**Tables**

**Table 1. Parameters for distribution of blood pressure**

Full population

Mean SD

Systolic Blood Pressure

Overall Mean 125.4 19.5

|Δ| = |Clinic-Home|/2 5.24 4.86

Home Stand Dev 2.74 2.05

Clinic Stand Dev 3.78 2.61

Diastolic Blood Pressure

Overall Mean 74.3 10.3

|Δ|= |Clinic-Home|/2 3.90 3.14

Home Stand Dev 2.34 1.75

Clinic Stand Dev 3.08 2.08

Framingham risk score population

Mean SD

Systolic Blood Pressure

Overall Mean 125.9 18.3

|Δ| = |Clinic-Home|/2 5.23 4.71

Home Stand Dev 2.78 2.06

Clinic Stand Dev 3.78 2.52

Diastolic Blood Pressure

Overall Mean 76.4 10.0

|Δ| = |Clinic-Home|/2 3.84 3.10

Home Stand Dev 2.28 1.71

Clinic Stand Dev 2.92 1.97

**Table 2. Parameters for survival model for Cardiovascular and all-cause mortality, NHANES III, Full population, using the systolic and diastolic mean model.**

Cardiovascular mortality

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sex | Race/Ethnicity | B – Mean | B – SD | θ - Mean | θ – SD |
| Female | Black | 1.36E-05 | 5.66E-06 | 8.83E-02 | 5.34E-03 |
| Female | White | 2.16E-06 | 9.20E-07 | 1.08E-01 | 4.88E-03 |
| Female | Other | 2.44E-05 | 1.07E-05 | 7.75E-02 | 5.65E-03 |
| Male | Black | 7.20E-05 | 2.49E-05 | 7.12E-02 | 4.59E-03 |
| Male | White | 8.68E-06 | 3.37E-06 | 9.73E-02 | 4.66E-03 |
| Male | Other | 8.17E-05 | 3.00E-05 | 6.78E-02 | 4.98E-03 |

All-cause mortality

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sex | Race/Ethnicity | B – Mean | B – SD | θ - Mean | θ – SD |
| Female | Black | 1.62E-04 | 3.14E-05 | 7.20E-02 | 2.64E-03 |
| Female | White | 3.12E-05 | 6.16E-06 | 9.06E-02 | 2.38E-03 |
| Female | Other | 2.66E-04 | 5.45E-05 | 6.25E-02 | 2.79E-03 |
| Male | Black | 4.29E-04 | 7.54E-05 | 6.41E-02 | 2.43E-03 |
| Male | White | 5.08E-05 | 9.67E-06 | 9.00E-02 | 2.36E-03 |
| Male | Other | 5.27E-04 | 8.88E-05 | 5.90E-02 | 2.45E-03 |

**Table 3. Parameters for survival model for Cardiovascular and all-cause mortality, NHANES III, FRS population, using the systolic and diastolic mean model.**

Cardiovascular mortality

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sex | Race/Ethnicity | B – Mean | B – SD | θ - Mean | θ – SD |
| Female | Black | 8.64E-06 | 5.44E-06 | 9.37E-02 | 7.95E-03 |
| Female | White | 1.71E-06 | 1.25E-06 | 1.10E-01 | 8.44E-03 |
| Female | Other | 4.06E-05 | 2.65E-05 | 7.08E-02 | 8.79E-03 |
| Male | Black | 6.36E-05 | 3.53E-05 | 6.97E-02 | 7.65E-03 |
| Male | White | 1.08E-05 | 6.54E-06 | 8.96E-02 | 7.37E-03 |
| Male | Other | 1.94E-04 | 9.69E-05 | 5.39E-02 | 7.09E-03 |

All-cause mortality

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sex | Race/Ethnicity | B – Mean | B – SD | θ - Mean | θ – SD |
| Female | Black | 1.77E-04 | 4.66E-05 | 6.99E-02 | 3.59E-03 |
| Female | White | 3.12E-05 | 8.81E-06 | 9.02E-02 | 3.55E-03 |
| Female | Other | 1.56E-04 | 4.83E-05 | 6.96E-02 | 4.27E-03 |
| Male | Black | 3.41E-04 | 8.54E-05 | 6.62E-02 | 3.52E-03 |
| Male | White | 4.27E-05 | 1.10E-05 | 9.02E-02 | 3.35E-03 |
| Male | Other | 4.51E-04 | 1.17E-04 | 5.94E-02 | 3.69E-03 |

**Table 4. Parameters for survival model for Cardiovascular and all-cause mortality, NHANES III, FRS population, using the FRS model.**

Cardiovascular mortality

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sex | Race/Ethnicity | B – Mean | B – SD | θ - Mean | θ – SD |
| Female | Black | 2.62E-05 | 1.82E-05 | 8.43E-02 | 8.59E-03 |
| Female | White | 3.71E-06 | 2.67E-06 | 1.03E-01 | 8.61E-03 |
| Female | Other | 1.02E-04 | 7.46E-05 | 6.41E-02 | 8.96E-03 |
| Male | Black | 2.14E-04 | 1.34E-04 | 6.08E-02 | 7.93E-03 |
| Male | White | 2.22E-05 | 1.46E-05 | 8.59E-02 | 7.78E-03 |
| Male | Other | 5.58E-04 | 3.25E-04 | 4.61E-02 | 7.20E-03 |

All-cause mortality

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sex | Race/Ethnicity | B – Mean | B – SD | θ - Mean | θ – SD |
| Female | Black | 2.34E-04 | 7.08E-05 | 6.84E-02 | 4.04E-03 |
| Female | White | 3.66E-05 | 1.16E-05 | 8.97E-02 | 3.92E-03 |
| Female | Other | 1.88E-04 | 6.25E-05 | 6.94E-02 | 4.42E-03 |
| Male | Black | 4.94E-04 | 1.42E-04 | 6.40E-02 | 3.84E-03 |
| Male | White | 5.01E-05 | 1.46E-05 | 9.03E-02 | 3.65E-03 |
| Male | Other | 6.00E-04 | 1.74E-04 | 5.80E-02 | 3.91E-03 |

**Table 5. Parameter estimates for Cardiovascular and all-cause mortality, NHANES III, Full population.**

Covariate Normalized p-value Range

SD mean coefficient

Cardiovascular mortality

Systolic Blood Pressure

Mean 19.3 0.329 <0.001 (0.282,0.375)

Inter-visit difference 6.68 0.128 <0.001 (0.075,0.179)

Home Stand Dev 1.61 -0.026 0.772 (-0.082,0.027)

Clinic Stand Dev 1.99 -0.021 0.752 (-0.073,0.028)

Diastolic Blood Pressure

Mean 10.2 -0.116 >0.999 (-0.165,-0.068)

Inter-visit difference 4.67 0.082 0.017 (0.015,0.149)

Home Stand Dev 1.23 0.033 0.215 (-0.039,0.101)

Clinic Stand Dev 1.34 -0.081 0.037 (-0.160,-0.006)

All-cause mortality

Systolic Blood Pressure

Mean 19.3 0.187 <0.001 (0.160,0.215)

Inter-visit difference 6.68 0.078 <0.001 (0.047,0.109)

Home Stand Dev 1.61 0.001 0.512 (-0.027,0.027)

Clinic Stand Dev 1.99 -0.016 0.848 (-0.044,0.010)

Diastolic Blood Pressure

Mean 10.2 -0.074 >0.999 (-0.101,-0.047)

Inter-visit difference 4.67 0.083 <0.001 (0.045,0.122)

Home Stand Dev 1.23 0.021 0.174 (-0.016,0.057)

Clinic Stand Dev 1.34 -0.031 0.911 (-0.069,0.007)

Table notes. P-value is a Bayesian p-value. For each cause of death the table presents results from a model with all components of systolic and diastolic blood pressure, applied to the entire NHANES population. At the top results are shown for estimating risk of cardiovascular mortality, at the bottom all-cause mortality. “Range” gives a central 90% credible interval for the normalized parameter.

**Table 6. Parameter estimates for CVD and all-cause mortality, NHANES III,** **Framingham risk score population.**

Covariate Normalized p-value Range

SD mean coefficient

CVD Mortality

Systolic Blood Pressure

Mean 18.2 0.348 <0.001 (0.291,0.424)

Inter-visit difference 6.60 0.116 0.007 (0.034,0.198)

Home Stand Dev 1.58 0.001 0.111 (-0.025,0.128)

Clinic Stand Dev 1.84 -0.016 0.170 (-0.135,0.030)

Diastolic Blood Pressure

Mean 9.92 -0.033 0.781 (-0.098, 0.038)

Inter-visit difference 4.55 0.093 0.053 (-0.0005,0.185)

Home Stand Dev 1.21 0.037 0.255 (-0.026,0.128)

Clinic Stand Dev 1.27 0.005 0.913 (-0.135,0.030)

All-cause mortality

Systolic Blood Pressure

Mean 18.2 0.201 <0.001 (0.165,0.238)

Inter-visit difference 6.60 0.073 0.004 (0.031,0.115)

Home Stand Dev 1.58 0.032 0.112 (-0.013,0.073)

Clinic Stand Dev 1.84 -0.023 0.839 (-0.063,0.015)

Diastolic Blood Pressure

Mean 9.92 -0.028 0.888 (-0.066,0.009)

Inter-visit difference 4.55 0.084 0.001 (0.045,0.122)

Home Stand Dev 1.21 0.010 0.343 (-0.038,0.053)

Clinic Stand Dev 1.27 0.011 0.346 (-0.039,0.060)

Table notes. P-value is a Bayesian p-value, as defined in the paper. For each cause of death the table presents results from a model with all components of systolic and diastolic blood pressure, applied to the entire NHANES population. At the top results are shown for estimating risk of cardiovascular mortality, at the bottom all-cause mortality. “Range” gives a central 90% credible interval for the normalized parameter.

**Table 7. Parameter estimates for CVD and all-cause mortality, NHANES III, model including Framingham Risk Score.**

Covariate Normalized p-value Range

SD mean coefficient

CVD Mortality

Framingham Risk Score 6.65 0.385 <0.001 (0.269,0.502)

Systolic Blood Pressure

Inter-visit Delta 6.61 0.173 0.001 (0.094,0.258)

Home Stand Dev 1.57 0.075 0.047 (0.002,0.146)

Clinic Stand Dev 2.17 -0.001 0.969 (-0.072,0.072)

Diastolic Blood Pressure

Inter-visit Delta 4.55 0.109 0.007 (0.055,0.244)

Home Stand Dev 1.21 0.047 0.367 (-0.045,0.132)

Clinic Stand Dev 1.28 0.051 0.376 (-0.043,0.143)

All-cause mortality

Framingham Risk Score 6.65 0.132 <0.001 (0.076,0.187)

Systolic Blood Pressure

Inter-visit Delta 6.61 0.111 <0.001 (0.063,0.156)

Home Stand Dev 1.60 0.044 0.033 (0.005,0.080)

Clinic Stand Dev 1.74 0.005 0.433 (-0.032,0.044)

Diastolic Blood Pressure

Inter-visit Delta 4.55 0.109 <0.001 (0.063,0.156)

Home Stand Dev 1.21 0.022 0.227 (-0.024,0.068)

Clinic Stand Dev 1.28 0.037 0.099 (-0.009,0.084)

Table notes. P-value is a Bayesian p-value. For each cause of death, the table presents results from 4 different models, one model with all components of systolic blood pressure and mean systolic, another with Framingham risk score instead of mean systolic blood pressure, and two analogous models for diastolic blood pressure. “Range” gives a central 90% credible interval for the normalized parameter.

**Figures**

**Figure 1** **Model-based ROC curves for population with a Framingham risk score. The models shown in the first row was trained on all-death outcomes and the second row was trained specifically on CVD and heart attack outcomes only. The type (solid/dashed) of the lines represents whether the model used the FRS or mean blood pressure (systolic and diastolic) in the linear predictor term. Finally, the columns differ in the choice of terms in the linear predictor, which is controlled by setting specific 𝛽-terms to be equal to zero. For example, the right-most column has all 𝛽=0. Note in particular that the predictor that including long-term variation in BP (Delta) as well as mean systolic BP (or FRS) – column 3 – increases AUC by 0.02 relative to the predictor that includes only the mean systolic BP (or FRS).**

