**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.sas  Location:  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.sas7bdat  Location:  /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 limited  0.5=Limited a little  1=Limited a lot |
| 2 | **L20.** How would you rate the health of your teeth and gums? | Teeth | MVPFI\_DENTALHEALTH | 0=Excellent/very good/good  1=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 needed  0.5=Some assistance needed  1=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 time  0.25=Most of the time  0.50=Good bit/some of the time  0.75=A little of the time  1=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 time  0.25=A little bit of the time  0.50=Good bit/some of the time  0.75=Most of the time  1=All of the time |
| 16 | **B43.** Anxiety | MHAnxPan  MHAnxPanMed | MVPFI\_ANXIETY | 0=No, 1=Yes |
| 17 | **B43.** Depression | MHDep  MHDepMed | MVPFI\_DEPRESSION | 0=No, 1=Yes |
| **Cognition** | 18 | **B43.** Dementia/Memory Loss | NSMemLoss  NSMemLossMed  NSDem  NSDemMed | MVPFI\_MCI\_DEMENTIA | 1=Dementia  0.5=MCI  0=none |
| **Comor-bidities** | 19 | **B43.** Hypertension | circhtn  circhtnmed | MVPFI\_HTN | 0=No, 1=Yes |
| 20 | **B43.** Diabetes | DoDM  DoDMMed | MVPFI\_DM | 0=No, 1=Yes |
| 21 | **B43.** Stroke/TIA | CircStrk  CircStrkMed  CircTIA  CircTIAMed | MVPFI\_STRKTIA | 0=No, 1=Yes |
| 22 | **B43.** MI/CHD/Angina | CircHrtAtk  CircHrtAtkMed  CircCAD  CirdCADMed | MVPFI\_MI\_CAD | 0=No, 1=Yes |
| 23 | **B43.** Peripheral vascular disease | CircPVD  CircPVDMed | MVPFI\_PVD | 0=No, 1=Yes |
| 24 | **B43.** Congestive heart failure | CircCHF  CircCHFMed | MVPFI\_CHF | 0=No, 1=Yes |
| 25 | **B43.** Arthritis (osteoarthritis, rheumatoid, other) or Gout | SkMsOA  SkMSOAMed  SkMsRA  SkMsRAMed  SkMsOthArth  SkMsOthArthMed  SkMsGout  SkMsGoutMed | MVPFI\_ARTHRITIS\_GOUT | 0=No, 1=Yes |
| 26 | **B43.** Osteoporosis | SkMsOP  SkMsOPMed | MVPFI\_OSTEOPOR | 0=No, 1=Yes |
| 27 | **B43.** COPD/Asthma | DoAsth  DoAsthMed  DoLung  DoLungMed | MVPFI\_ASTHMA\_COPD | 0=No, 1=Yes |
| 28 | **B43.** Liver condition | DoLiver  DoLiverMed | MVPFI\_LIVER | 0=No, 1=Yes |
| 29 | **B43.** Thyroid problems | DoThy  DoThyMed | MVPFI\_THYROID | 0=No, 1=Yes |
| 30 | **B43.** Cancer of any type (breast, colon, lung, prostate, other) | CaBrst  CaBrstMed  CaColon  CaColonMed  CaLung  CaLungMed  CaPros  CaProsMed  CaOth  CaOthMed | MVPFI\_NONSKIN\_CANCER | 0=No, 1=Yes  *Note: Skin cancer is not included in the definition* |
| 31 | **B43.** Macular degeneration/  Glaucoma/Blindness, | HVMD  HVMDMed  HVGlauc  HVGlaucMed  HVBlind  HVBlindMed | MVPFI\_VISION | 0=No, 1=Yes |
| 32 | **B43.** Severe hearing loss or deafness | HVHear  HVHearMed | MVPFI\_HEARING\_LOSS | 0=No, 1=Yes |
| 33 | **B43.** Kidney disease | KDNoDial  KDNoDialMed  KDDial  KDDialMed  KDAcute  KDAcuteMed | MVPFI\_KIDNEY | 0=No  0.5=Yes, without dialysis or acute kidney disease w/o current dialysis  1=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 items  1=3-6 missing items  2=≥7 missing items | --- |
| MVPFI\_NMISS\_3PLUS | Missing ≥3 items | 0=No  1=Yes | --- |
| MVPFI\_NMISS\_7PLUS | Missing ≥7 items | 0=No  1=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.* |