**Creation of MVP Frailty Index v.20\_1**

1. **Study sample**

The MVP frailty index was derived using enrolled MVP participants who completed both the MVP Baseline and Lifestyle surveys v20.1 (N=336,574). The dataset contains all participants who completed both surveys, regardless of their age or the time interval between the survey completion dates.

1. **Construction of MVP Frailty Index**

The selection of the survey items included in the MVP frailty index was based on physician input (Ariela Orkaby, Benjamin Seligman, Manas Rane). **Table 1** (pages 2-4) shows the 33 MVP Baseline and Lifestyle survey items that were included in the MVP frailty index calculation. Each survey item was recoded so that a value of 1 represented having a worse outcome. **Table 2** (page 5) shows a summary of the MVP frailty index composite scores.

* MVP Frailty Index Score [MVPFI\_SCORE]= Sum of values for the 33 FI components / Total items completed
* MVP FI scores were categorized into 3 groups [MVPFI\_CAT]: Robust (0-0.10), Prefrail (0.11-0.20), and Frail (≥0.21)
* If a participant was missing ≥7 (~20%) of the 33 FI score items, their frailty score was set to missing
	+ The dataset also contains a participant’s raw frailty index score, which does not make any exclusions for missing values [MVPFI\_SCORE\_RAW, MVPFI\_CAT\_RAW]
1. **Program code and data sources**

|  |  |  |
| --- | --- | --- |
| **SAS Program** | **Input Datasets** | **Output Dataset** |
| Create\_MVPFI\_survey\_v20\_1\_FINAL\_230607.sasLocation: P:\ORD\_MVP\_001\Preis, Sarah\PROJECTS\21\_MVP\_Frailty\_Index\0\_MVP\_FI\_FINAL | [ORD\_MVP\_001].[MVP].[CoreDemo\_v20\_1][ORD\_MVP\_001].[MVP].[Baseline\_v20\_1][ORD\_MVP\_001].[MVP].[Lifestyle\_v20\_1] | MVPFI\_survey\_v20\_1\_FINAL\_230607.sas7bdatLocation:/data/dart/2017/ord\_mvp\_001/Preis, Sarah |

1. **Analysis considerations**

The dataset below contains all participants who completed the Baseline and Lifestyle surveys. However, in our primary analysis of the association between the MVP frailty index and mortality, we excluded the following participants:

* 1. Missing ≥7 (~20%) of the 33 FI score items
	2. Completed the Lifestyle survey >30 days before or >1 year after the Baseline Survey
	3. Age <50 years

**Table 1.** Summary of MVP Baseline and Lifestyle Questionnaire Items Used to Create the MVP Frailty Index.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **FI****Domain** | **FI Item #** | **MVP Survey Question****(B=Baseline, L=Lifestyle)** | **MVP Survey Variable Name** | **MVP FI Variable Name** | **MVP FI Variable Coding** |
| **Health****Status****And****Function** | 1 | **B35b.** Does your health limit you in climbing several flights of stairs? | VR12Q3 | MVPFI\_LIMIT\_STAIRS | 0=Not limited0.5=Limited a little1=Limited a lot  |
| 2 | **L20.** How would you rate the health of your teeth and gums? | Teeth | MVPFI\_DENTALHEALTH | 0=Excellent/very good/good1=Fair/poor  |
| 3 | **L25.** Usual walking pace | WalkSpd | MVPFI\_WALKSPD | 0=Brisk/very brisk/normal, average (≥2 mph)0.5=Easy, casual (<2 mph)1=Unable to walk  |
|  | **L29.**In the past week, have you required assistance in the following activities due to a health condition? |  |  |  |
| 4 | Bathing | AsstBath | MVPFI\_ASSTBATH | 0=No assistance needed0.5=Some assistance needed1=Dependent*Code “4-I do not do this activity” as missing.* |
| 5 | Eating | AsstEat | MVPFI\_ASSTEAT |
| 6 | Transferring | AsstTrnsfr | MVPFI\_ASSTTRNSFR |
| 7 | Using toilet | AsstTtl | MVPFI\_ASSTTLT |
| 8 | Walking around home | AsstWlk | MVPFI\_ASSTWALK |
| 9 | Dressing | AsstDrss | MVPFI\_ASSTDRSS |
| 10 | Preparing meals | AsstMeal | MVPFI\_ASSTMEAL |
| 11 | Managing money | AsstMoney | MVPFI\_ASSTMONEY |
| 12 | Doing household chores | AsstChore | MVPFI\_ASSTCHORE |
| 13 | Taking medications properly | AsstMeds | MVPFI\_ASSTMEDS |
| **Mood** | 14 | **B39a.** During the past 4 weeks, how much of the time have you *felt calm and peaceful?* | VR12Q9 | MVPFI\_FELTCALM | 0=All of the time0.25=Most of the time0.50=Good bit/some of the time0.75=A little of the time1=None of the time  |
| 15 | **B39c**. During the past 4 weeks, how much of the time *have you felt downhearted/blue?* | VR12Q11 | MVPFI\_FELTBLUE | 0=None of the time0.25=A little bit of the time0.50=Good bit/some of the time0.75=Most of the time1=All of the time  |
| 16 | **B43.** Anxiety | MHAnxPanMHAnxPanMed | MVPFI\_ANXIETY | 0=No, 1=Yes |
| 17 | **B43.** Depression | MHDepMHDepMed | MVPFI\_DEPRESSION | 0=No, 1=Yes |
| **Cognition** | 18 | **B43.** Dementia/Memory Loss | NSMemLossNSMemLossMedNSDemNSDemMed | MVPFI\_MCI\_DEMENTIA | 1=Dementia0.5=MCI0=none |
| **Comor-bidities** | 19 | **B43.** Hypertension | circhtncirchtnmed | MVPFI\_HTN | 0=No, 1=Yes |
| 20 | **B43.** Diabetes | DoDMDoDMMed | MVPFI\_DM | 0=No, 1=Yes |
| 21 | **B43.** Stroke/TIA | CircStrkCircStrkMedCircTIACircTIAMed | MVPFI\_STRKTIA | 0=No, 1=Yes |
| 22 | **B43.** MI/CHD/Angina | CircHrtAtkCircHrtAtkMedCircCADCirdCADMed | MVPFI\_MI\_CAD | 0=No, 1=Yes |
| 23 | **B43.** Peripheral vascular disease | CircPVDCircPVDMed | MVPFI\_PVD | 0=No, 1=Yes |
| 24 | **B43.** Congestive heart failure | CircCHFCircCHFMed | MVPFI\_CHF | 0=No, 1=Yes |
| 25 | **B43.** Arthritis (osteoarthritis, rheumatoid, other) or Gout | SkMsOASkMSOAMedSkMsRASkMsRAMedSkMsOthArthSkMsOthArthMedSkMsGoutSkMsGoutMed | MVPFI\_ARTHRITIS\_GOUT | 0=No, 1=Yes |
| 26 | **B43.** Osteoporosis | SkMsOPSkMsOPMed | MVPFI\_OSTEOPOR | 0=No, 1=Yes |
| 27 | **B43.** COPD/Asthma | DoAsthDoAsthMedDoLungDoLungMed | MVPFI\_ASTHMA\_COPD | 0=No, 1=Yes |
| 28 | **B43.** Liver condition | DoLiverDoLiverMed | MVPFI\_LIVER | 0=No, 1=Yes |
| 29 | **B43.** Thyroid problems | DoThyDoThyMed | MVPFI\_THYROID | 0=No, 1=Yes |
| 30 | **B43.** Cancer of any type (breast, colon, lung, prostate, other) | CaBrstCaBrstMedCaColonCaColonMedCaLungCaLungMedCaProsCaProsMedCaOthCaOthMed | MVPFI\_NONSKIN\_CANCER | 0=No, 1=Yes*Note: Skin cancer is not included in the definition* |
| 31 | **B43.** Macular degeneration/Glaucoma/Blindness,  | HVMDHVMDMedHVGlaucHVGlaucMedHVBlindHVBlindMed | MVPFI\_VISION | 0=No, 1=Yes |
| 32 | **B43.** Severe hearing loss or deafness | HVHearHVHearMed | MVPFI\_HEARING\_LOSS | 0=No, 1=Yes |
| 33 | **B43.** Kidney disease | KDNoDialKDNoDialMedKDDialKDDialMedKDAcuteKDAcuteMed | MVPFI\_KIDNEY | 0=No0.5=Yes, without dialysis or acute kidney disease w/o current dialysis1=Yes, with dialysis  |

Robust = 0-0.10 Prefrail=0.11-0.20, Frail=0.21+

**Table 2.** Summary of MVP Frailty Index Composite Scores.

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable Name** | **Definition** | **Coding** | **Notes** |
| MVPFI\_SUM | Total score for the 33 MVP-FI items | Continuous | --- |
| MVPFI\_TOTITEMS | Total number of items completed | 0-33 | --- |
| MVPFI\_NMISS | Total number of missing items | Continuous | --- |
| MVPFI\_NMISS\_CAT | # of missing category | 0=0-2 missing items1=3-6 missing items2=≥7 missing items | --- |
| MVPFI\_NMISS\_3PLUS | Missing ≥3 items  | 0=No1=Yes | --- |
| MVPFI\_NMISS\_7PLUS | Missing ≥7 items  | 0=No1=Yes | --- |
|  |  |  |  |
| MVPFI\_SCORE | Calculated as MVPFI\_SUM/MVPFI\_TOTITEMS | Continuous (range 0-1) | *Note: Set to missing for individuals who are missing ≥7 items (~20%).*  |
| MVPFI\_CAT | Frailty category based on MVPFI\_SCORE | 0=Robust (0-0.10)1=Prefrail (0.11-0.20)2=Frail (≥0.21) | *Note: Set to missing for individuals who are missing ≥7 items (~20%).*  |
|  |  |  |  |
| MVPFI\_SCORE\_10Pct | Calculated as MVPFI\_SUM/MVPFI\_TOTITEMS | Continuous (range 0-1) | *Note: Set to missing for individuals who are missing ≥3 items (~10%).*  |
| MVPFI\_CAT\_10Pct | Frailty category based on MVPFI\_SCORE | 0=Robust (0-0.10)1=Prefrail (0.11-0.20)2=Frail (≥0.21) | *Note: Set to missing for individuals who are missing ≥3 items (~10%).*  |
|  |  |  |  |
| MVPFI\_SCORE\_RAW | Calculated as MVPFI\_SUM/MVPFI\_TOTITEMS | Continuous (range 0-1) | *Note: No exclusions made for missing items.* |
| MVPFI\_CAT\_RAW | Frailty category based on MVPFI\_SCORE | 0=Robust (0-0.10)1=Prefrail (0.11-0.20)2=Frail (≥0.21) | *Note: No exclusions made for missing items.* |