_v._comq16, wt=2);
label &_v._comq16="Leukemia";

%com_skip_out(var1=&_v.lymph , var2=one , ind=&_v._comq17, wt=2);
label &_v._comq17="Lymphoma";

%com_skip_out(var1=&_v.cancr , var2=one , ind=&_v._comq18, wt=2);
if &_v._comq18=2 and &_v.cancrs=1 then &_v._comq18=6;
label &_v._comq18="Cancer";

%com_skip_out(var1=&_v.aids , var2=one , ind=&_v._comq19, wt=6);
label &_v._comq19="AIDS";

if nmiss(&_v._comq14,&_v._comq15,&_v._comq16,&_v._comq17,&_v._comq18,&_v._comq19)<6 then
&_v._dx=sum((&_v._comq14>0),(&_v._comq15>0),(&_v._comq16>0),(&_v._comq17>0),(&_v._comq18>0),(&_v._comq19>0));
*label &_v._dx="Number of serious diseases reported";

%score(i=2 , arr=&_v._comq: , llim=0, ulim=6, nmiss=2, score=&_v.mcomor, ave=);
drop one cc;;
run;
```


***Measurement: CHARLSON COMORBIDITY SCORE (CUMULATIVE TO 60M)**

Study: MOST
 Source name: V3MCOMOR.SAS
 Source type: Program
 Author: I Tolstykh
 Created: January 2011

Input: Input datasets is V3ENROLL, V0MCOMOR, V2MCOMOR
 Input variables are: v0_comq;, v2_comq;, v3_comq;

Output: &_V.MCOMOR_CUM: Charlson Comorbidity Score, Cumulative

Summary: Calculates the cumulative Charlson Comorbidity score.

At 60M in MOST most of the comorbidity questions have been modify to asses the timeframe between 30M and 60M visit "Since last contact...". Therefore the cumulative version of the Modified Charlson Comorbidity Index score was calculated based on all prior and current answers.

References: Not available

Revisions: None

*****,

```
data all; merge all(in=ina) &lib..V0mcomor(keep=mostid v0_comq;) &lib..V2mcomor(keep=mostid v2_comq;);
by mostid; if ina;
array _c0 v0_comq0 v0_comq1 v0_comq2 v0_comq3 v0_comq4 v0_comq5 v0_comq7 v0_comq8 v0_comq9
v0_comq14 v0_comq15 v0_comq16 v0_comq17 v0_comq18 v0_comq19;
array _c1 v2_comq0 v2_comq1 v2_comq2 v2_comq3 v2_comq4 v2_comq5 v2_comq7 v2_comq8 v2_comq9
v2_comq14 v2_comq15 v2_comq16 v2_comq17 v2_comq18 v2_comq19;
array _c2 v3_comq0 v3_comq1 v3_comq2 v3_comq3 v3_comq4 v3_comq5 v3_comq7 v3_comq8 v3_comq9
v3_comq14 v3_comq15 v3_comq16 v3_comq17 v3_comq18 v3_comq19;
array _cc v03_comq0 v03_comq1 v03_comq2 v03_comq3 v03_comq4 v03_comq5 v03_comq7 v03_comq8
v03_comq9 v03_comq14 v03_comq15 v03_comq16 v03_comq17 v03_comq18 v03_comq19;
```

```
*label &_v._comq0="Reumatoid Arthritis ";
*label &_v._comq1="Heart attack or bypass surgery on heart";
*label &_v._comq2="Heart failure";
*label &_v._comq3="PVD";
*label &_v._comq4="Stroke (if 1) or hemiplegia (if 2)";
*label &_v._comq5="Asthma or COPD (if medicines=Yes)";
*label &_v._comq7="Ulcer (if dx by endoscopy)";
*label &_v._comq8="Diabetes (if medications or insulin injections)";
*label &_v._comq9="Kidney problem";
*label &_v._comq14="Alzheimer's disease";
*label &_v._comq15="Liver damage (weight=2, not 3)";
*label &_v._comq16="Leukemia";
*label &_v._comq17="Lymphoma";
*label &_v._comq18="Cancer";
*label &_v._comq19="AIDS";
```

```
do over _cc; _cc=max(_c0, _c1, _c2); end;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

*only questions for components 5 and 7 asked as current – answers from prior visit should not make an impact;

```
if v3_comq5 ne . then V03_comq5=v3_comq5;
```

```
if v3_comq7 ne . then V03_comq7=v3_comq7;
```

```
%score(i=2cum , arr=v03_comq: , llim=0, ulim=6, nmiss=2, score=&_v.mcomor_cum, ave=);
```

```
*label &_v.mcomor_cum="Cumulative Modified Comorbidity score " ;
```

```
run;
```

***Measurement: LATE LIFE FDI – DISABILITY COMPONENT SCORE**

Study: MOST
 Source name: LLD.SAS
 Source type: Program
 Author: J Keysor, J Katz (original) I Tolstykh (macro adapted for MOST)
 Created: 2006

Input: Input dataset is &_V.ENROLL
 Input variables are:
 &_V.FDI1-&_V.FDI12

Output: &_V.LLDIIR: Late-Life Disability Instrumental Limitation Score;

Summary: This is the limitation (instrumental role) subscale of the Late-Life Function and Disability Instrument (FDI).
 Missing values are handled in the same way as those in WOMAC and SF-12: if there is one missing then the average of the remaining questions substitutes this missing value. If there are 2 or more missing values, then the overall score is set to missing or invalid.

References: Jette AM, Haley SM, Coster WJ, Kooyoomjian JT, Levenson S, Heeren T, Ashba J. Late life function and disability instrument: I. Development and evaluation of the disability component. J Gerontol A Biol Sci Med Sci. 2002 Apr;57(4):M209-16.
 Instrument created by Jeffrey Katz who notes: "MOST only used the limitation Instrumental Role subscale".

Revisions: None

*****,

* &_v stands for visit: V0(baseline), V1(15M), V2(30M), etc ;

```
data all; set all;
%score(i=3, arr=&_v.fdi1-&_v.fdi12, llim=1, ulim=5, nmiss=1, score=rawld, ave=Y);
/**rescale 12--> 0 and 60--> 100***/
Summary score for Late-Life Disability Instrumental Limitation Score
(this was the subscale used in MOST)
First the total instrumental score is summed.
round(rawld,1)=(sum of lldi instrumental limitation items)
Then convert to get the 0-100 score - non linear transformation***/
```

```
if round(rawld,1)=12 then &_v.lldiir=0.00;
if round(rawld,1)=13 then &_v.lldiir=12.19;
if round(rawld,1)=14 then &_v.lldiir=19.41;
if round(rawld,1)=15 then &_v.lldiir=23.79;
if round(rawld,1)=16 then &_v.lldiir=27.02;
if round(rawld,1)=17 then &_v.lldiir=29.62;
if round(rawld,1)=18 then &_v.lldiir=31.82;
if round(rawld,1)=19 then &_v.lldiir=33.74;
if round(rawld,1)=20 then &_v.lldiir=35.46;
if round(rawld,1)=21 then &_v.lldiir=37.02;
if round(rawld,1)=22 then &_v.lldiir=38.46;
if round(rawld,1)=23 then &_v.lldiir=39.80;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

```
if round(rawlId,1)=24 then &_v.lldiir=41.06;
if round(rawlId,1)=25 then &_v.lldiir=42.25;
if round(rawlId,1)=26 then &_v.lldiir=43.38;
if round(rawlId,1)=27 then &_v.lldiir=44.47;
if round(rawlId,1)=28 then &_v.lldiir=45.52;
if round(rawlId,1)=29 then &_v.lldiir=46.53;
if round(rawlId,1)=30 then &_v.lldiir=47.52;
if round(rawlId,1)=31 then &_v.lldiir=48.48;
if round(rawlId,1)=32 then &_v.lldiir=49.44;
if round(rawlId,1)=33 then &_v.lldiir=50.37;
if round(rawlId,1)=34 then &_v.lldiir=51.29;
if round(rawlId,1)=35 then &_v.lldiir=52.21;
if round(rawlId,1)=36 then &_v.lldiir=53.11;
if round(rawlId,1)=37 then &_v.lldiir=54.02;
if round(rawlId,1)=38 then &_v.lldiir=54.92;
if round(rawlId,1)=39 then &_v.lldiir=55.81;
if round(rawlId,1)=40 then &_v.lldiir=56.72;
if round(rawlId,1)=41 then &_v.lldiir=57.62;
if round(rawlId,1)=42 then &_v.lldiir=58.54;
if round(rawlId,1)=43 then &_v.lldiir=59.46;
if round(rawlId,1)=44 then &_v.lldiir=60.40;
if round(rawlId,1)=45 then &_v.lldiir=61.35;
if round(rawlId,1)=46 then &_v.lldiir=62.33;
if round(rawlId,1)=47 then &_v.lldiir=63.34;
if round(rawlId,1)=48 then &_v.lldiir=64.38;
if round(rawlId,1)=49 then &_v.lldiir=65.47;
if round(rawlId,1)=50 then &_v.lldiir=66.62;
if round(rawlId,1)=51 then &_v.lldiir=67.85;
if round(rawlId,1)=52 then &_v.lldiir=69.17;
if round(rawlId,1)=53 then &_v.lldiir=70.62;
if round(rawlId,1)=54 then &_v.lldiir=72.24;
if round(rawlId,1)=55 then &_v.lldiir=74.08;
if round(rawlId,1)=56 then &_v.lldiir=76.27;
if round(rawlId,1)=57 then &_v.lldiir=78.98;
if round(rawlId,1)=58 then &_v.lldiir=82.69;
if round(rawlId,1)=59 then &_v.lldiir=88.91;
if round(rawlId,1)=60 then &_v.lldiir=100.00;
run;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

***Measurement: PHYSICAL SCALE FOR THE ELDERLY (PASE)**

Study: MOST
Source name: PASE.SAS
Source type: Program
Author: Yun Yi Hung
Created: March 2004

Input: Input dataset is V0ENROLL, V3ENROLL
Input variables are:
&_V.WALK, &_V.WALKT, &_V.LTE, &_V.LTET, &_V.MOD, &_V.MODT, &_V.STR,
&_V.STRT, &_V.WGT, &_V.WGTT, &_V.LHW, &_V.HHW, &_V.HOME, &_V.LAWN,
&_V.GARDN, &_V.CARE, &_V.WK, &_V.WKHR, &_V.WKPA

Output: &_V.PASE01: PASE - Walking activities
&_V.PASE02: PASE - Light sport/recreational activities
&_V.PASE03: PASE - Moderate sport/recreational activities
&_V.PASE04: PASE - Strenuous sport/recreational activities
&_V.PASE05: PASE - Muscle strength/endurance activities
&_V.PASE06: PASE - Light housework
&_V.PASE07: PASE - Heavy housework
&_V.PASE08: PASE - Home repairs
&_V.PASE09: PASE - Lawn work or yard care
&_V.PASE10: PASE - Outdoor gardening
&_V.PASE11: PASE - Caring for another person
&_V.PASE12: PASE - Work for pay or volunteer
&_V.PASE: PASE Score
&_V.PASE_M: PASE Score (missing excluded)

Summary: The Physical Activity Scale for the Elderly (PASE) was developed by the New England Research Institute (NERI).

NOTE: THE PASE QUESTIONNAIRE IS COPYRIGHTED MATERIAL AND CANNOT BE REPRODUCED WITHOUT THE EXPRESS CONSENT OF NERI.

PASE scores are summary values calculated from weights and frequencies for each of the 12 types of activities described in the questionnaire. Q1 on page 1 (sitting activities over the past 7 days) and Q4 on page 2 (climbed flight of stairs over the past 7 days) were administered as part of the PASE questionnaire, but did not contribute to the overall PASE score.

Q8-Q11 have been given an option "Don't know/Refused" – all such responses were converted into missing values before calculation. If all PASE components are missing, then score set up as missing value. There are no substitutions made for missing or skipped questions. If at least one component of the score is non-missing, then the score is calculated.

References: -http://www.neri.org/html/products/product_details.asp?product_id=30
- Washburn RA, Smith KW, Jette AM, Janney CA. The Physical Activity Scale for the Elderly (PASE): development and evaluation. J Clin Epidemiol. 1993 Feb;46(2):153-62.

Revisions: None

,

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

%Macro items16(often, hours, OFTEN1, HOURS1, FREQUEN) ;

```
***RECODE &OFTEN TO &OFTEN1 FREQ ***;
&OFTEN1=.; &HOURS1=.; &FREQUEN=.;
IF &OFTEN=0 THEN &OFTEN1=0;
IF &OFTEN=1 THEN &OFTEN1=1.5;
IF &OFTEN=2 THEN &OFTEN1=3.5;
IF &OFTEN=3 THEN &OFTEN1=6;
```

```
***RECODE &HOURS TO &HOURS1 ***;
IF &HOURS=1 THEN &HOURS1=0.5;
IF &HOURS=2 THEN &HOURS1=1.5;
IF &HOURS=3 THEN &HOURS1=3;
IF &HOURS=4 THEN &HOURS1=5;
IF &HOURS<0 THEN &HOURS1=0;
```

```
***DETERMINE ACTIITY FREQUENCY - put condition + round***;
if &often1>.Z and &hours1>.Z then &FREQUEN=round((&OFTEN1*&HOURS1)/7,0.01);
***DROP TEMP VARIALBLES***;
DROP &OFTEN1 &HOURS1;
%MEND ITEMS16;
```

data all; set all;

```
*SET DONT KNOW/REFUSED TO MISSING;
ARRAY VAR1_ &_v.LHW &_v.HHW &_v.HOME &_v.LAWN &_v.GARDN &_v.CARE &_v.WK &_v.WKPA;
ARRAY VAR2_ &_v.LHW &_v.HHW &_v.HOME &_v.LAWN &_v.GARDN &_v.CARE &_v.WK &_v.WKPA;
DO OVER VAR1_;
  IF VAR1_=8 THEN VAR2_=.;
END;
```

```
*S*** WALKF *** **CALCULATED ACTIVITY FREQUENCY, WALKING***;
%ITEMS16(&_v.WALK, &_v.WALKT, WALK1, WALKT1, WALKF);
*E*** WALKF ***;
```

```
*S*** LTEF *** **CALCULATED ACTIVITY FREQUENCY, LITE SPORT/REC***;
%ITEMS16(&_v.LTE,&_v.LTET,LTET1,LTET1,LTEF);
*E*** LTEF ***;
```

```
*S*** MODF *** **CALCULATED ACTIVITY FREQUENCY, MODERATE SPORT/REC***;
%ITEMS16(&_v.MOD,&_v.MODT,MOD1,MODT1,MODF);
*E*** MODF ***;
```

```
*S*** STRF *** **CALCULATED ACTIVITY FREQUENCY, STRENUOUS SPORT/REC***;
%ITEMS16(&_v.STR,&_v.STRT,STR1,STRT1,STRF);
*E*** STRF ***;
```

```
*S*** WGTf *** **CALCULATED ACTIVITY FREQUENCY***;
%ITEMS16(&_v.WGT, &_v.WGTT, WGT1, WGTT1, WGTf);
*E*** WGTf ***;
```

```
***put non-missing condition - IVT 04/17/2007***;
*S*** &_v.PASE01 *** COMPONENT: Walk outside home (Weight=20)***;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

```

if walkf>.Z then &_v.PASE01=20*WALKF;
*E*** &_v.PASE01 *** ;

*S*** &_v.PASE02 *** COMPONENT: Light sport/rec activity (Weight=21)***;
if ltef>.Z then &_v.PASE02=21*LTEF;
*E*** &_v.PASE02 ***;

*S*** &_v.PASE03 *** COMPONENT: Moderate sport/rec activity (Weight=23)***;
if modf>.Z then &_v.PASE03=23*MODF;
*E*** &_v.PASE03 ***;

*S*** &_v.PASE04 *** COMPONENT: Strenuous sport/rec activity (Weight=23)***;
if strf>.Z then &_v.PASE04=23*STRF;
*E*** &_v.PASE04 ***;

*S*** &_v.PASE05 *** COMPONENT: Muscle Str,Endurance activity (Weight=30)***;
if wgtf>.Z then &_v.PASE05=30*WGTF;
*E*** &_v.PASE05 ***;

*S*** &_v.PASE06 *** COMPONENT: Light housework (Weight=25)***;
if &_v.lhw>.Z then &_v.PASE06=25*&_v.LHW;
*E*** &_v.PASE06 ***;

*S*** &_v.PASE07*** COMPONENT: Heavy housework (Weight=25)***;
if &_v.hhw>.Z then &_v.PASE07=25*&_v.HHW;
*E*** &_v.PASE07***;

*S*** &_v.PASE08 *** COMPONENT: Home Repairs (Weight=30)***;
if &_v.home>.Z then &_v.PASE08=30*&_v.HOME;
*E*** &_v.PASE08 ***;

*S*** &_v.PASE09 *** COMPONENT: Lawn work/yard care (Weight=36)***;
if &_v.lawn>.Z then &_v.PASE09=36*&_v.LAWN;
*E*** &_v.PASE09 ***;

*S*** &_v.PASE10 *** COMPONENT: Outdoor Gardening (Weight=20)***;
if &_v.gardn>.Z then &_v.PASE10=20*&_v.GARDN;
*E*** &_v.PASE10 ***;

*S*** &_v.PASE11 *** COMPONENT: Caring for another person (Weight=35)***;
if &_v.care>.Z then &_v.PASE11=35*&_v.CARE;
*E*** &_v.PASE11 ***;

*S** &_v.WKPA ***;
*S*** &_v.PASE12*** COMPONENT: Work for pay/volunteer (Weight=21)*** ;
&_v.PASE12 = .;
IF &_v.WK in (0,8) THEN WKF=0;
IF &_v.WK=1 and &_v.WKPA>=1 THEN DO; WKF=0; END;
IF &_v.WK=1 and 2<=&_v.WKPA<=4 and &_v.WKHR>.Z THEN DO; WKF=round(&_v.WKHR/7, 0.01); END;
if wkf>.Z then &_v.PASE12=21*WKF;
*E*** &_v.PASE12***;

*S*** &_v.PASE ***Calculate total PASE score - put round and remove formatting***;

```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

```
&_v.PASE =round(SUM(&_v.PASE01,&_v.PASE02,&_v.PASE03,&_v.PASE04,&_v.PASE05,  
&_v.PASE06,&_v.PASE07,&_v.PASE08,&_v.PASE09,&_v.PASE10,&_v.PASE11,  
&_v.PASE12),0.1);  
*E*** &_v.PASE ***;  
  
*FORMAT &_v.PASE &_v.PASE01 &_v.PASE02 &_v.PASE03 &_v.PASE04 &_v.PASE05 &_v.PASE06  
&_v.PASE07 &_v.PASE08 &_v.PASE09 &_v.PASE10 &_v.PASE11 &_v.PASE12 8.1;  
  
array VAR3_ &_v.PASE01 &_v.PASE02 &_v.PASE03 &_v.PASE04 &_v.PASE05 &_v.PASE06 &_v.PASE07  
&_v.PASE08 &_v.PASE09 &_v.PASE10 &_v.PASE11 &_v.PASE12;  
    DO OVER VAR3_;  
        IF VAR3_=. THEN VAR3_=.M;  
    END;  
  
%score(i=3a, arr=&_v.pase01-&_v.pase12, llim=0, ulim=500, nmiss=1, score=&_V.pase_m, ave=);  
  
run;
```


***Measurement: SF-12 HEALTH SURVEY**

Study: MOST
 Source name: SF12.SAS
 Source type: Program
 Author: P Cawton (original) F Harris, A Coutts (adapted for MOST)
 Created: 2006

Input: Input dataset is V0ENROLL, V1ENROLL, V2ENROLL, V3ENROLL
 Input variables are:
 &_V.SF1-&_V.SF12

Output: &_V.SF12MM: SF12 Modified Mental Summary Scale
 &_V.SF12MP: SF12 Modified Physical Summary Scale
 Summary:
 &_V.SF12MM (Mental Health Summary Measure) is the summary of points for questions 1-12.
 &_V.SF12MP (Physical Health Summary Measure) is the summary of points for questions 1-12.

MOST uses a modified version of the SF-12 version 1.0 survey. Participants are given the option of answering “Don’t know” to some of the questions (questions 4-7). These questions asked the participant if the following were true during the past 30 days:

- Q59-60) as a result of physical health:
 “Accomplished less than you would like”
 “Were limited in the kind of work or other activities”
- Q61-62) as a result of emotional problems:
 “Accomplished less than you would like”
 “Didn’t do work or other activities as carefully as usual”

This option is not part of the standard version 1.0.
 Skipped questions and “Don’t know” responses are assigned a missing value. If the number of missing values for all SF-12 questions is more than 0, then both the SF-12 physical and mental scores are assigned as missing or invalid.
 The table of average values to transform the raw scores is the 1998 table from the SF-12 scoring manual.

References: Ware J, Jr., Kosinski M, Turner-Bowker D, Gandek B. How to Score Version 2 of the SF-12 Health Survey (with a Supplement Documenting Version 1). Lincoln, RI: QualityMetric Incorporated, 2002.
 Pickard AS, Johnson JA, et al. Replicability of SF-36 summary scores by the SF-12 in stroke patients. Stroke. 1999, 30: 1213-1217.
 Ware JE Jr, Kosinski M, Keller SD. A 12-Item Short-Form Health Survey. Medical Care. 1996, 34: 220-233.

Revisions: None

Note: The Short Form 12 Health Survey (SF-12) is an abbreviated form of the SF-36 Health Survey which can be used for large scale health measurement and monitoring. It consists of 12 items which are used to calculate summary measures for physical and mental health.
 physical health subscore==SUM(points for questions 1, 2, 3, 4, 5, 8)
 emotional health subscore==SUM(points for questions 6, 7, 9, 10, 11, 12)

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

```
*****
*           STEP 1: CREATE INDICATOR VARIABLES FROM           *
*           ITEM RESPONSE CHOICES                             *
*****
```

```
data all; set all;
if 1<= &_v.SF1 <=5 then do;

    * GH1_1 -- RATE OVERALL HEALTH, COMPARED WITH PEOPLE OWN AGE, POOR ***;
    GH1_1=(&_v.SF1=5);
    LABEL GH1_1 = 'OVERALL HEALTH, POOR';

    * GH1_2 -- RATE OVERALL HEALTH, COMPARED WITH PEOPLE OWN AGE, FAIR ***;
    GH1_2=(&_v.SF1 = 4);
    LABEL GH1_2 = 'OVERALL HEALTH, FAIR';

    * GH1_3 -- RATE OVERALL HEALTH, COMPARED WITH PEOPLE OWN AGE, GOOD ***;
    GH1_3=(&_v.SF1 = 3);
    LABEL GH1_3 = 'OVERALL HEALTH, GOOD';

    * GH1_4 -- RATE OVERALL HEALTH, COMPARED WITH PEOPLE OWN AGE, VERY GOOD ***;
    GH1_4=(&_v.SF1 = 2);
    LABEL GH1_4 = 'OVERALL HEALTH, VERY GOOD';

end;

* RATE OVERALL HEALTH, COMPARED WITH PEOPLE OWN AGE, EXCELLENT ***;
* WEIGHTING OF ZERO ***;

if 0<= &_v.SF2 <=2 then do;
    * PF02_1 -- LIMITED A LOT IN MODERATE ACTIVITIES SF2=1;
    PF02_1 =(&_v.SF2 = 1);
    LABEL PF02_1 = 'LIMITED A LOT IN MODERATE ACTIVITIES';

    * PF02_2 -- LIMITED A LITTLE IN MODERATE ACTIVITIES SF2=2;
    PF02_2 = (&_v.SF2 = 2);
    LABEL PF02_2 = 'LIMITED A LITTLE IN MODERATE ACTIVITIES';

end;

if 0<= &_v.SF3 <=2 then do;
    * PF04_1 -- LIMITED A LOT IN CLIMBING SEVERAL FLIGHTS OF STAIRS SF3=1;
    PF04_1 =(&_v.SF3 = 1);
    LABEL PF04_1 = 'LIMITED A LOT IN CLIMB SEV. FLIGHTS OF STAIRS';
    * PF04_2 -- LIMITED A LITTLE IN CLIMBING SEVERAL FLIGHTS OF STAIRS SF3=2;
    PF04_2 = (&_v.SF3 = 2);
    LABEL PF04_2 = 'LIMITED A LITTLE IN CLIMB SEV. FLIGHTS OF STAIRS';

end;

if 0<= &_v.SF4 <=1 then do;
    * RP2_1 -- DUE TO PHYSICAL HEALTH, ACCOMPLISHED LESS THAN WOULD LIKE SF4=1;
    RP2_1 = (&_v.SF4 = 1); end;
    LABEL RP2_1 = 'DUE TO PHYS. HEALTH, ACCOMPLISHED LESS';
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

```
if 0<= &_v.SF5 <=1 then do;
* RP3_1 -- DUE TO PHYSICAL HEALTH, LIMITED IN KIND OF ACTIVITIES SF5=1;
RP3_1 = (&_v.SF5 = 1); end;
LABEL RP3_1 = 'DUE TO PHYS. HLTH, LIMIT IN KIND OF ACT.';

if 0<= &_v.SF6 <=1 then do;
* RE2_1 -- DUE TO EMOTIONAL PROBLEMS, ACCOMPLISHED LESS THAN WOULD LIKE SF6=1;
RE2_1 = (&_v.SF6 =1); end;
LABEL RE2_1 = 'DUE TO EMOT. PROBS, ACCOMPLISHED LESS';
if 0<= &_v.SF7 <=1 then do;;
* RE3_1 -- DUE TO EMOTIONAL PROBLEMS, WORK NOT AS CAREFUL SF7=1;
RE3_1 = (&_v.SF7 = 1); end;
LABEL RE3_1 = 'DUE TO EMOT. PROBS, WORK NOT CAREFUL';

if 0<= &_v.SF8 <=4 then do;

* BP2_1 -- PAIN INTERFERES WITH NORMAL WORK -- EXTREMELY SF8=4;
BP2_1 = (&_v.SF8=4);
LABEL BP2_1 = 'PAIN INTERFER WITH NORMAL WORK,EXTREMELY';

* BP2_2 -- PAIN INTERFERES WITH NORMAL WORK -- QUITE A BIT SF8=3;
BP2_2 = (&_v.SF8=3);
LABEL BP2_2 = 'PAIN INTERFER WITH NORM. WORK,Q.A BIT';
* BP2_3 -- PAIN INTERFERES WITH NORMAL WORK -- MODERATELY SF8=2;
BP2_3 = (&_v.SF8=2);
LABEL BP2_3 = 'PAIN INTERFER WITH NORM. WORK,MODERATE';

* BP2_4 -- PAIN INTERFERES WITH NORMAL WORK -- A LITTLE BIT SF8=1;
BP2_4 = (&_v.SF8=1);
LABEL BP2_4 = 'PAIN INTERFER WITH NORM. WORK,A LITTLE';

end;

* PAIN INTERFERES WITH NORMAL WORK -- NOT AT ALL (&_v.SF8=0)***;
* WEIGHTING OF ZERO ***;

if 0<= &_v.SF9 <=5 then do;
* MH3_1 -- FELT CALM AND PEACEFUL - NONE OF THE TIME SF9=0;
MH3_1 = (&_v.SF9=0);
LABEL MH3_1 = 'FELT CALM/PEACEFUL, NONE OF TIME';

* MH3_2 -- FELT CALM AND PEACEFUL - A LITTLE OF THE TIME SF9=1;
MH3_2 = (&_v.SF9=1);
LABEL MH3_2 = 'FELT CALM/PEACEFUL, A LITTLE OF TIME';
* MH3_3 -- FELT CALM AND PEACEFUL - SOME OF THE TIME SF9=2;

MH3_3 = (&_v.SF9=2);
LABEL MH3_3 = 'FELT CALM/PEACEFUL, SOME OF TIME';
* MH3_4 -- FELT CALM AND PEACEFUL - A GOOD BIT OF THE TIME SF9=3;
MH3_4 = (&_v.SF9=3);
LABEL MH3_4 = 'FELT CALM/PEACEFUL, GOOD BIT OF TIME';

* MH3_5 -- FELT CALM AND PEACEFUL - MOST OF THE TIME SF9=4;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

```
MH3_5 = (&_v.SF9=4);
LABEL MH3_5 = 'FELT CALM/PEACEFUL, MOST OF TIME';
end;

* FELT CALM AND PEACEFUL - ALL OF THE TIME (&_v.SF9=5)***;
* WEIGHTING OF ZERO ***;

if 0<= &_v.SF10 <=5 then do;
  * VT2_1 -- HAVE A LOT OF ENERGY -- NONE OF THE TIME SF10=0;
  VT2_1 = (&_v.SF10=0);
  LABEL VT2_1 = 'HAVE ENERGY, NONE OF THE TIME';

  * VT2_2 -- HAVE A LOT OF ENERGY -- A LITTLE OF THE TIME SF10=1;
  VT2_2 = (&_v.SF10=1);
  LABEL VT2_2 = 'HAVE ENERGY, A LITTLE OF THE TIME';

  * VT2_3 -- HAVE A LOT OF ENERGY -- SOME OF THE TIME SF10=2;
  VT2_3 = (&_v.SF10=2);
  LABEL VT2_3 = 'HAVE ENERGY, SOME OF THE TIME';

  * VT2_4 -- HAVE A LOT OF ENERGY -- A GOOD BIT OF THE TIME SF10=3;
  VT2_4 = (&_v.SF10=3);
  LABEL VT2_4 = 'HAVE ENERGY, A GOOD BIT OF THE TIME';

  * VT2_5 -- HAVE A LOT OF ENERGY -- MOST OF THE TIME SF10=4;
  VT2_5 = (&_v.SF10=4);
  LABEL VT2_5 = 'HAVE ENERGY, MOST OF THE TIME';
end;

* HAVE A LOT OF ENERGY -- ALL OF THE TIME (&_v.SF10=5)***;
* WEIGHTING OF ZERO ***;

if 0<= &_v.SF11 <=5 then do;
  * MH4_1 -- FELT DOWNHEARTED AND BLUE - ALL OF THE TIME SF11=5;
  MH4_1 = (&_v.SF11=5);
  LABEL MH4_1 = 'FELT DOWNHEARTED/BLUE, ALL OF TIME';

  * MH4_2 -- FELT DOWNHEARTED AND BLUE - MOST OF THE TIME SF11=4;
  MH4_2 = (&_v.SF11=4);
  LABEL MH4_2 = 'FELT DOWNHEARTED/BLUE, MOST OF TIME';

  * MH4_3 -- FELT DOWNHEARTED AND BLUE - A GOOD BIT OF THE TIME SF11=3;
  MH4_3 = (&_v.SF11=3);
  LABEL MH4_3 = 'FELT DOWNHEARTED/BLUE, GOOD BIT OF TIME';

  * MH4_4 -- FELT DOWNHEARTED AND BLUE - SOME OF THE TIME SF11=2;
  MH4_4 = (&_v.SF11=2);
  LABEL MH4_4 = 'FELT DOWNHEARTED/BLUE, SOME OF TIME';

  * MH4_5 -- FELT DOWNHEARTED/BLUE - A LITTLE OF THE TIME SF11=1;
  MH4_5 = (&_v.SF11=1);
  LABEL MH4_5 = 'FELT DOWNHEARTED/BLUE, LITTLE OF TIME';
end;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

* FELT DOWNHEARTED/BLUE -- NONE OF THE TIME (&_v.SF11=0)***;
 * WEIGHTING OF ZERO ***;

if 0<= &_v.SF12 <=4 then do;

* SF2_1 -- HEALTH INTERFERS WITH SOCIAL ACTIVITIES, ALL OF THE TIME SF12=4;
 SF2_1 = (&_v.SF12=4);
 LABEL SF2_1 = 'HEALTH INTERFERS W/SOCIAL ACT., ALL TIME';

* SF2_2 -- HEALTH INTERFERS WITH SOCIAL ACTIVITIES, MOST OF THE TIME SF12=3;
 SF2_2 = (&_v.SF12=3);
 LABEL SF2_2 = 'HEALTH INTERFERS W/SOCIAL ACT.,MOST TIME';

* SF2_3 -- HEALTH INTERFERS WITH SOCIAL ACTIVITIES, SOME OF THE TIME SF12=2;
 SF2_3 = (&_v.SF12=2);
 LABEL SF2_3 = 'HEALTH INTERFERS W/SOCIAL ACT.,SOME TIME';

* SF2_4 -- HEALTH INTERFERS WITH SOCIAL ACTIVITIES, A LITTLE OF THE TIME SF12=1;
 SF2_4 = (&_v.SF12=1);
 LABEL SF2_4 = 'HEALTH INTERFERS W/SOCIAL ACT,LIT. TIME';

end;

* HEALTH INTERFERS WITH SOCIAL ACTIVITIES, NONE OF THE TIME (&_v.SF12=0)***;
 * WEIGHTING OF ZERO ***;

*****,
 * STEP 2: WEIGHTING AND AGGREGATION OF *
 * INDICATOR VARIABLES USING *
 * PHYSICAL AND MENTAL REGRESSION WEIGHTS *
 *****,

if any of the component would be missing, raw score will be missing;

nmissSF12m=nmiss(
 gh1_1, gh1_2, gh1_3, gh1_4, pf02_1, pf02_2, pf04_1, pf04_2, rp2_1, rp3_1,
 re2_1, re3_1, bp2_1, bp2_2, bp2_3, bp2_4, mh3_1, mh3_2, mh3_3, mh3_4, mh3_5,
 vt2_1, vt2_2, vt2_3, vt2_4, vt2_5, mh4_1, mh4_2, mh4_3, mh4_4, mh4_5,
 sf2_1, sf2_2, sf2_3, sf2_4);

label nmissSF12m="Number of missing in SF12 modified ";

if any of the sf4-sf7 would be 8, raw score will be missing;

if nmissSF12m=0 then do;

RAWPCS12 = (-7.23216*PF02_1) + (-3.45555*PF02_2) +
 (-6.24397*PF04_1) + (-2.73557*PF04_2) + (-4.61617*RP2_1) +
 (-5.51747*RP3_1) + (-11.25544*BP2_1) + (-8.38063*BP2_2) +
 (-6.50522*BP2_3) + (-3.80130*BP2_4) + (-8.37399*GH1_1) +
 (-5.56461*GH1_2) + (-3.02396*GH1_3) + (-1.31872*GH1_4) +
 (-2.44706*VT2_1) + (-2.02168*VT2_2) + (-1.6185*VT2_3) +
 (-1.14387*VT2_4) + (-0.42251*VT2_5) + (-0.33682*SF2_1) +
 (-0.94342*SF2_2) + (-0.18043*SF2_3) + (0.11038*SF2_4) +
 (3.04365*RE2_1) + (2.32091*RE3_1) + (3.46638*MH3_1) +
 (2.90426*MH3_2) + (2.37241*MH3_3) + (1.36689*MH3_4) +
 (0.66514*MH3_5) + (4.61446*MH4_1) + (3.41593*MH4_2) +

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

$$(2.34247*MH4_3) + (1.28044*MH4_4) + (0.41188*MH4_5);$$

$$\begin{aligned} \text{RAWMCS12} = & (3.93115*PF02_1) + (1.8684*PF02_2) + \\ & (2.68282*PF04_1) + (1.43103*PF04_2) + (1.4406*RP2_1) + \\ & (1.66968*RP3_1) + (1.48619*BP2_1) + (1.76691*BP2_2) + \\ & (1.49384*BP2_3) + (0.90384*BP2_4) + (-1.71175*GH1_1) + \\ & (-0.16891*GH1_2) + (0.03482*GH1_3) + (-0.06064*GH1_4) + \\ & (-6.02409*VT2_1) + (-4.88962*VT2_2) + (-3.29805*VT2_3) + \\ & (-1.65178*VT2_4) + (-0.92057*VT2_5) + (-6.29724*SF2_1) + \\ & (-8.26066*SF2_2) + (-5.63286*SF2_3) + (-3.13896*SF2_4) + \\ & (-6.82672*RE2_1) + (-5.69921*RE3_1) + (-10.19085*MH3_1) + \\ & (-7.92717*MH3_2) + (-6.31121*MH3_3) + (-4.09842*MH3_4) + \\ & (-1.94949*MH3_5) + (-16.15395*MH4_1) + (-10.77911*MH4_2) + \\ & (-8.09914*MH4_3) + (-4.59055*MH4_4) + (-1.95934*MH4_5); \end{aligned}$$

```
*****
*           STEP 3: NORM-BASED STANDARDIZATION OF           *
*           SCALE SCORES                                     *
* 1998 constants are used                                  *
*****;
```

```
&_v.SF12MP = RAWPCS12 + 57.65693;
&_v.SF12MM = RAWMCS12 + 60.58847;
end;
```

```
IF &_v.SF12MP = . THEN &_v.SF12MP=.M;
IF &_v.SF12MM = . THEN &_v.SF12MM=.M;
```

```
run;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

***Measurement: WOMAC OSTEOARTHRITIS INDEX SCORE AND KOOS SCORE**

Study: MOST
Source name: WOMAC.SAS
Source type: Program
Author: J Nui (original) | Tolstykh (macro adapted for MOST)
Created: 2006

Input: Input dataset is V0ENROLL, V1ENROLL, V2ENROLL, V3ENROLL
Input variables are: &_V.SP1K - &_V.SP5K
&_V.Q1KR, &_V.UPR, &_V.DOWNR, &_V.Q3KR, &_V.Q4KR, &_V.Q5KR, &_V.Q6KR
&_V.Q7KR, &_V.Q1KL, &_V.UPL, &_V.DOWNL, &_V.Q3KL, &_V.Q4KL, &_V.Q5KL
&_V.Q6KL, &_V.Q7KL, &_V.Q8K-&_V.Q24K, &_V.Q1HR-&_V.Q8HR, &_V.Q1HL-&_V.Q8HL

Output: &_V.KOOSSP: Knee Injury and Osteoarthritis Outcome Score
&_V.Q2KR: WOMAC Up/Down stairs, RIGHT knee, PAST 30 D
&_V.WOPNKR: WOMAC Pain Score, RIGHT knee
&_V.WOSTKR: WOMAC Stiffness Score, RIGHT knee
&_V.Q2KL: WOMAC Up/Down stairs, LEFT knee, PAST 30 D
&_V.WOPNKL: WOMAC Pain Score, LEFT knee
&_V.WOSTKL: WOMAC Stiffness Score, LEFT knee
&_V.WOPASK: WOMAC Physical Ability Score, EITHER knee
&_V.WOTOTR: WOMAC Total, RIGHT knee
&_V.WOTOTL: WOMAC Total, LEFT knee
&_V.WOPNHR: WOMAC Pain Score, RIGHT hip - Standard
&_V.WOPHRM: WOMAC Pain Score, RIGHT hip - Modified (3Q added)
&_V.WOPNHL: WOMAC Pain Score, LEFT hip - Standard
&_V.WOPHLM: WOMAC Pain Score, LEFT hip - Modified (3Q added)

Summary: &_V.KOOSSP – The Function in sport and recreation” subscale of the Knee Injury and Osteoarthritis Outcome Score (KOOS) was calculated according to the KOOS User’s Guide.

Note that the sport and recreation questions used in MOST had an additional answer option (“Don’t do”) that is not in the original KOOS instrument. The “Don’t do” response option was added so that participants who do not normally do the listed activities (e.g. running or jumping) do not skip these questions. The “don’t do” responses are converted to missing values before calculation of the score.

When ≥ 2 of the KOOS sub-questions have missing answers, the calculated variable for the KOOS score is set as .M:Missing.

Modified WOMAC Osteoarthritis Index Likert Version 5.0 (November 2001). Subscales are for knee pain and stiffness, hip pain, physical function, and degree of difficulty (when physically active). In addition to asking about degree of physical difficulty going up stairs and going down stairs, in MOST we also ask separate knee pain questions regarding going up stairs and going down stairs. The stair climbing calculation was based on the highest response value of the two questions. If there is one missing answer and one non-missing answer for the stair climbing questions, the non-missing answer is used. Subsets of the questions have a “Don’t Do” response option. If the participant chose the “don’t do” response, the score for that question was set to missing when computing WOMAC scores. Participant responses are all based on the past 30 days.

In MOST, WOMAC pain questions are also asked about the hips (five questions). In addition, three of the physical function questions of interest (pain experienced while putting

on socks, getting in or out of a chair, and getting in or out of a car) are also asked about the hips. The modified hip pain subscale was calculated based on these 8 questions.

The WOMAC knee calculated variable and subscales were calculated based on code from Jingbo Niu at Boston University (Framingham Study). The WOMAC hip pain (modified) subscale calculation was created by Yun Yi Hung (Coordinating Center).

The method used to handle missing values (i.e., participant fails to/refuses to complete all questions) is consistent with the suggestion from the WOMAC User's Guide (Nicholas Bellamy) for how missing values should be treated: "If >= two pain, both stiffness, or >= four physical function items are omitted, the patient's response is regarded as invalid and the deficient subscale(s) should not be used in analysis. Where one pain, one stiffness, or 1-3 physical function items are missing, we suggest substituting the average value for the subscale in lieu of the missing item value(s). This method is similar to that employed for other indices (e.g., SF-36)."

NOTE: KOOS missing values: Because of the high number of "Don't do" responses for the KOOS function, sports and recreation activities, there are many missing values for the KOOS calculated variable.

References: The KOOS User's Guide website: www.koos.nu.
Information about the WOMAC Osteoarthritis Index can be found at the following website: www.womac.org.

Revisions: None

* &_v stands for visit: V0(baseline), V1(15M), V2(30M), etc ;

data all; set all;

**IF THE ANSWER IS 5 (DON'T DO) FOR BOTH UP/DOWN SET THE VARS Q5 AS 5;

if &_v.upr=5 AND &_v.downr=5 then &_v.Q2KR=5;

if &_v.upl=5 AND &_v.downl=5 then &_v.Q2KL=5;

**IF THE ANSWER IS 5 (DON'T DO), SET THE VARS MISSING;

array _ss &_v.upr &_v.downr &_v.upl &_v.downl;

do over _ss; if _ss>4 or _ss<0 then _ss=.T;

end;

*WE ASK GOING UP AND GOING DOWN IN TWO QUESTIONS.

USE THE WORST (non-missing) ONE BETWEEN THE TWO;

if &_v.upr>.Z or &_v.downr>.Z then &_v.Q2KR=max(&_v.upr,&_v.downr);

if &_v.upl>.Z or &_v.downl>.Z then &_v.Q2KL=max(&_v.upl,&_v.downl);

*****RIGHT KNEE*****

** pain score **;

** If >=2 variables among q1-q5 are missing, set the pain score invalid **;

** If 1 variable is missing, use the mean of other variables to replace it **;

%score(i=6r, arr=&_v.Q1KR &_v.Q2KR &_v.Q3KR &_v.Q4KR &_v.Q5KR, llim=0, ulim=4, nmiss=1, score=&_v.wopnkr, ave=Y);

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.


```

*****LEFT KNEE*****
%score(i=6l, arr=&_v.Q1KL &_v.Q2KL &_v.Q3KL &_v.Q4KL &_v.Q5KL, llim=0, ulim=4, nmiss=1,
score=&_v.wopnkl, ave=Y);

*****RIGHT HIP STANDARD***;
%score(i=7r, arr=&_v.Q1HR &_v.Q2HR &_v.Q3HR &_v.Q4HR &_v.Q5HR, llim=0, ulim=4, nmiss=1,
score=&_v.wopnhr, ave=Y);

*****LEFT HIP STANDARD***;
%score(i=7l, arr=&_v.Q1HL &_v.Q2HL &_v.Q3HL &_v.Q4HL &_v.Q5HL, llim=0, ulim=4, nmiss=1,
score=&_v.wopnhl, ave=Y);

*****RIGHT HIP MODIFIED*****8 questions***;
%score(i=8r, arr=&_v.Q1HR &_v.Q2HR &_v.Q3HR &_v.Q4HR &_v.Q5HR &_v.Q6HR &_v.Q7HR &_v.Q8HR,
llim=0, ulim=4, nmiss=1, score=&_v.wophrm, ave=Y);

*****LEFT HIP MODIFIED*****8 questions***;
%score(i=8l, arr=&_v.Q1HL &_v.Q2HL &_v.Q3HL &_v.Q4HL &_v.Q5HL &_v.Q6HL &_v.Q7HL &_v.Q8HL,
llim=0, ulim=4, nmiss=1, score=&_v.wopnlm, ave=Y);

*****RIGHT KNEE*****;
** stiffness score **;
** If both variables (Q6 and Q7) are missing, set the stiffness score invalid
** If 1 variable is missing, use the value of the other variable to replace it;

%score(i=9r, arr=&_v.Q6KR &_v.Q7KR , llim=0, ulim=4, nmiss=1,
score=&_v.wostkr, ave=Y);

*****LEFT KNEE***;
%score(i=9l, arr=&_v.Q6KL &_v.Q7KL , llim=0, ulim=4, nmiss=1,
score=&_v.wostkl, ave=Y);

*****EITHER KNEE*****;
** physical ability score **;
*If >=4 variables among q8-q24 are missing, set the physical function ability invalid* *If 1-3 variables are
missing, use the mean of other variables to replace them *;

%score(i=10, arr=&_v.Q8K &_v.Q9K &_v.Q10K &_v.Q11K &_v.Q12K &_v.Q13K &_v.Q14K &_v.Q15K
&_v.Q16K &_v.Q17K &_v.Q18K &_v.Q19K &_v.Q20K &_v.Q21K &_v.Q22K &_v.Q23K &_v.Q24K , llim=0,
ulim=4, nmiss=3, score=&_v.wopask, ave=Y);

*****WOMAC total*****;
if &_v.WOPNKR>.Z and &_v.WOSTKR>.Z and &_v.WOPASK>.Z then
&_v.WOTOTR = &_v.WOPNKR + &_v.WOSTKR + &_v.WOPASK; else &_v.WOTOTR=.M;
if &_v.WOPNKI>.Z and &_v.WOSTKI>.Z and &_v.WOPASK>.Z then
&_v.WOTOTL = &_v.WOPNKL + &_v.WOSTKL + &_v.WOPASK; else &_v.WOTOTI=.M;

*****EITHER KNEE*****;
** SP score **;
** If >=2 variables among sp1-sp5 are missing, set the SP score invalid **;
** If 1 variable is missing, use the mean of other variables to replace it **;
*** array q_sp V0SP1K V0SP2K V0SP3K V0SP4K V0SP5K;
%score(i=11, arr=&_v.sp1K &_v.sp2K &_v.sp3K &_v.sp4K &_v.sp5K ,

```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

```
llim=0, ulim=4, nmiss=1, score=&_v.koosp, ave=Y);  
run;
```

JOINT PAIN, ACHING OR STIFFNESS

***Measurement: FREQUENT KNEE PAIN (FKP) – KNEE LEVEL**

Study: MOST
 Source name: V0FKP.sas
 Source type: Program
 Author: I Tolstykh
 Created: 2007

Input: Input dataset is V0ENROLL and X-ray QA database
 Input variables are: TSKNPN, TSKPNR, TSKPNL, V0KPN12R, V0PN30R, V0KPN30R, V0KPN12L, V0PN30L, V0KPN30L, V0R_EXCL, V0L_EXCL

Output: V0R_FKP: Frequent knee pain at baseline, RIGHT knee
 V0R_SX: Prevalent knee pain symptoms at baseline, RIGHT knee (knee did not have TKR or x-ray exclusions)
 V0L_FKP: Frequent knee pain at baseline, LEFT knee
 V0L_SX: Prevalent knee pain symptoms at baseline, LEFT knee (knee did not have TKR or x-ray exclusions)

Summary: Calculates the prevalent knee pain symptoms at baseline for each knee.
 Possible values: 1='1: Yes'
 0='0: No'
 8='8: Inconsistent'

References: Not available

Revisions: None

*****,

```
* FKP during telephone screen info;
data all; set all; length FKP00R1 FKP00L1 $1.;
if tsknpnr=1 then fkp00r1='Y'; else
if (tsknpnr=0 or tsknpr=0) then fkp00r1='N'; else fkp00r1='D';
if tsknpnl=1 then fkp00l1='Y'; else
if (tsknpnl=0 or tsknpl=0) then fkp00l1='N'; else fkp00l1='D';
run;
```

```
%macro endpoint_identification(_s=R);
length FKP00&_s.2 $1.;
if (&_v.kpn12&_s.=1 and &_v.pn30&_s.=1 and &_v.kpn30&_s.=1) then FKP00&_s.2='Y'; else
if (&_v.kpn12&_s.=0 or &_v.pn30&_s.=0 or &_v.kpn30&_s.=0) then FKP00&_s.2='N'; else if
(&_v.kpn12&_s.<0) then FKP00&_s.2='.'; else FKP00&_s.2='D';
V0&_s._FKP=compress(FKP00&_s.1||FKP00&_s.2);
if (V0&_s._excl=0) then do;
select (V0&_s._FKP);
when ('YY') V0&_s._SX=1;
when ('NN') V0&_s._SX=0;
otherwise V0&_s._SX=8;
end; end;
%mend endpoint_identification;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

```
data all; set all;  
%endpoint_identification(_s=R);  
%endpoint_identification(_s=L);  
drop fkp00: ; run;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

***Measurement: FREQUENT KNEE PAIN (FKP) – PARTICIPANT LEVEL**

Study: MOST
 Source name: V0FKPPS_STATUS.SAS
 Source type: Program
 Author: J Niu
 Created: August 2008

Input dataset: STATUS_ENDPOINTS

Input: Input dataset X-ray QA and calculated above
 Input variables are:
 &_V.L_FKP: Variable calculated by V0FKP.sas
 &_V.R_FKP: Variable calculated by V0FKP.sas
 &_V.L_XRAY: Left knee x-ray status at baseline from x-ray QA
 &_V.R_XRAY: Right knee x-ray status at baseline from x-ray QA
 &_V.L_TKR: Left knee replacement at baseline from knee x-ray QA
 &_V.R_TKR: Right knee replacement at baseline from knee x-ray QA

Output: &_V._FKPSX: Frequent knee(s) pain symptoms at baseline, person-level status

Summary: Calculates frequent knee pain by person (pain on most days during last 30 days on Telephone Interview and Clinic Visit).
 - 0 (Missing/Missing)
 Pain data missing in both knees: (a) Total Knee Replacement or (b) excluded or (c) with pain information missing in both Telephone Interview (TI) and Clinic Visit (CV), or with pain one time and pain information missing the other time on TI and CV
 - 1 (No freq pain/Missing)
 Had no frequent pain: answered "No" or "Don't know" to the question "Do you have pain on most days during the last 30 days?" on either TI or CV, in one knee and pain data missing in other knee
 - 2 (Freq pain/Missing)
 Had frequent pain: answered "Yes" to the question "Do you have pain on most days during last 30 days" on both TI and CV, in one knee and pain data missing in other knee
 - 3 (No freq pain/No freq pain)
 Had no frequent pain in both knees
 - 4 (No freq pain/Freq pain)
 Had frequent pain in one knee but not both
 - 5 (Freq pain/Freq pain)
 Had frequent pain in both knees

References: Not available

Revisions: None

*****,

* &_v stands for visit: V0(baseline), V1(15M), V2(30M), etc ;
 * &_s stands for the side: L(left), R(right) ;

```
%macro Kpn1(_s);
** intermediate variable in each knee: &_v.L_FKPUPD, &_v.R_FKPUPD
* had knee pain on both TI and CV
  1:Freq pain
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

```

* had no knee pain on either TI or CV
0:No pain
    * had pain data missing on both TI and CV, or had pain one time and pain information missing the
    other time on TI and CV
8:Missing
* had knee replacement or the knee was excluded
9:TKR/Exclusion **;
    if &_v.&_s._xray in (2 3) or &_v.&_s._tkr =1 then &_v.&_s._FKPUPD=9;
    else if &_v.&_s._xray=1 and &_v.&_s._tkr=0 then do;
if &_v.&_s._fkp='YY' then &_v.&_s._FKPUPD=1; else
        if &_v.&_s._fkp in ('NN' 'YN' 'NY' 'ND' 'DN' 'N.' '.N') then
&_v.&_s._FKPUPD=0;
        if &_v.&_s._fkp in ('YD' 'DY' 'DD' 'Y.' 'D.' '..' '.D' '.Y') then
&_v.&_s._FKPUPD=8;

    end;
%mend Kpn1;

data ALL; set ALL;

%Kpn1(L)
%Kpn1(R)

/* calculates the person-based frequent knee pain (frequent pain/no frequent pain) variable - 5 level */
if &_v.L_FKPUPD in (8,9) and &_v.R_FKPUPD in (8,9) then &_v._FKPSX = 0; else
if (&_v.L_FKPUPD =0 and &_v.R_FKPUPD in (8,9)) or (&_v.L_FKPUPD in (8,9) and &_v.R_FKPUPD =0)
then &_v._FKPSX = 1; else
    if (&_v.L_FKPUPD =1 and &_v.R_FKPUPD in (8,9)) or (&_v.L_FKPUPD in (8,9) and &_v.R_FKPUPD =1)
    then &_v._FKPSX = 2; else
if &_v.L_FKPUPD =0 and &_v.R_FKPUPD =0 then &_v._FKPSX = 3; else
if (&_v.L_FKPUPD =1 and &_v.R_FKPUPD =0) or (&_v.L_FKPUPD =0 and &_v.R_FKPUPD =1)
then &_v._FKPSX = 4; else
if &_v.L_FKPUPD =1 and &_v.R_FKPUPD =1 then &_v._FKPSX = 5;

format &_v._fkpsx statusf. ;
drop &_v.L_FKPUPD &_v.R_FKPUPD;

run;

```

***Measurement: FREQUENT KNEE PAIN (FKP) – PARTICIPANT LEVEL**

Study: MOST
Source name: V1FKPPS_STATUS.SAS
Source type: Program
Author: J Niu
Created: 2009

Input dataset: V1ENROLL, V2ENROLL, V3ENROLL

Input: Input dataset X-ray QA and calculated above
Input variables are:
&_V.L_FKP: Variable calculated by V0FKP.sas
&_V.R_FKP: Variable calculated by V0FKP.sas
&_V.L_XRAY: Left knee x-ray status at baseline from x-ray QA
&_V.R_XRAY: Right knee x-ray status at baseline from x-ray QA
&_V.L_TKR: Left knee replacement at baseline from knee x-ray QA
&_V.R_TKR: Right knee replacement at baseline from knee x-ray QA

Output: &_V._FKPSX: Frequent knee(s) pain symptoms at baseline, person-level status

Summary: Calculates frequent knee pain by person (pain on most days during last 30 days on Telephone Interview and Clinic Visit).
- 0 (Missing/Missing)
Pain data missing in both knees: (a) Total Knee Replacement or (b) excluded or (c) with pain information missing in both Telephone Interview (TI) and Clinic Visit (CV), or with pain one time and pain information missing the other time on TI and CV
- 1 (No freq pain/Missing)
Had no frequent pain: answered "No" or "Don't know" to the question "Do you have pain on most days during the last 30 days?" on either TI or CV, in one knee and pain data missing in other knee
- 2 (Freq pain/Missing)
Had frequent pain: answered "Yes" to the question "Do you have pain on most days during last 30 days" on both TI and CV, in one knee and pain data missing in other knee
- 3 (No freq pain/No freq pain)
Had no frequent pain in both knees
- 4 (No freq pain/Freq pain)
Had frequent pain in one knee but not both
- 5 (Freq pain/Freq pain)
Had frequent pain in both knees

References: Not available

Revisions: None

*****,

* &_v stands for visit: V0(baseline), V1(15M), V2(30M), etc ;

* &_s stands for the side: L(left), R(right) ;

%macro Kpn1(_s);

** intermediate variable in each knee: &_v.L_FKPUPD, &_v.R_FKPUPD

* had knee pain on both TI and CV

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

```
1:Freq pain
* had no knee pain on either TI or CV
0:No pain
* had pain data missing on both TI and CV, or had pain one time and pain information
missing the other time on TI and CV
8:Missing
* had knee replacement or the knee was excluded
9:TKR/Exclusion
**,
'
if &_v.&_s._excl=1 or &_v.&_s._tkr =1 then &_v.&_s._FKPUPD=9;
else if &_v.&_s._excl=0 and &_v.&_s._tkr=0 then do;
if &_v.&_s._fkp='YY' then &_v.&_s._FKPUPD=1; else
if &_v.&_s._fkp in ('NN' 'YN' 'NY' 'NM' 'MN' 'N.' 'ND' 'DN' )
then &_v.&_s._FKPUPD=0;
if &_v.&_s._fkp in ('YM' 'MY' 'MM' 'Y.' 'M.' 'YD' 'DY' 'DD' 'D.' '..')
then &_v.&_s._FKPUPD=8;
end;
%mend Kpn1;

data ALL; set ALL;

%Kpn1(L)
%Kpn1(R)

/* Calculate person-based frequent knee pain (frequent pain / no frequent pain) variable - 5 level */
if &_v.L_FKPUPD in (8,9) and &_v.R_FKPUPD in (8,9) then &_v._FKPSX = 0; else
if (&_v.L_FKPUPD =0 and &_v.R_FKPUPD in (8,9)) or (&_v.L_FKPUPD in (8,9) and &_v.R_FKPUPD =0)
then &_v._FKPSX = 1; else
if (&_v.L_FKPUPD =1 and &_v.R_FKPUPD in (8,9)) or (&_v.L_FKPUPD in (8,9) and &_v.R_FKPUPD =1)
then &_v._FKPSX = 2; else
if &_v.L_FKPUPD =0 and &_v.R_FKPUPD =0 then &_v._FKPSX = 3; else
if (&_v.L_FKPUPD =1 and &_v.R_FKPUPD =0) or (&_v.L_FKPUPD =0 and &_v.R_FKPUPD =1)
then &_v._FKPSX = 4; else
if &_v.L_FKPUPD =1 and &_v.R_FKPUPD =1 then &_v._FKPSX = 5;

format &_v._fkpsx fkpsx. ;
drop &_v.L_FKPUPD &_v.R_FKPUPD;
run;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

***Measurement: FOOT AND HAND PAIN**

Study: MOST
 Source name: V0JPAIN.SAS
 Source type: Program
 Author: Yanyan Zhu
 Created: August 2008, modified: January 2010

Input: Input dataset is V0ENROLL, V3ENROLL
 Input variables are:
 &_V.JPAIN, &_V.FF1L - &_V.FF9L, &_V.FF1R - &_V.FF9R, &_V.BF1L - &_V.BF9L,
 &_V.BF1R - &_V.BF9L
 At baseline also hand/fingers &_V.F1L - &_V.F15L, &_V.F1R - &_V.F15R

Output: &_V.L_FFOOT: Pain location (Any): LEFT front foot, most days, PAST 30D
 &_V.R_FFOOT: Pain location (Any): RIGHT front foot, most days, PAST 30D
 &_V.L_BFOOT: Pain location (Any): LEFT bottom foot, most days, PAST 30D
 &_V.R_BFOOT: Pain location (Any): RIGHT bottom foot, most days, PAST 30D
 &_V.L_HAND: Pain location (Any): LEFT hand, most days, PAST 30D
 &_V.R_HAND: Pain location (Any): RIGHT hand, most days, PAST 30D

Summary: Create variables to indicate the pain in 6 areas.
 LEFT front foot (9 locations),
 RIGHT front foot (9 locations),
 LEFT bottom foot (9 locations),
 RIGHT bottom foot (9 locations),
 LEFT hand (15 locations – baseline only),
 RIGHT hand (15 locations – baseline only)
 - .D Don't know - if participant answered "8:Don't know" in Q9 SAQ Home special missing value is assigned to all 6 variables.
 - 1 (Yes) – if participant answered "1:Yes" in Q9 SAQ Home and notes pain in any location within an area.
 - 0 (No) – if participant answered "0:No" in Q9 SAQ Home. then value zero is assigned to all 6 variables. Or if participant answered "1:Yes" in Q9 SAQ Home and did not mark any bubble in the predesigned location then value zero is assigned to this location.

References: Not available

Revisions: Modified by I Tolstykh for 60m release – exclude pain questions on hand and fingers joints

*****,

- * &_v stands for visit: V0(baseline), V1(15M), V2(30M), etc ;
- * &_s stands for the side: L(left), R(right) ;
- * &_jt stands for the area: FF(forefoot), BF(back foot), F(finger);
- * &_jtname stands for the area in the calculated variable: FFOOT(forefoot), BFOOT(back foot), HAND(hand);
- * &_n stands for the number of joints in an area;

```
%macro JTvar(_s, _jt, _n);
%global &_v.&_jt.&_s;
%do i=1 %to &_n;
%if &i=1 %then %let &_v.&_jt.&_s =;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

```
%let &_v.&_jt.&_s = &&&_v.&_jt.&_s &_v.&_jt.&i.&_s;
%end;
%put &_v.&_jt.&_s= &&&_v.&_jt.&_s;
%mend JTvar;

%JTvar(L, FF, 9);
%JTvar(L, BF, 9);
%JTvar(R, FF, 9);
%JTvar(R, BF, 9);

***run this part only for V0***;
%JTvar(L, F, 15);
%JTvar(R, F, 15);

%macro JTvar2(_s, _jt, _jtname);
if &_v.jpain not in (0,1,8) then &_v.&_s.&_jtname=.M;
else if &_v.JPAIN in (8) then &_v.&_s.&_jtname=.D;
else if &_v.JPAIN in (0) then &_v.&_s.&_jtname=0;
else if &_v.JPAIN=1 then &_v.&_s.&_jtname = max(of &&&_v.&_jt.&_s);
FORMAT &_v.&_s.&_jtname YNDK.;
%mend JTvar2;

data all; set all;

%JTvar2(R,FF,FFOOT);
%JTvar2(L,FF,FFOOT);
%JTvar2(R,BF,BFOOT);
%JTvar2(L,BF,BFOOT);

***run this part only for V0***;
%JTvar2(R,F,HAND);
%JTvar2(L,F,HAND);

run;
```

***Measurement: BACK PAIN**

Study: MOST
 Source name: V0LBACKPN.SAS
 Source type: Program
 Author: J Niu
 Created: August 2008

Input: Input dataset is V0ENROLL, V2ENROLL, V3ENROLL
 Input variables are:
 &_V.PAIN, &_V.LB, &_V.FREQ

Output: &_V._LBP: Low back pain most of days, PAST 30 D

Summary: Create variable to indicate whether participant bothered by low back pain all or most of the time in the past 30 days

- 1 (Yes)
 Participant marked Yes to question "During the past 30 days, have you had any back pain?", and reported "bothered by back pain in the past 30 days" all of the time or most of the time, and marked lower back as the "part or parts of your back the pain usually located", set the calculated variable to 1 (Yes).
- 0 (No)
 If the participant answered Yes to question "During the past 30 days, have you had any back pain?", but either reported "bothered by back pain in the past 30 days" some of the time, rarely, or never, or did not mark lower pain as the "part or parts of your back the pain usually located", set the calculated variable to 0 (No).
 If participant answered No or Don't know to question "During the past 30 days, have you had any back pain?", set the calculated variable 0 (No).
- .M
 If the answer to the question "During the past 30 days, have you had any back pain?" is missing, set the calculated variable to .M (missing).

References: Not available

Revisions: None

*****,

* &_v stands for visit: V0(baseline), V1(15M), V2(30M), etc ;

```
data all;
  set all;
  /*Calculate variable for bothered by low back pain all or most of the time in the past 30 days*/
  if &_v.pain not in (0,1,8) then &_v._LBP=.M; else
  if &_v.pain in (8) then &_v._LBP=.D; else
  &_v._LBP=(&_v.pain=1 and &_v.freq in (1,2) and &_v.lb=1 );

format &_v._lbp yndk.;
run;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

***Measurement: WIDESPREAD PAIN (WHOLE BODY)**

Study: MOST
Source name: V0WSP.SAS
Source type: Program
Author: J Niu
Created: September, 2008

Input: Input dataset is V0ENROLL
Input variables are:
&_V.JPAIN and all variables on homunculus
&_V.PAIN, &_V.FREQ, &_V.NK, &_V.UB, &_V.MB, &_V.LB, &_V.BK

Output: &_v._WSPA: wide spread pain, definition 1 from Jeffrey & Neil
&_v._WSPB: wide spread pain, definition 2 from Jeffrey & Neil
&_v._WSPC: wide spread pain, definition from Tuhina

Summary: Create variables to indicate widespread pain

Definition A: From Jeffrey Curtis & Neil Segal

- 3 level wide spread pain

2: Widespread - pain in all 5 regions

0: No - no pain or pain only in hip or knee joint(s) but no other areas

1: Intermediate - any other pattern

.M:missing

- The 5 regions are body quadrants and axes

- Right up: R shoulder, R elbow, R wrist

- Left up: L shoulder, L elbow, L wrist

- Right low: R hip, R knee, R ankle

- Left low: L hip, L knee, L ankle

- axes: neck on homunculus, or any back pain (neck, upper back, middle back, low back, buttock) all of time, most of the time, or some of the time on back graph

Definition B: From Jeffrey Curtis & Neil Segal

- 3 level wide spread pain, intermediate widespread pain based on Number of limbs plus axial pain

2: Widespread: 5 regions

1: Intermediate: 2-4 regions

0: No: 0-1 region

.M:missing

- The 5 regions are body quadrants and axes, the same as in definition A

Definition C: From Tuhina Neogi

- 2 level wide spread pain

1: Yes - pain in all 5 regions

0: No - no pain or pain in less than 5 regions

.M:missing

- The 5 regions are:

- Above waist: L/R shoulder, L/R elbow, L/R wrist, L/R hand (any of 15 joints),

- And neck on homunculus, neck, upper back, middle back on back graph

- Below waist: L/R hip, L/R knee, L/R ankle, L/R foot (any of 9 forefoot or 9 back foot sites) on homunculus low back on back graph

- Right side: R shoulder, R elbow, R wrist, R hand, R hip, R knee, R ankle, and R foot on homunculus

- Left side: L shoulder, L elbow, L wrist, L hand, L hip, L knee, L ankle, and L foot on homunculus

- Axes: neck, upper back, middle back, low back, buttock on back graph

Revisions: Not available

References: None

*****;

* &_v stands for visit: V0(baseline), V1(15M), V2(30M), etc ;

data all; set all;

** WSP definitions - from Jeffrey and Neil;

* pain in body quadrants on pain homunculus: 1/3 location (hand and feet are not counted) **;

if &_v.jpain in (0 1) then do;

&_v.RUP=0; &_v.LUP=0;

&_v.RLP=0; &_v.LLP=0;

if &_v.shdrr=1 or &_v.elbr=1 or &_v.wrstr=1 then &_v.RUP=1 ;

if &_v.shdrl=1 or &_v.elbl=1 or &_v.wrsl=1 then &_v.LUP=1 ;

if &_v.hipr=1 or &_v.knr=1 or &_v.anklr=1 then &_v.RLP=1 ;

if &_v.hipl=1 or &_v.knl=1 or &_v.ankll=1 then &_v.LLP=1 ;

end;

* Axial pain yes if

a) had back pain during the past 30 d and frequency of back pain was all of the time, most of the time, or some of the time

or b) had neck pain on homunculus;

if &_v.neck =1 or (&_v.pain=1 and &_v.freq in (1 2 3)) then &_v.AXIAL=1 ;

else if (&_v.jpain =0 or &_v.neck=0) and &_v.pain in (0 1) then &_v.AXIAL=0;

** WSP definition A - from Jeffrey and Neil;

*yes - self-reported pain in all four body quadrants (1/3 sites) plus axial pain;

* intermediate - pain limited to hips & knees, but not other sites;

* no - other subjects **;

if &_v.RUP=1 AND &_v.LLP=1 and &_v.LUP=1 and &_v.RLP=1 and &_v.AXIAL=1 then &_v._WSPa=2 ;

else if &_v.jpain in (0 1) and &_v.AXIAL in (0 1) then do;

if max(of &_v.shdrr &_v.elbr &_v.wrstr &_v.anklr &_v.shdrl &_v.elbl &_v.wrsl &_v.ankll &_v.AXIAL)=0 and max(of &_v.hipr &_v.knr &_v.hipl &_v.knl)=1 then &_v._WSPa=0;

else if max(of &_v.RUP &_v.LLP &_v.LUP &_v.RLP &_v.AXIAL)=0 then &_v._WSPa=0;

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

```

else &_v._WSPa=1;
end;
  if &_v._WSPa=. then &_v._WSPa=.M;

```

** WSP definition B - from Jeffrey and Neil;

```

* defining intermediate widespread pain based on number of limbs plus axial pain;
* Yes - 5 regions;
* intermediate - 2-4 regions;
* no - 0-1 region;
if &_v.RUP=1 AND &_v.LLP=1 and &_v.LUP=1 and &_v.RLP=1 and &_v.AXIAL=1 then &_v._WSPb=2 ;
else if &_v.jpain in (0 1) and &_v.AXIAL in (0 1) then do;
  if 2<=sum(of &_v.RUP &_v.LLP &_v.LUP &_v.RLP &_v.AXIAL)<=4 then &_v._WSPb=1;
  else &_v._WSPb=0;
end;
  if &_v._WSPb=. then &_v._WSPb=.M;

```

** WSP definition C - from Tuhina;

```

  if (&_v.jpain=1 and max (of &_v.shdrr &_v.shdrl &_v.elbr &_v.elbl &_v.wrstr &_v.wrsl
    &_v.f1r &_v.f2r &_v.f3r &_v.f4r &_v.f5r &_v.f6r &_v.f7r &_v.f8r
    &_v.f9r &_v.f10r &_v.f11r &_v.f12r &_v.f13r &_v.f14r &_v.f15r
    &_v.f1l &_v.f2l &_v.f3l &_v.f4l &_v.f5l &_v.f6l &_v.f7l &_v.f8l
    &_v.f9l &_v.f10l &_v.f11l &_v.f12l &_v.f13l &_v.f14l &_v.f15l
    &_v.neck)=1) or
  (&_v.pain=1 and max(of &_v.nk &_v.ub &_v.mb)=1) then &_v.pain_above_waist=1;
  else if &_v.jpain in (0 1) and &_v.pain in (0 1) then &_v.pain_above_waist=0;

  if (&_v.jpain=1 and max (of &_v.hipr &_v.hipl &_v.knr &_v.knl &_v.anklr &_v.ankll
    &_v.ff1r &_v.ff2r &_v.ff3r &_v.ff4r &_v.ff5r &_v.ff6r &_v.ff7r &_v.ff8r &_v.ff9r
    &_v.ff1l &_v.ff2l &_v.ff3l &_v.ff4l &_v.ff5l &_v.ff6l &_v.ff7l &_v.ff8l &_v.ff9l
    &_v.bf1r &_v.bf2r &_v.bf3r &_v.bf4r &_v.bf5r &_v.bf6r &_v.bf7r &_v.bf8r &_v.bf9r
    &_v.bf1l &_v.bf2l &_v.bf3l &_v.bf4l &_v.bf5l &_v.bf6l &_v.bf7l &_v.bf8l &_v.bf9l)=1) or
  (&_v.pain=1 and &_v.lb=1) then &_v.pain_below_waist=1;
  else if &_v.jpain in (0 1) and &_v.pain in (0 1) then &_v.pain_below_waist=0;

  if &_v.pain=1 and max (of &_v.nk &_v.ub &_v.mb &_v.lb &_v.bk)=1 then &_v.back_neck_pain=1;
  else if &_v.pain in (0 1) then &_v.back_neck_pain=0;

  if &_v.jpain=1 and max (of &_v.shdrr &_v.elbr &_v.wrstr
    &_v.f1r &_v.f2r &_v.f3r &_v.f4r &_v.f5r &_v.f6r &_v.f7r &_v.f8r
    &_v.f9r &_v.f10r &_v.f11r &_v.f12r &_v.f13r &_v.f14r &_v.f15r
    &_v.hipr &_v.knr &_v.anklr
    &_v.ff1r &_v.ff2r &_v.ff3r &_v.ff4r &_v.ff5r &_v.ff6r &_v.ff7r &_v.ff8r &_v.ff9r
    &_v.bf1r &_v.bf2r &_v.bf3r &_v.bf4r &_v.bf5r &_v.bf6r &_v.bf7r &_v.bf8r &_v.bf9r)=1
  then &_v.pain_right=1;
  else if &_v.jpain in (0 1) then &_v.pain_right=0;
  if &_v.jpain=1 and max (of &_v.shdrl &_v.elbl &_v.wrsl
    &_v.f1l &_v.f2l &_v.f3l &_v.f4l &_v.f5l &_v.f6l &_v.f7l &_v.f8l
    &_v.f9l &_v.f10l &_v.f11l &_v.f12l &_v.f13l &_v.f14l &_v.f15l
    &_v.hipl &_v.knl &_v.ankll
    &_v.ff1l &_v.ff2l &_v.ff3l &_v.ff4l &_v.ff5l &_v.ff6l &_v.ff7l &_v.ff8l &_v.ff9l
    &_v.bf1l &_v.bf2l &_v.bf3l &_v.bf4l &_v.bf5l &_v.bf6l &_v.bf7l &_v.bf8l &_v.bf9l)=1
  then &_v.pain_left=1;

```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

```
else if &_v.jpain in (0 1) then &_v.pain_left=0;

if &_v.pain_above_waist=1 and &_v.pain_below_waist=1 and &_v.back_neck_pain=1 and
&_v.pain_right=1
and &_v.pain_left=1 then &_v._WSPc=1;
else if &_v.pain_above_waist in (0 1) and &_v.pain_below_waist in (0 1) and &_v.back_neck_pain in
(0 1)
and &_v.pain_right in (0 1) then &_v._WSPc=0;

array _WW &_v._wsp; ;
do over _ww; if (&_v.jpain=8 or &_v.pain=8 ) and _ww<0 then _ww=.D; if _ww=. then _ww=.M; end;

drop &_v.RUP &_v.LUP &_v.RLP &_v.LLP &_v.AXIAL
&_v.pain_above_waist &_v.pain_below_waist &_v.back_neck_pain &_v.pain_right &_v.pain_left;
run;
```

***Measurement: WIDESPREAD PAIN (WHOLE BODY)**

Study: MOST
Source name: V1WSP.SAS
Source type: Program
Author: J Niu, I Tolstykh
Created: September, 2008 modified January 2011

Input: Input dataset is V1ENROLL, V2ENROLL, V3ENROLL
Input variables are:
&_V.JPAIN and all variables on homunculus
&_V.PAIN, &_V.FREQ, &_V.NK, &_V.UB, &_V.MB, &_V.LB, &_V.BK

Output: &_v._WSPa: wide spread pain, definition 1 from Jeffrey & Neil
&_v._WSPb: wide spread pain, definition 2 from Jeffrey & Neil
&_v._WSPc: wide spread pain, definition from Tuhina (not calculated at 30M)

Summary: Create variables to indicate widespread pain

Definition A: From Jeffrey Curtis & Neil Segal

- 3 level wide spread pain
- 2: Widespread - pain in all 5 regions
- 0: No - no pain or pain only in hip or knee joint(s) but no other areas
- 1: Intermediate - any other pattern
- .M:missing

- The 5 regions are body quadrants and axes
- Right up: R shoulder, R elbow, R wrist (R hand in V1ENROLL and V2ENROLL?)
- Left up: L shoulder, L elbow, L wrist (L hand in V1ENROLL and V2ENROLL)
- Right low: R hip, R knee, R ankle (R foot in V1ENROLL) plus any R foot in foot diagram
- Left low: L hip, L knee, L ankle (L foot in V1ENROLL) plus any L foot in foot diagram?
- axes: neck on homunculus, or any back pain (neck, upper back, middle back, low back, buttock) all of time, most of the time, or some of the time on back graph (No back pain in V1ENROLL)

Definition B: From Jeffrey Curtis & Neil Segal

- 3 level wide spread pain, intermediate widespread pain based on Number of limbs plus axial pain
- 2: Widespread: 5 regions
- 1: Intermediate: 2-4 regions
- 0: No: 0-1 region
- .M:missing

- The 5 regions are body quadrants and axes, the same as in definition A

Definition C: From Tuhina Neogi

- 2 level wide spread pain
- 1: Yes - pain in all 5 regions
- 0: No - no pain or pain in less than 5 regions
- .M:missing
- The 5 regions are:
- Above waist: L/R shoulder, L/R elbow, L/R wrist, L/R hand (any of 15 joints),

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

- And neck on homunculus, neck, upper back, middle back on back graph
- Below waist: L/R hip, L/R knee, L/R ankle, L/R foot (any of 9 forefoot or 9 back foot sites) on homunculus low back on back graph
- Right side: R shoulder, R elbow, R wrist, R hand, R hip, R knee, R ankle, and R foot on homunculus
- Left side: L shoulder, L elbow, L wrist, L hand, L hip, L knee, L ankle, and L foot on homunculus
- Axes: neck, upper back, middle back, low back, buttock on back graph

Revisions: Not available

References: None

*****,

* &_v stands for visit: V0(baseline), V1(15M), V2(30M), etc ;

```
%macro definitionA;
%if &_v=V0 %then
%do;
&_v.handr=max(of &_v.f1r &_v.f2r &_v.f3r &_v.f4r &_v.f5r &_v.f6r &_v.f7r &_v.f8r
&_v.f9r &_v.f10r &_v.f11r &_v.f12r &_v.f13r &_v.f14r &_v.f15r);
&_v.handl=max(of &_v.f1l &_v.f2l &_v.f3l &_v.f4l &_v.f5l &_v.f6l &_v.f7l &_v.f8l
&_v.f9l &_v.f10l &_v.f11l &_v.f12l &_v.f13l &_v.f14l &_v.f15l);
%end;
%if &_v=V0 or &_v=V3 %then
%do;
&_v.footr=max(of &_v.ff1r &_v.ff2r &_v.ff3r &_v.ff4r &_v.ff5r &_v.ff6r &_v.ff7r &_v.ff8r &_v.ff9r &_v.bf1r
&_v.bf2r &_v.bf3r &_v.bf4r &_v.bf5r &_v.bf6r &_v.bf7r &_v.bf8r &_v.bf9r);
&_v.footl=max(of &_v.ff1l &_v.ff2l &_v.ff3l &_v.ff4l &_v.ff5l &_v.ff6l &_v.ff7l &_v.ff8l &_v.ff9l &_v.bf1l &_v.bf2l
&_v.bf3l &_v.bf4l &_v.bf5l &_v.bf6l &_v.bf7l &_v.bf8l &_v.bf9l);
%end;

*** axial***;
%if &_v=V0 or &_v=V2 or &_v=V3 %then
%do;
if &_v.neck =1 or (&_v.pain=1 and &_v.freq in (1 2 3)) then &_v.AXIAL=1;
else if (&_v.jpain =0 or &_v.neck=0) and &_v.pain in (0 1) then &_v.AXIAL=0;
%end;

%if &_v=V1 %then
%do;
if &_v.neck =1 then &_v.AXIAL=1;
else if (&_v.jpain =0 or &_v.neck=0) then &_v.AXIAL=0;
%end;
%mend definitionA;

%macro definitionC;
%if &_v =V1 %then %do;
if (&_v.jpain=1 and max (of &_v.shdrr &_v.shdrl &_v.elbr &_v.elbl &_v.wrstr &_v.wrstl
&_v.handr &_v.handl &_v.neck)=1)
then &_v.pain_above_waist=1;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

```

else if &_v.jpain in (0 1) then &_v.pain_above_waist=0;
if (&_v.jpain=1 and max (of &_v.hipr &_v.hipl &_v.knr &_v.knl &_v.anklr &_v.ankll
    &_v.footr &_v.footl)=1) then &_v.pain_below_waist=1;
else if &_v.jpain in (0 1) then &_v.pain_below_waist=0;
if &_v.jpain=1 and &_v.neck=1 then &_v.back_neck_pain=1;
else if &_v.jpain in (0 1) then &_v.back_neck_pain=0;
&_v.pain=.;
%end;

%else %do;
if (&_v.jpain=1 and max (of &_v.shdrr &_v.shdrl &_v.elbr &_v.elbl &_v.wrstr &_v.wrstl
    &_v.handr &_v.handl &_v.neck)=1) or
    (&_v.pain=1 and max(of &_v.nk &_v.ub &_v.mb)=1) then &_v.pain_above_waist=1;
else if &_v.jpain in (0 1) and &_v.pain in (0 1) then &_v.pain_above_waist=0;

if (&_v.jpain=1 and max (of &_v.hipr &_v.hipl &_v.knr &_v.knl &_v.anklr &_v.ankll
    &_v.footr &_v.footl)=1)
    or (&_v.pain=1 and &_v.lb=1) then &_v.pain_below_waist=1;
else if &_v.jpain in (0 1) and &_v.pain in (0 1) then &_v.pain_below_waist=0;

if &_v.pain=1 and max (of &_v.nk &_v.ub &_v.mb &_v.lb &_v.bk)=1
then &_v.back_neck_pain=1;
else if &_v.pain in (0 1) then &_v.back_neck_pain=0;
%end;

%mend definitionC;

```

data all; set all;

** WSP definitions - from Jeffrey and Neil;

* Pain in body quadrants on pain homunculus: 1/3 location (hand and feet are not counted (?)*;

```

    if &_v.jpain in (0 1) then do;
        &_v.RUP=0; &_v.LUP=0; &_v.RLP=0; &_v.LLP=0;
        if &_v.shdrr=1 or &_v.elbr=1 or &_v.wrstr=1 then &_v.RUP=1 ;
        if &_v.shdrl=1 or &_v.elbl=1 or &_v.wrstl=1 then &_v.LUP=1 ;
        if &_v.hipr=1 or &_v.knr=1 or &_v.anklr=1 then &_v.RLP=1 ;
        if &_v.hipl=1 or &_v.knl=1 or &_v.ankll=1 then &_v.LLP=1 ;
    end;

```

* Axial pain yes if

a) Had back pain during the past 30 d and frequency of back pain was all of the time, most of the time, or some of the time

or b) Had neck pain on homunculus;

```
%definitionA;
```

** WSP definition A - from Jeffrey and Neil;

* Yes - self-reported pain in all four body quadrants (1/3 sites) plus axial pain;

* Intermediate - pain limited to hips & knees, but not other sites;

* No - other subjects **;

```

if &_v.RUP=1 AND &_v.LLP=1 and &_v.LUP=1 and &_v.RLP=1 and &_v.AXIAL=1
then &_v._WSPa=2 ;

```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

```
else if &_v.jpain in (0 1) and &_v.AXIAL in (0 1) then do;
if max(of &_v.shdrr &_v.elbr &_v.wrstr &_v.anklr &_v.shdrl &_v.elbl &_v.wrsl &_v.ankll &_v.AXIAL)=0
  and max(of &_v.hipr &_v.knr &_v.hipl &_v.knl)=1 then &_v._WSPa=0;
else if max(of &_v.RUP &_v.LLP &_v.LUP &_v.RLP &_v.AXIAL)=0 then &_v._WSPa=0;
  else &_v._WSPa=1;
end;

if &_v._WSPa=. then &_v._WSPa=.M;

** WSP definition B - from Jeffrey and Neil;
* Defining intermediate widespread pain based on number of limbs plus axial pain;
* Yes - 5 regions;
* Intermediate - 2-4 regions;
* no - 0-1 region;
if &_v.RUP=1 AND &_v.LLP=1 and &_v.LUP=1 and &_v.RLP=1 and &_v.AXIAL=1
then &_v._WSPb=2 ;

else if &_v.jpain in (0 1) and &_v.AXIAL in (0 1) then do;
if 2<=sum(of &_v.RUP &_v.LLP &_v.LUP &_v.RLP &_v.AXIAL)<=4 then &_v._WSPb=1;
  else &_v._WSPb=0;
end;
if &_v._WSPb=. then &_v._WSPb=.M;

** WSP definition C - from Tuhina;
%definitionC;

if &_v.jpain=1 and max (of &_v.shdrr &_v.elbr &_v.wrstr &_v.handr &_v.hipr &_v.knr &_v.anklr &_v.footr )=1
then &_v.pain_right=1;
else if &_v.jpain in (0 1) then &_v.pain_right=0;
if &_v.jpain=1 and max (of &_v.shdrl &_v.elbl &_v.wrsl &_v.handl &_v.hipl &_v.knl &_v.ankll &_v.footl)=1
  then &_v.pain_left=1;
else if &_v.jpain in (0 1) then &_v.pain_left=0;

  if &_v.pain_above_waist=1 and &_v.pain_below_waist=1 and &_v.back_neck_pain=1 and
    &_v.pain_right=1 and &_v.pain_left=1
  then &_v._WSPc=1;
else if &_v.pain_above_waist in (0 1) and &_v.pain_below_waist in (0 1) and &_v.back_neck_pain in (0 1)
and &_v.pain_right in (0 1) then &_v._WSPc=0;

array _WW &_v._wsp; ;
do over _ww; if (&_v.jpain=8 or &_v.pain=8 ) and _ww<0 then _ww=.D;
if _ww=. then _ww=.M;
end;

drop &_v.RUP &_v.LUP &_v.RLP &_v.LLP &_v.AXIAL
&_v.pain_above_waist &_v.pain_below_waist &_v.back_neck_pain &_v.pain_right &_v.pain_left;
run;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

HISTORY AND STATUS

***Measurement: DIFFERENCE BETWEEN TELEPHONE INTERVIEW AND CLINIC VISIT (WEEKS)**

Study: MOST
 Source name: V0DATEDIFF_STATUS.SAS
 Source type: Program
 Author: J Niu
 Created: August 2008

Input dataset: &_V.ENROLL

Input: Date of Telephone Screening Interview and date of Clinic Visit
 Number of weeks between telephone screen and clinic visit
 &_V._TIDATE: page 1 in Telephone Interview
 &_V._CVDATE: page 1 in Clinic Visit

Output: &_V._DATEDIFF: Number of weeks between telephone screen and clinic visit

Summary: The variable was calculated as clinic visit date minus telephone screen date in week unit.
 - If either telephone screen date or clinic visit date is missing, set calculated variable to .M (missing).

References: Not available

Revisions: None

*****,

* &_v stands for visit: V0(baseline), V1(15M), V2(30M), etc ;

data all;
 set all;

/*Calculates the number of dates between telephone screen and clinic visit. */
 &_v._DATEDIFF= int((&_v._cvdate - &_v.tidate)/7);

/*Set special missing values */
 if &_v._cvdate <0 or &_v.tidate <0 then &_v._DATEDIFF=.M;
 run;

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

***Measurement: HEIGHT, WEIGHT, AND BODY MASS INDEX (BMI) AT 25-YEARS-OLD**

Study: MOST
Source name: V0BMI25.SAS
Source type: Program
Author: J Niu
Created: August 2008

Input: Input data set V0ENROLL
Input variables are: V0HTFT, V0HTIN, V0WT25 (self reported Height and Weight)

Output: V0_HT25: Height at 25 years old without shoes, mm
V0_WGHT25: Usual weight at 25 years old (not pregnant), kg
V0_BMI25: Body Mass Index (BMI) at 25 year old, kg/m**2

Summary: Calculate height in mm and weight in kg at about 25 years old.
BMI at about 25 was calculated as weight in kg at about 25 years old divided by the square of height in meter at about 25 years old

References: Not available

Revisions: None

Note: If self reported height at 25 years old is more then 100 mm different from the measured height at Baseline, then self reported value has been set to invalid or missing

*****,

* baseline only ;
data all; set all;

```
/* Height in mm at age 25 */  
v0ht25in=v0htft*12+v0htin;  
v0_HT25=round(v0ht25in*0.0254*1000, 1);
```

```
/* Weight in kg at age 25 */  
v0_WGHT25=round(v0wt25*.454, 1);
```

```
/* BMI at age 25 */  
v0_BMI25=round(v0wt25 * .454 / ((v0ht25in*0.0254) **2 ), 1);
```

```
drop v0ht25in;  
run;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

***Measurement: KNEE INJURIES AND KNEE SURGERY**

Study: MOST
 Source name: V0INJURYYEARS.SAS
 Source type: Program
 Author: I Tolstykh
 Created: August 2008

Input: Input datasets are V0ENROLL and X-ray QA
 Input variables are: &_V.LAR&_V.WAG1R, &_V.WAG2R, &_V.WAG3R, &_V.WDKR,
 &_V.SURGR, &_V.R_TKR &_V.KAG1R, &_KDKR, &_V.ARTR, &_V.AAG1R, &_V.AAG2R,
 &_V.AAG3R, &_V.ADKR &_V.MENR&_V.MAG1R, &_V.MAG2R, &_V.MAG3R, &_V.MDKR
 &_V.LIGR&_V.LAG1R, &_V.LAG2R, &_V.LAG3R, &_V.IDKR &_V.SOTHR,
 &_V.SAG1R, &_V.SAG2R, &_V.SAG3R, &_V.SODKR, &_V.LAL, &_V.WAG1L,
 &_V.WAG2L, &_V.WAG3L, &_V.WDKL, &_V.SURGL, &_V.L_TKR, &_V.KAG1L, &_V.KDKL
 &_V.ARTL, &_V.AAG1L, &_V.AAG2L, &_V.AAG3L, &_V.ADKL&_V.MENL, &_V.MAG1L,
 &_V.MAG2L, &_V.MAG3L, &_V.MDKL, &_v.ligl&_V.LAG1L, &_V.LAG2L, &_V.LAG3L,
 &_V.LDKL, &_V.SOTHL, &_V.SAG1L, &_V.SAG2L, &_V.SAG3L, &_V.SODKL

Output: &_V.R_INJYR: Years since last arthroscopy, RIGHT knee
 &_V.R_TKRYR: Years since first TKR, RIGHT knee
 &_V.R_ARTYR: Years since last arthroscopy, RIGHT knee
 &_V.R_MENYR: Years since last meniscectomy, RIGHT knee
 &_V.R_LIGYR: Years since last ligament repair, RIGHT knee
 &_V.R_OTHYR: Years since last surgery - Other, RIGHT knee
 &_V.L_INJYR: Years since last arthroscopy, LEFT knee
 &_V.L_TKRYR: Years since first TKR, LEFT knee
 &_V.L_ARTYR: Years since last arthroscopy, LEFT knee
 &_V.L_MENYR: Years since last meniscectomy, LEFT knee
 &_V.L_LIGYR: Years since last ligament repair, LEFT knee
 &_V.L_OTHYR: Years since last surgery - Other, LEFT knee

Summary: This macro calculates:
 - The number of years since last knee injury for each of the knees, left and right, or knee surgery such as arthroscopy, meniscectomy, arthroscopy, ligament repair or other unspecified surgery
 - The number of years since first total knee replacement (TKR), for each of the knees, left and right

References: Not available

Revisions: None

*****,

- * %LET _V=V0;
- * This code is written for use with data from any dataset, so it uses
- * generic macro variables to take the place of variable prefixes that change from year
- * to year, as follows:
- * &_v stands for the variable prefixes V0, V1, V2, etc ;
- * &_s stands for the side prefix or suffix R and L ;

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

```
%macro inj_yy(R1=LA, R2=INJ, R3=W );
data all; set all;
select (&_V.&R1&_S );
when (1) do;
if max(&_V.&R3.AG1&_S , &_V.&R3.AG2&_S., &_V.&R3.AG3&_S.)>=0
then &_V.&_S._&R2.YR = tsage-max(&_V.&R3.AG1&_S , &_V.&R3.AG2&_S., &_V.&R3.AG3&_S.);
else &_V.&_S._&R2.YR=.D;
end;
WHEN (0,8,.Q) &_V.&_S._&R2.YR=.Q;
otherwise &_V.&_S._&R2.YR=.M;
end;
run;
proc freq data=all;
tables &_V.&R1&_S*&_V.&_S._&R2.YR /missing list nopercnt;
format &_V.&_S._&R2.YR zerof.;
run;
proc print data=all;
where (&_V.&_S._&R2.YR=.D or &_V.&_S._&R2.YR<-1) and &_V.&_S._&R2.YR not in (.M, .Q);
var mostid tsage &_V.&_S._&R2.YR &_V.&R1&_S
&_V.&R3.AG1&_S. &_V.&R3.AG2&_S. &_V.&R3.AG3&_S. &_v.&R3.DK&_S. ;
run;
***put 0 to indicate the most recent injury/surgery***;
data all; set all;
if &_V.&_S._&R2.YR>.Z and &_V.&_S._&R2.YR<0 then &_V.&_S._&R2.YR=0;
run;
%mend inj_yy;
```

```
%macro TKR_yy(R2=TKR, R3=K );
data ALL; set ALL;
select (&_V.&_S._TKR );
when (1) do;
if &_V.&R3.AG1&_S.>=0 then &_V.&_S._&R2.YR = tsage-&_V.&R3.AG1&_S. ;
else &_V.&_S._&R2.YR=.D;
end;
otherwise &_V.&_S._&R2.YR=.Q;
end;
run;
proc freq data=ALL;
tables &_V.&_S._TKR*&_V.&_S._&R2.YR /missing list nopercnt;
format &_V.&_S._&R2.YR zerof.;
run;
proc print data=ALL;
where (&_V.&_S._&R2.YR=.D or &_V.&_S._&R2.YR<-1) and &_V.&_S._&R2.YR not in (.M, .Q);
var mostid site sex v0_tidate tsage v0_cvdate &_V.&_S._&R2.YR &_V.&_S._TKR &_v.SURG&_S.
&_V.&R3.AG1&_S. &_v.&R3.DK&_S. ;
run;
***put 0 to indicate the most recent injury/surgery***;
data all; set all;
if &_V.&_S._&R2.YR>.Z and &_V.&_S._&R2.YR<0 then &_V.&_S._&R2.YR=0;
run;
%mend tkr_yy;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

```
%let _S=R;  
%inj_yy(R1=LA, R2=INJ, R3=W );  
%inj_yy(R1=ART, R2=ART, R3=A );  
%inj_yy(R1=MEN, R2=MEN, R3=M );  
%inj_yy(R1=LIG, R2=LIG, R3=L );  
%inj_yy(R1=SOTH, R2=OTH, R3=S );  
%TKR_yy(R2=TKR, R3=K );
```

```
%let _S=L;  
%inj_yy(R1=LA, R2=INJ, R3=W );  
%inj_yy(R1=ART, R2=ART, R3=A );  
%inj_yy(R1=MEN, R2=MEN, R3=M );  
%inj_yy(R1=LIG, R2=LIG, R3=L );  
%inj_yy(R1=SOTH, R2=OTH, R3=S );  
%TKR_yy(R2=TKR, R3=K );  
run;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

***Measurement: HIP AND SPINE FRACTURES**

Study: MOST
Source name: V0FXHIPSPINE.SAS
Source type: Program
Author: J Niu
Created: August 2008

Input: Input dataset is V0ENROLL
Input variables are:
&_V.BONE, &_V.FXHIP, &_V.SPINE

Output: &_V._FXHIPSP: Fracture of hip or spine reported

Summary: Create hip or spine fracture variable
- 1 (Yes)
Participant reported hip fracture after age 45, or spine/vertebrae fracture.
- 0 (No)
Participant reported no fracture or fracture but no hip fracture after age 45, and no spine/vertebrae fracture.
- .D (Don't know)
Participant reported "Don't know" to fracture after age 45 or reported "Don't know" to spine/vertebrae fracture.

References: Not available

Revisions: None

*****,

* &_V stands for visit: V0(baseline);

data all; set all;

```
if &_v.fxhip=1 or &_v.spine=1 then &_v._FXHIPSP=1;  
else if (&_v.bone=0 or (&_v.bone=1 and &_v.fxhip=0)) and &_v.spine=0  
then &_v._FXHIPSP=0;  
else if &_v.bone=8 or (&_v.bone=1 and &_v.fxhip=8) or &_v.spine=8  
then &_v._FXHIPSP=.D;
```

```
format &_v._FXHIPSP yndn.;  
run;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

***Measurement: HIP AND SPINE FRACTURES**

Study: MOST
Source name: V1FXHIPSPINE.SAS
Source type: Program
Author: J Niu
Created: August 2008

Input: Input dataset is V1ENROLL, V2ENROLL, V3ENROLL
Input variables are:
&_V.BONE, &_V.FXHIP, &_V.SPINE

Output: &_V._FXHIPSP: Fracture of hip or spine reported

Summary: Create hip or spine fracture variable
- 1 (Yes)
Participant reported hip fracture after age 45, or spine/vertebrae fracture.
- 0 (No)
Participant reported no fracture or fracture but no hip fracture after age 45, and no spine/vertebrae fracture.
- .D (Don't know)
Participant reported "Don't know" to fracture after age 45 or reported "Don't know" to spine/vertebrae fracture.

References: Not available

Revisions: None

*****,

```
* &_v stands for visit: V1(15M), V2(30M), etc ;  
data all;  
  set all;  
  if nmiss(&_v.bone)=1 or (&_v.bone=1 and nmiss(&_v.fxhip,&_v.spine)=2) then &_v._FXHIPSP=.M;  
  
  else if &_v.fxhip=1 or &_v.spine=1 then &_v._FXHIPSP=1;  
  
  else if (&_v.bone=0 or (&_v.bone=1 and &_v.fxhip=0 and &_v.spine=0)) then &_v._FXHIPSP=0;  
  
  else if &_v.bone=8 or (&_v.bone=1 and &_v.fxhip=8) or (&_v.bone=1 and &_v.spine=8) then  
&_v._FXHIPSP=.D;  
  format &_v._FXHIPSP yndk. ;  
run;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

***Measurement: WORK HISTORY**

Study: MOST
 Source name: V0WYEAR.SAS
 Source type: Program
 Author: J Niu
 Created: August 2008

Input: Input dataset is V0ENROLL
 Input variables are: &_V.DRIVE, &_V.DRYR, &_V.BEND, &_V.BNYR, &_V.WLKA, &_V.WAYR, &_V.WLKB, &_V.WBYR, &_V.STAND, &_V.STYR, &_V.WKNEEL, &_V.KLYR, &_V.SQUAT, &_V.SQYR, &_V.CLIMB, &_V.CLYR&_V.LIFT, &_V.LFYR

Output: &_V._DRYRCAT: Years work req drive>=4 hrs/day?, category
 &_V._BNYRCAT: Years work bend>=2 hrs/day?, category
 &_V._WAYRCAT: Years work req walking>=2 hrs/day?, category
 &_V._WBYRCAT: Years work req walking>=2 hrs/day?, category
 &_V._STYRCAT: Years work req standing>=2 hrs/day?, category
 &_V._KLYRCAT: Years work req kneel>=30 min/day?, category
 &_V._SQYRCAT: Years work req squat>=30 min/day?, category
 &_V._CLYRCAT: Years work req climb stairs>=10 flight/d?, category
 &_V._LFYRCAT: Years work req movg obj>=25 lbs/day?, category

Summary: Calculate length of period subject self-reported performing specific activity at work.
 - 0 (no)
 Participant never did a specific activity at work or "Don't know" whether they did a specific activity at work
 - 1 (<10 years)
 Participant did a specific activity at work, and did it less than 10 years
 - 2 (10-19 years)
 Participant did a specific activity at work, and did it 10-19 years
 - 3. (>=20 years)
 Participant did a specific activity at work for 20 years or longer
 - .D (Don't know)
 Participant did a specific activity at work, and did not report the number of years or reported as 0 years
 - .M (Missing)
 Participant did not answer about specific activity at work

References: Not available

Revisions: None

*****,

- * &_v stands for visit: V0(baseline), V1(15M), V2(30M), etc ;
- * &_wk stands for activities at work;
- * &_wkylr stands for activities at work in work year variables ;

```
%macro WYear1(_wk, _wkylr);
data all; set all;
  if &_v.&_wk in (0,8) then &_v.&_wkylr.YRCAT=0;
  else if &_v.&_wk=1 then do;
    if 1<=&_v.&_wkylr.yr <=9 then &_v.&_wkylr.YRCAT=1; else
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

```
if 10<=&_v.&_wkyr.yr <=19 then &_v.&_wkyr.YRCAT=2; else
if 20<=&_v.&_wkyr.yr then &_v.&_wkyr.YRCAT=3; else
if &_v.&_wkyr.yr<=0 then &_v.&_wkyr.YRCAT=.D;
end;
else if &_v.&_wk = . then &_v.&_wkyr.YRCAT=.M;
format &_v.&_wkyr.YRCAT wkcatf.;
run;
```

```
%mend WYear1;
```

```
%WYear1(drive, DR) ;
%WYear1(bend, BN);
%WYear1(wlka, WA);
%WYear1(wlkb, WB);
%WYear1(stand, ST);
%WYear1(wkneel, KL);
%WYear1(squat, SQ);
%WYear1(climb, CL);
%WYear1(lift, LF);
run;
```

***Measurement: TOBACCO USE**

Study: MOST
 Source name: SMOKE.SAS
 Source type: Program
 Author: F Harris, A Coutts (adapted from HealthABC)
 Created: September 2005

Input: Input dataset is V0ENROLL, TSCREEN
 Input variables are:
 V0SMOKE, V0SKAGE, V0SKAVE, V0SKNOW, V0SKAMT, V0SKSTP, TSAGE

Output: V0SMK: Smoking status at baseline 0=never, 1=current, 2=former
 V0PACKYR: Smoking - Pack-years exposure to cigarettes

Summary: V0SMK – This is the variable that should be used to classify participants as never/current/former smokers.
 V0PACKYR – This is the main variable for smoking status to describe pack-years exposure to cigarettes. It was also calculated based on HealthABC code.

References: Not available

Revisions: None

*****,

```
data all; set all;
  *** Smoking status at baseline 0=never, 1=current, 2=former ***;
  if V0SMOKE=0 then V0SMK=0; else
  if V0SMOKE=1 and V0SKNOW=1 then V0SMK=1; else
  if V0SMOKE=1 and V0SKNOW=0 then V0SMK=2; else V0SMK=.M;
  *** Pack Years of Cigarette Use ***;
  V0packyr=.m;
  if V0SMOKE=0 then V0PACKYR=0;
  ***If nonsmoker then V0PACKYR is 0; ***Those missing or refusing 100 cigs in life question are set to
  missing; ***begin packyear calculations for current/former smokers;

  else if V0SMOKE = 1 then do;
  **reset age beginning for those under the age of 10 to 10;
  if 2 < V0SKAGE < 10 then V0SKAGE = 10;
  **Case 1: Current smoker, with all present data;
  If V0SKNOW = 1 then yrssmoke= TSAGE - V0SKAGE;
  if yrssmoke > 0 then do;
  if V0SKNOW = 1 and V0SKAVE > 0 then V0PACKYR = ceil(V0SKAVE*yrssmoke/20);
  **Case 1b: current smoker missing average amount smoked;
  if V0SKNOW = 1 and V0SKAVE le 0 and V0SKAMT > 0 then
  V0PACKYR=ceil(V0SKAMT *yrssmoke/20); end;
  If V0SKNOW=0 then do;
  **Case 2: Former smoker, all present and consistent data;
  if V0SKSTP > V0SKAGE and V0SKAGE ge 10 then yrssmoke=V0SKSTP-V0SKAGE;
  **if started and stopped in the same year set yrssmoke to 1;
  if V0SKSTP > 0 and V0SKSTP = V0SKAGE then yrssmoke = 1;
  if yrssmoke > 0 and V0SKAVE > 0 then V0PACKYR=ceil(V0SKAVE*yrssmoke/20);
  end; end;
run;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

***Measurement: TOBACCO USE (ANY USED)**

Study: MOST
Source name: V0SMK3.SAS
Source type: Program
Author: J Nui
Created: August 2008

Input: Input dataset is V0ENROLL
Input variables are: &_V.SMOKE, &_V.CHEW, &_V.PIPE

Output: &_V._SMK3: Any tobacco used, 3 types

Summary: Create variable to indicate the different tobacco uses:
- 1 (Yes)
If the subject either smoked at least 100 cigarettes in entire life, or ever used chewing tobacco or snuff on a regular basis, or ever smoked a pipe or cigars regularly, set the calculated variable to 1 (Yes).
- 0 (No)
If reported none of the 3 types of tobacco use, set the calculated variable to 0 (No).
- .M
If any of the 3 types of tobacco use information is missing, set the calculated variable to .M (Missing).

References: Not available

Revisions: None

*****,

* &_v stands for visit: V0(baseline), V1(15M), V2(30M), etc ;

data all;set all;

```
/*Calculate Cigarettes, tobacco, or pipe - smoking status. */  
if &_v.smoke=1 or &_v.chew=1 or &_v.pipe=1 then &_v._SMK3=1;  
else &_v._SMK3=0;
```

```
/*Set special missing values */  
if &_v.smoke<=.Z or &_v.chew<=.Z or &_v.pipe<=.Z then &_v._SMK3=.M;  
format &_v._smk3 ynkn.;  
run;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

***Measurement: MEDICATION INVENTORY (MIF): IDIS INGREDIENT DATABASE (USE IN LAST 30 DAYS)**

Study: MOST
Source name: MIF.SAS
Source type: Program
Author: I Tolstykh
Created: March 2007

Input: Input dataset is a multiple record per ID dataset that contains a list of the ingredients present in the prescription medication that the participants reported during clinic visit.

Output: &_V.SAME: Medication Inventory - S-Adenosyl-Methionine (SAMe)
&_V.ALENDR: Medication Inventory - Alendronate
&_V.ANALGS: Medication Inventory - Analgesics
&_V.BISHOPS: Medication Inventory - Bisphosphonates
&_V.CALCIT: Medication Inventory - Calcitonin
&_V.CALCUM: Medication Inventory - Calcium Supplements
&_V.CHONDR: Medication Inventory - Chondroitin
&_V.CSTERD: Medication Inventory - Corticosteroids, not including inhaled corticosteroids
&_V.COXII: Medication Inventory - COX II inhibitors
&_V.MSM: Medication Inventory - Dimethyl Sulfone (MSM)
&_V.DOXY: Medication Inventory - Doxycycline
&_V.ESTROG: Medication Inventory - Estrogens
&_V.FLUOR: Medication Inventory - Fluorides
&_V.GLCSMN: Medication Inventory - Glucosamine
&_V.HYALUR: Medication Inventory - Hyaluronate
&_V.NARCAN: Medication Inventory - Narcotic Analgesics
&_V.NSAID: Medication Inventory - NSAIDs
&_V.PROGST: Medication Inventory - Progestins
&_V.RALOX: Medication Inventory - Raloxifene
&_V.RISED: Medication Inventory - Risedronate
&_V.SALICY: Medication Inventory - Salicylates
&_V.TPTD: Medication Inventory - Teriparatide
&_V.VITMND: Medication Inventory - Vitamin D and Derivatives
&_V.OSTEOP: Medication Inventory - Osteoporosis Medications
&_V.DIABMED: Medication Inventory - Diabetes Medications
&_V.RAMED: Medication Inventory - Rheumatoid Arthritis Medications

Summary: The complete Medication Inventory Form data is released as separate dataset &_V.MIF. Note that some participants did not report taking any medications in the past 30 days. The raw dataset has intentional blank records for participants who reported no medication usage. This raw dataset also contains multiple records for participants who reported taking more than one medication in the past 30 days or if reported medication has more than one ingredient. Special missing values (.M) have been assigned in the MIF datasets for medications that were reported, but other details about the medication were missing/not answered (e.g., formulation codes were not asked prior to December 2004, so a majority of the records in the raw dataset do not have formulation code.) The IDIS ingredient code variable in the raw dataset is &_V.CODE and the IDIS ingredient name is &_V.NAME. The INGCODE inclusion/exclusion conditions are described in the table &_V.MIF IDIS Legend on the MOST website.

References: Not available

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

Revisions: Starting in 2009 the list of medication expanded to include the Diabetes and Rheumatoid Arthritis medications.

*****,

* &_v stands for visit: V0(baseline), V1(15M), V2(30M), etc ;
*prepare merge with MIF dataset from contents file;

```
data dd1; set varlist( where=(index(description,'MIF')>0 or index(method,'INGCODE')>0));  
run;
```

```
data _null_; file newmif; set dd1;  
put @3 &vname ;  
run;  
data _null_; file newcode; set dd1;  
put @3 'if (' method ') then ' &vname '=1;';  
run;
```

```
proc sort data=&lib..&_v.mif(keep=mostid &_v.code)  
out=mif(rename=(&_v.code=ingcode));  
by mostid;  
run;
```

```
data mif1(keep=mostid &_v.); set mif;  
by mostid;  
retain %include newmif; . ;  
array _vv &_v.;;  
if first.mostid then do; do over _vv; _vv=0; end; end;  
%include newcode;  
if last.mostid then output;  
run;
```

```
data all; merge all mif1;  
by mostid;  
run;
```


***Measurement: ASSISTIVE DEVICES CURRENTLY USED**

Study: MOST
Source name: V3DEVICE.sas
Source type: Program
Author: I Tolstykh
Created: Feb 10 2011

Input: Input dataset is V3ENROLL, V3MCVTI
Input variables are: V3AICANE, V3AICRUT, V3AIWLK, V3AIWHL, V3AIOTH, V3AOCANE, VAOCRUT, V3AOWLK, V3AOWHL, V3Aooth, V3ASCANE, V3ASLIFT, V3ASELEV, V3ASOTH, V3AUCHR, V3AUCANE, V3AUWLK, V3AUCRUT, V3AUTLT, V3AUGRAB, V3AUOTH

Output: &_v.DEVICE:

Summary: This code evaluates how many helpful aids and devices each participant uses.

References: Not available

Revisions: None

*****,

* &_v stands for visit: V0(baseline), V1(15M), V2(30M), etc ;

```
data all; set all;
if length(&_v.shsid)=3 or &_v._mcvti=1 then do;
    &_v.device=max(&_v.AICANE, &_v.AICRUT, &_v.AIWLK, &_v.AIWHL, &_v.AIOth,
    &_v.AOCANE, &_v.AOCRUT, &_v.AOWLK, &_v.AOWHL, &_v.AOOTH, &_v.ASCANE,
    &_v.ASLIFT, &_v.ASELEV, &_v.ASOTH, &_v.AUCHR, &_v.AUCANE, &_v.AUWLK,
    &_v.AUCRUT, &_v.AUTLT, &_v.AUGRAB, &_v.AUOTH);
end;
run;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

EXAMS

***Measurement: 20-METER WALK**

Study: MOST
Source name: V0WALKTS.SAS
Source type: Program
Author: J Niu
Created: August 2008

Input: Input dataset is V0ENROLL, V2ENROLL, V3ENROLL
Input variables are: &_V.WALK1, &_V.WALKT1, &_V.STEP1, &_V.WALK2, &_V.WALKT2, &_V.STEP2

Output: &_V._STEP: 20-meter Walk - Average number steps
&_V._WALKT: 20-meter Walk - Average time, seconds

Summary: Calculate average 20 meter walk time, average 20 meter walk steps

- If both trials were completed, calculated variable is the average of the 2 trials
- If only 1 trial was completed, calculated variable is the value from the completed trial
- .Q (not required)

If participant did not do any of the trials (refused; did not attempt, unable, or attempted but unable to complete at least one trial, etc) set calculated variable to .Q (not required).

- .M (missing)

If participant did trials, but the measure of walk time or steps is missing, set corresponding calculated variable to .M (missing).

References: Not available

Revisions: None

*****,

* &_V stands for visit: V0(baseline), V1(15M), V2(30M), etc ;

data all;

set all;

/*Calculate average walk time, walk steps of the two trials.*/

if nmiss(&_v.walkt1, &_v.walkt2)<2 then &_v._WALKT = round(mean(&_v.walkt1, &_v.walkt2), .01);

if nmiss(&_v.step1, &_v.step2)<2 then &_v._STEP = round(mean(&_v.step1, &_v.step2), 1);

/*Set special missing values*/

if &_v.walk1 ne 1 and &_v.walk2 ne 1 then do;

&_v._WALKT=.Q;

&_v._STEP=.Q;

end;

else if &_v.walk1 =1 or &_v.walk2 =1 then do;

if &_v._WALKT=. then &_v._WALKT=.M;

if &_v._STEP=. then &_v._STEP=.M;

end;

run;

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

***Measurement: CHAIR STANDS**

Study: MOST
 Source name: V0CHAIR.SAS
 Source type: Program
 Author: J Nui
 Created: August 2008

Input: Input dataset is V0ENROLL
 Input variables are: &_V.CHAIR, &_V.TR1, &_V.CTIME1, &_V.TR2, &_V.CTIME2

Output: V0_CTIME: Chair Stands - Average time, five chair stands, seconds

Summary: Calculate average time to complete 5 stands without using arms.
 - If both trials of the repeated chair stands were completed, the calculated variable is the average of the 2 trials
 - If only 1 trial of the repeated chair stands was completed, the calculated variable is the value from the completed trial.
 - .Q (not required)
 If the participant did not complete any repeated chair stands without rising using arms, refused the trial, did not attempt or attempted but was unable to complete, set the calculated variable to .Q: (not required).
 - .M (missing)
 If participant completed repeated chair stands trial(s), but the time measure was missing, set the calculated variable to .M: missing

References: Not available

Revisions: None

*****;

* &_v stands for visit: V0(baseline), V1(15M), V2(30M), etc.;
 data all;
 set all;

/*Calculate average time to complete 5 standings without using arm */
 &_v._CTIME = round(mean(&_v.ctime1, &_v.ctime2), .01);

/*Set special missing values */
 if &_v.chair in (2,3,4,7, .) and &_v._CTIME=.
 then &_v._CTIME =.Q;
 else
 if &_v.chair =1 and &_v.tr1 in (2,3,4,7,.Q,.M) and &_v.tr2 in (2,3,4,7,.Q,.M) then
 &_v._CTIME =.Q;
 else
 if (&_v.tr1 =1 or &_v.tr2 =1) and &_v._CTIME =. then &_v._CTIME =.M;
 run;

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

***Measurement: ISOKINETIC THIGH MUSCLE STRENGTH (FLEXION AND EXTENSION)**

Study: MOST
 Source name: VOISOSTR.SAS
 Source type: Program
 Author: J Niu
 Created: August 2008

Input: Input dataset is V0ENROLL, V3ENROLL
 Input variables are: &_V.TESTL, &_V.DONEL, &_V.FLX1L-&_V.FLX4L, &_V.EXT1L-&_V.EXT4L, &_V.TESTR, &_V.DONER, &_V.FLX1R-&_V.FLX4R, &_V.EXT1R-&_V.EXT4R

Output: &_V.L_FLXMAX: Highest torque, maximum flexion, LEFT leg
 &_V.L_EXTMAX: Highest torque, maximum extension, LEFT leg
 &_V.L_HSQ: Thigh strength defined by hamstring to quadriceps ratio, LEFT leg
 &_V.R_FLXMAX: Highest torque, maximum flexion, RIGHT leg
 &_V.R_EXTMAX: Highest torque, maximum extension, RIGHT leg
 &_V.R_HSQ: Thigh strength defined by hamstring to quadriceps ratio, RIGHT leg

Summary: Calculate maximal flexion/extension torques in each leg, as maximal value of the 4 trials.
 Calculate ratio of maximal flexion and maximal extension in each leg.
 - If two or more trials were completed, calculated variable is the maximum of the trials.
 - If only 1 trial was completed, calculated variable is the value from the completed trial.
 - If the test was not done in the leg, set calculated variable to .Q (not required).
 - If the test was done, but the entire trial set measurement was missing in the leg, set calculated variable to .M (missing).

References: Not available

Revisions: None

*****,

* &_v stands for the visit: V0(baseline), V1(15M), V2(30M), etc ;
 * &_s stands for the side: L(left), R(right) ;
 * &_str stands for isokinetic strength: FLX(flexion), EXT(extension);

```
%macro IsoStr1(_s, _str);
/* calculate maximal flexion, extension strength in each knee*/
&_v.&_s._&_str.max = max(&_v.&_str.1&_s., &_v.&_str.2&_s., &_v.&_str.3&_s., &_v.&_str.4&_s.);
/*Set special missing values */
if &_v.test&_s. in (0, .) then &_v.&_s._&_str.max =.Q;
else if &_v.test&_s. =1 and &_v.done&_s. in (0, ., .Q) then &_v.&_s._&_str.max =.M;
%mend IsoStr1;
```

```
%macro IsoStr2(_s);
/* calculate maximal flexion/ maximal extension strength ratio in each knee*/
&_v.&_s._HSQ= round(&_v.&_s._FLXmax / &_v.&_s._EXTmax, .01);
/*Set special missing values */
if &_v.test&_s. in (0, .) then &_v.&_s._HSQ =.Q;
else if &_v.test&_s. =1 and &_v.done&_s. in (0, ., .Q) then &_v.&_s._HSQ =.M;
%mend IsoStr2;
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

```
data all; set all;
```

```
/* calculate maximal flexion, extension strength in each knee*/
```

```
%IsoStr1(L, FLX)
```

```
%IsoStr1(R, FLX)
```

```
%IsoStr1(L, EXT)
```

```
%IsoStr1(R, EXT)
```

```
/* calculate maximal flexion/ maximal extension strength ratio in each knee*/
```

```
%IsoStr2(L)
```

```
%IsoStr2(R)
```

```
run;
```

***Measurement: HAND EXAM**

Study: MOST
 Source name: V0HANDOACOUNT.SAS
 Source type: Program
 Author: Yanyan Zhu
 Created: August 2008

Input: Input dataset is V0ENROLL
 Input variables are: &_V.H1L - &_V.H10L, &_V.H1R - &_V.H10T

Output: &_V.R_HJMIS: Number of hand joints unable to measure: RIGHT
 &_V.R_HJOA: Number of hand joints with bony enlargement: RIGHT
 &_V.L_HJMIS: Number of hand joints unable to measure: LEFT
 &_V.L_HJOA: Number of hand joints with bony enlargement: LEFT

Summary: Create variables to indicate how many hand joints with bony enlargement
 - Possible values: 0-10:
 LEFT hand (10 joints),
 RIGHT hand (10 joints).
 - Missing
 If the exam was not done for any reason in a joint, then that joint was set to missing.
 - 0
 If the examiner determined a joint was Normal or Uncertain, then that joint was set to normal (0).
 - 1
 If the examiner determined Bony enlargement in a joint, then that joint was set to 1.

References: Not available

Revisions: None

*****,

- * &_v stands for visit: V0(baseline), V1(15M), V2(30M), etc ;
- * &_s stands for the side: L(left), R(right) ;
- * &_jt stands for the area: H(hand);
- * &_n stands for the number of joints in an are;

```
%macro JTvar(_s, _jt, _n);
%global &_v.&_jt.&_s &_v.&_jt.&_s.new;
%do i=1 %to &_n;
  %if &i=1 %then %do;
    %let &_v.&_jt.&_s =;
    %let &_v.&_jt.&_s.new =;
  %end;
  %let &_v.&_jt.&_s = &&&_v.&_jt.&_s &_v.&_jt.&i.&_s;
  %let &_v.&_jt.&_s.new = &&&_v.&_jt.&_s.new &_v.&_jt.&i.&_s.new;
%end;
%put &_v.&_jt.&_s= &&&_v.&_jt.&_s;
%put &_v.&_jt.&_s.new= &&&_v.&_jt.&_s.new;
%mend JTvar;
```

```
%JTvar(L, H, 10);
```

NOTE: For the data collection forms, refer to the annotated forms (V5AnnotatedForms.PDF). Workbook page numbers for each variable are provided in the overview table.

```
%JTvar(R, H, 10);

%macro JTvar3(_s, _jt);
array &_v.&_jt.&_s.1 &&&_v.&_jt.&_s;
array &_v.&_jt.&_s.new1 &&&_v.&_jt.&_s.new;
do over &_v.&_jt.&_s.1;
if &_v.&_jt.&_s.1 in (.Q, 8) then &_v.&_jt.&_s.new1=.;
else if &_v.&_jt.&_s.1 =2 then &_v.&_jt.&_s.new1=1;
else &_v.&_jt.&_s.new1=0;
end;
if nmiss(of &&&_v.&_jt.&_s.new)>2 then &_v.&_s._HJOA=.Q;
else &_v.&_s._HJOA=sum(of &&&_v.&_jt.&_s.new);
%mend JTvar3;

%macro JTvar4(_s, _jt);
array &_v.&_jt.&_s.1 &&&_v.&_jt.&_s;
array &_v.&_jt.&_s.new1 &&&_v.&_jt.&_s.new;
do over &_v.&_jt.&_s.1;
if &_v.&_jt.&_s.1 in (.Q, 8,..M) then &_v.&_jt.&_s.new1=.;
else if &_v.&_jt.&_s.1 =2 then &_v.&_jt.&_s.new1=1;
else &_v.&_jt.&_s.new1=0;
end;
&_v.&_s._HJMis=nmiss(of &&&_v.&_jt.&_s.new);
if nmiss(of &&&_v.&_jt.&_s.new)=10 then &_v.&_s._HJOA=.Q;
else &_v.&_s._HJOA=sum(of &&&_v.&_jt.&_s.new);
%mend JTvar4;

data all; set all;
/*%JTvar3(R,H);
%JTvar3(L,H);*/
%JTvar4(R,H);
%JTvar4(L,H);

drop &&&_v.HLnew &&&_v.HRnew;
run;
```