Table1 (for Publication)

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Contents

1 To-do-list

- ☒ run table 1 for the total sample size as 1 group
  - ☒ Keeping table1 for one group (n = 600)
  - ☒ Baseline levels of AMH (untransformed)
  - ☒ also include the min and max of AMH
  - ☒ How many repeated measures per woman
- ☒ all the survival parameters summary
- ☒ all the longitudinal parameters summary
- ☒ joint model summary
  - ☒ with rate
  - ☒ without rate

2 Table1: descriptive summaries

Here is the Table1 for publication.

Characteristics	**N = 600**[1]
Age (years)	
Mean (SD)	46.42 (2.41)
Median [Range]	46.00 [42.00, 53.00]
Ethnicity / Race	
CAUCA	265 / 600 (44%)
BLACK	170 / 600 (28%)
CHINE	62 / 600 (10%)
HISPA	18 / 600 (3.0%)
JAPAN	85 / 600 (14%)
Marital Status	
Not Married/Partnered	191 / 600 (32%)
Married/Partnered	409 / 600 (68%)
Alcohol Use	
None	308 / 600 (51%)
<1/wk	71 / 600 (12%)
1-7/wk	161 / 600 (27%)
>7/wk	60 / 600 (10%)
Smoking History	
Never Smoked	373 / 600 (62%)
Past Only	149 / 600 (25%)
Current Smoker	78 / 600 (13%)
Ever use of BC Pills	
Never	155 / 600 (26%)
Ever use BC pills	445 / 600 (74%)
BMI	
Mean (SD)	28 (7)
Median [Range]	26 [16, 56]
Overall Health	
Excellent	147 / 600 (25%)
Very Good	233 / 600 (39%)
Good	151 / 600 (25%)

[1] n / N (%)

Characteristics	N = 600[1]
Fair/Poor	69 / 600 (12%)
Physical Activity Score	
Mean (SD)	7.75 (1.77)
Median [Range]	7.60 [3.40, 12.80]
Baseline AMH	
Mean (SD)	540 (702)
Median [Range]	273 [1, 4,652]
Number of Visits	
Mean (SD)	5.54 (2.14)
Median [Range]	5.00 [3.00, 11.00]
Parity	
None	111 / 600 (19%)
One	88 / 600 (15%)
Two	210 / 600 (35%)
Three	116 / 600 (19%)
More than three	75 / 600 (13%)
Children	
Mean (SD)	1.98 (1.41)
Median [Range]	2.00 [0.00, 12.00]
Employment Status	
Unemployed	104 / 600 (17%)
Employed	496 / 600 (83%)
Educational Attainment	
High School or Less	125 / 600 (21%)
Some College	190 / 600 (32%)
College degree or higher	285 / 600 (48%)
Site	
B	96 / 600 (16%)
C	76 / 600 (13%)
M	103 / 600 (17%)
NJ	27 / 600 (4.5%)
P	74 / 600 (12%)
UCD	102 / 600 (17%)
UCLA	122 / 600 (20%)

^{1}n / N (%)

Here is the LaTeX code for the table1.

```
% latex table generated in R 4.2.2 by xtable 1.8-4 package
% Tue Apr  9 11:44:18 2024
\begin{table}[ht]
\centering
\begin{tabular}{rll}
  \hline
 & **Characteristics** & **N = 600** \\
  \hline
1 & \_\_\_Age (years)\_\_\_ &  \\
  2 & Mean (SD) & 46.42 (2.41) \\
  3 & Median & 46.00 \\
  4 & [Range] & [42.00, 53.00] \\
  5 & \_\_\_Ethnicity / Race\_\_\_ &  \\
  6 & CAUCA & 265 / 600 (44\%) \\
  7 & BLACK & 170 / 600 (28\%) \\
  8 & CHINE & 62 / 600 (10\%) \\
  9 & HISPA & 18 / 600 (3.0\%) \\
  10 & JAPAN & 85 / 600 (14\%) \\
  11 & \_\_\_Marital Status\_\_\_ &  \\
  12 & Not Married/Partnered & 191 / 600 (32\%) \\
  13 & Married/Partnered & 409 / 600 (68\%) \\
  14 & \_\_\_Alcohol Use\_\_\_ &  \\
  15 & None & 308 / 600 (51\%) \\
  16 & $<$1/wk & 71 / 600 (12\%) \\
  17 & 1-7/wk & 161 / 600 (27\%) \\
  18 & $>$7/wk & 60 / 600 (10\%) \\
  19 & \_\_\_Smoking History\_\_\_ &  \\
  20 & Never Smoked & 373 / 600 (62\%) \\
  21 & Past Only & 149 / 600 (25\%) \\
  22 & Current Smoker & 78 / 600 (13\%) \\
  23 & \_\_\_Ever use of BC Pills\_\_\_ &  \\
  24 & Never & 155 / 600 (26\%) \\
  25 & Ever use BC pills & 445 / 600 (74\%) \\
  26 & \_\_\_BMI\_\_\_ &  \\
  27 & Mean (SD) & 28 (7) \\
  28 & Median & 26 \\
  29 & [Range] & [16, 56] \\
  30 & \_\_\_Overall Health\_\_\_ &  \\
  31 & Excellent & 147 / 600 (25\%) \\
  32 & Very Good & 233 / 600 (39\%) \\
  33 & Good & 151 / 600 (25\%) \\
  34 & Fair/Poor & 69 / 600 (12\%) \\
  35 & \_\_\_Physical Activity Score\_\_\_ &  \\
  36 & Mean (SD) & 7.75 (1.77) \\
  37 & Median & 7.60 \\
  38 & [Range] & [3.40, 12.80] \\
  39 & \_\_\_Baseline AMH\_\_\_ &  \\
  40 & Mean (SD) & 540 (702) \\
  41 & Median & 273 \\
```

```
  42 & [Range] & [1, 4,652] \\
  43 & \_\_\_Number of Visits\_\_\_ &  \\
  44 & Mean (SD) & 5.54 (2.14) \\
  45 & Median & 5.00 \\
  46 & [Range] & [3.00, 11.00] \\
  47 & \_\_\_Parity\_\_\_ &  \\
  48 & None & 111 / 600 (19\%) \\
  49 & One & 88 / 600 (15\%) \\
  50 & Two & 210 / 600 (35\%) \\
  51 & Three & 116 / 600 (19\%) \\
  52 & More than three & 75 / 600 (13\%) \\
  53 & \_\_\_Children\_\_\_ &  \\
  54 & Mean (SD) & 1.98 (1.41) \\
  55 & Median & 2.00 \\
  56 & [Range] & [0.00, 12.00] \\
  57 & \_\_\_Employment Status\_\_\_ &  \\
  58 & Unemployed & 104 / 600 (17\%) \\
  59 & Employed & 496 / 600 (83\%) \\
  60 & \_\_\_Educational Attainment\_\_\_ &  \\
  61 & High School or Less & 125 / 600 (21\%) \\
  62 & Some College & 190 / 600 (32\%) \\
  63 & College degree or higher & 285 / 600 (48\%) \\
  64 & \_\_\_Site\_\_\_ &  \\
  65 & B & 96 / 600 (16\%) \\
  66 & C & 76 / 600 (13\%) \\
  67 & M & 103 / 600 (17\%) \\
  68 & NJ & 27 / 600 (4.5\%) \\
  69 & P & 74 / 600 (12\%) \\
  70 & UCD & 102 / 600 (17\%) \\
  71 & UCLA & 122 / 600 (20\%) \\
   \hline
\end{tabular}
\end{table}
```

3 Table2: summary for AMH and visits

Characteristics	N = 600
Baseline AMH	
Mean (SD)	540 (702)
Median [IQR]	273 [71, 672]
Median [5%, 95%]	273 [1, 2,095]
Median [Range]	273 [1, 4,652]
Minimum AMH	
Mean (SD)	28 (78)
Median [IQR]	2 [1, 18]
Median [5%, 95%]	2 [1, 133]
Median [Range]	2 [1, 772]
Maximum AMH	
Mean (SD)	628 (730)
Median [IQR]	341 [132, 836]
Median [5%, 95%]	341 [23, 2,174]
Median [Range]	341 [1, 4,681]
Number of Visits	
Mean (SD)	5.54 (2.14)
Median [IQR]	5.00 [4.00, 7.00]
Median [5%, 95%]	5.00 [3.00, 10.00]
Median [Range]	5.00 [3.00, 11.00]

Here is the latex code for Table2:

```
% latex table generated in R 4.2.2 by xtable 1.8-4 package
% Tue Apr  9 14:00:42 2024
\begin{table}[ht]
\centering
\begin{tabular}{rll}
  \hline
 & **Characteristics** & **N = 600** \\
  \hline
1 & \_\_\_Baseline AMH\_\_\_ &  \\
  2 & Mean (SD) & 540 (702) \\
  3 & Median [IQR] & 273 [71, 672] \\
  4 & Median [5\%, 95\%] & 273 [1, 2,095] \\
  5 & Median [Range] & 273 [1, 4,652] \\
  6 & \_\_\_Minimum AMH\_\_\_ &  \\
  7 & Mean (SD) & 28 (78) \\
  8 & Median [IQR] & 2 [1, 18] \\
```

```
  9 & Median [5\%, 95\%] & 2 [1, 133] \\
  10 & Median [Range] & 2 [1, 772] \\
  11 & \_\_\_Maximum AMH\_\_\_ &  \\
  12 & Mean (SD) & 628 (730) \\
  13 & Median [IQR] & 341 [132, 836] \\
  14 & Median [5\%, 95\%] & 341 [23, 2,174] \\
  15 & Median [Range] & 341 [1, 4,681] \\
  16 & \_\_\_Number of Visits\_\_\_ &  \\
  17 & Mean (SD) & 5.54 (2.14) \\
  18 & Median [IQR] & 5.00 [4.00, 7.00] \\
  19 & Median [5\%, 95\%] & 5.00 [3.00, 10.00] \\
  20 & Median [Range] & 5.00 [3.00, 11.00] \\
   \hline
\end{tabular}
\end{table}
```

4 Longitudinal model

$lme.fit1: \quad (fixed = lamh \sim time,\ random = \sim time|id)$

Here is the summary for longitudinal sub-model, based on model selection

Here is the table for the longitudinal model:

effect	group	term	estimate	std.error	df	statistic	p.value
fixed	NA	(Intercept)	7.5166321	0.1042432	2725	72.10669	0
fixed	NA	time	-0.5304830	0.0116235	2725	-45.63885	0
ran_pars	id	sd_(Intercept)	1.6842278	NA	NA	NA	NA
ran_pars	id	cor_time.(Intercept)	-0.3595600	NA	NA	NA	NA
ran_pars	id	sd_time	0.1039758	NA	NA	NA	NA
ran_pars	Residual	sd_Observation	1.2991322	NA	NA	NA	NA

The full summary for the longitudinal model is as follows:

```
#> Linear mixed-effects model fit by REML
#>   Data: swan_amh00
#>       AIC      BIC    logLik
#>   12583.7 12620.36 -6285.852
#>
#> Random effects:
#>  Formula: ~time | id
#>  Structure: General positive-definite, Log-Cholesky parametrization
#>             StdDev    Corr
#> (Intercept) 1.6842278 (Intr)
#> time        0.1039758 -0.36
#> Residual    1.2991322
#>
#> Fixed effects:  lamh ~ time
#>                 Value Std.Error   DF   t-value p-value
#> (Intercept)  7.516632 0.1042432 2725  72.10669       0
#> time        -0.530483 0.0116235 2725 -45.63885       0
#>  Correlation:
#>      (Intr)
#> time -0.748
#>
#> Standardized Within-Group Residuals:
#>        Min         Q1        Med         Q3        Max
#> -4.9581436 -0.4749003  0.1009506  0.5917255  2.8944856
#>
#> Number of Observations: 3326
#> Number of Groups: 600
```

5 Survival model

Notes: is it necessary to include a model with observed AMH as covariate in survival model?

$surv.fit16: \quad coxph(Surv(etime, event) \sim married + bc\_pills + bmi + factor(site) + factor(ethnic) + factor(smoke))$

Here is the table for survival model, based on model selection:

term	estimate	std.error	statistic	p.value
marriedMarried/Partnered	0.2009837	0.0963057	2.0869349	0.0368940
bc_pillsEver use BC pills	-0.2237786	0.0993733	-2.2518989	0.0243287
bmi	-0.0035685	0.0067598	-0.5279079	0.5975633
site_ethnic_b_black	0.0058217	0.2136773	0.0272453	0.9782641
site_ethnic_c_black	-0.0224055	0.2183077	-0.1026328	0.9182544
site_ethnic_c_cauca	0.2142089	0.2217840	0.9658448	0.3341219
site_ethnic_m_black	0.1646291	0.1995273	0.8250954	0.4093174
site_ethnic_m_cauca	0.3423318	0.2155704	1.5880274	0.1122801
site_ethnic_nj_cauca	0.2682986	0.3604395	0.7443652	0.4566556
site_ethnic_nj_hispa	0.0658811	0.2772944	0.2375853	0.8122028
site_ethnic_p_black	0.3511122	0.2466007	1.4238086	0.1545019
site_ethnic_p_cauca	0.7013580	0.2008652	3.4916843	0.0004800
site_ethnic_ucd_cauca	0.3055980	0.2124732	1.4382898	0.1503518
site_ethnic_ucd_chine	0.2584626	0.1959062	1.3193179	0.1870628
site_ethnic_ucla_cauca	0.3373483	0.2201958	1.5320374	0.1255132
site_ethnic_ucla_japan	0.1564432	0.1787153	0.8753768	0.3813689
smoke_past_only	0.0755806	0.1047054	0.7218408	0.4703924
smoke_current_smoker	0.6000705	0.1365294	4.3951736	0.0000111

Here is the summary for the survival model

```
#> Call:
#> coxph(formula = Surv(etime, event) ~ 0 + married + bc_pills +
#>     bmi + site_ethnic_b_black + site_ethnic_c_black + site_ethnic_c_cauca +
#>     site_ethnic_m_black + site_ethnic_m_cauca + site_ethnic_nj_cauca +
#>     site_ethnic_nj_hispa + site_ethnic_p_black + site_ethnic_p_cauca +
#>     site_ethnic_ucd_cauca + site_ethnic_ucd_chine + site_ethnic_ucla_cauca +
#>     site_ethnic_ucla_japan + smoke_past_only + smoke_current_smoker,
#>     data = swan_amh12, model = TRUE, x = TRUE)
#>
#>   n= 600, number of events= 600
#>
#>                               coef exp(coef)  se(coef)      z Pr(>|z|)
#> marriedMarried/Partnered   0.200984  1.222605  0.096306  2.087  0.03689 *
#> bc_pillsEver use BC pills -0.223779  0.799492  0.099373 -2.252  0.02433 *
#> bmi                       -0.003569  0.996438  0.006760 -0.528  0.59756
#> site_ethnic_b_black        0.005822  1.005839  0.213677  0.027  0.97826
#> site_ethnic_c_black       -0.022406  0.977844  0.218308 -0.103  0.91825
#> site_ethnic_c_cauca        0.214209  1.238881  0.221784  0.966  0.33412
#> site_ethnic_m_black        0.164629  1.178956  0.199527  0.825  0.40932
#> site_ethnic_m_cauca        0.342332  1.408227  0.215570  1.588  0.11228
#> site_ethnic_nj_cauca       0.268299  1.307738  0.360439  0.744  0.45666
#> site_ethnic_nj_hispa       0.065881  1.068100  0.277294  0.238  0.81220
```

```
#> site_ethnic_p_black        0.351112  1.420647  0.246601  1.424  0.15450
#> site_ethnic_p_cauca        0.701358  2.016489  0.200865  3.492  0.00048 ***
#> site_ethnic_ucd_cauca      0.305598  1.357436  0.212473  1.438  0.15035
#> site_ethnic_ucd_chine      0.258463  1.294938  0.195906  1.319  0.18706
#> site_ethnic_ucla_cauca     0.337348  1.401227  0.220196  1.532  0.12551
#> site_ethnic_ucla_japan     0.156443  1.169344  0.178715  0.875  0.38137
#> smoke_past_only            0.075581  1.078510  0.104705  0.722  0.47039
#> smoke_current_smoker       0.600070  1.822247  0.136529  4.395 1.11e-05 ***
#> ---
#> Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
#>
#>                           exp(coef) exp(-coef) lower .95 upper .95
#> marriedMarried/Partnered     1.2226     0.8179    1.0123    1.4766
#> bc_pillsEver use BC pills    0.7995     1.2508    0.6580    0.9714
#> bmi                          0.9964     1.0036    0.9833    1.0097
#> site_ethnic_b_black          1.0058     0.9942    0.6617    1.5290
#> site_ethnic_c_black          0.9778     1.0227    0.6374    1.5000
#> site_ethnic_c_cauca          1.2389     0.8072    0.8021    1.9134
#> site_ethnic_m_black          1.1790     0.8482    0.7974    1.7432
#> site_ethnic_m_cauca          1.4082     0.7101    0.9230    2.1487
#> site_ethnic_nj_cauca         1.3077     0.7647    0.6452    2.6505
#> site_ethnic_nj_hispa         1.0681     0.9362    0.6203    1.8393
#> site_ethnic_p_black          1.4206     0.7039    0.8762    2.3035
#> site_ethnic_p_cauca          2.0165     0.4959    1.3603    2.9893
#> site_ethnic_ucd_cauca        1.3574     0.7367    0.8951    2.0586
#> site_ethnic_ucd_chine        1.2949     0.7722    0.8820    1.9011
#> site_ethnic_ucla_cauca       1.4012     0.7137    0.9101    2.1574
#> site_ethnic_ucla_japan       1.1693     0.8552    0.8238    1.6598
#> smoke_past_only              1.0785     0.9272    0.8784    1.3242
#> smoke_current_smoker         1.8222     0.5488    1.3944    2.3813
#>
#> Concordance= 0.589  (se = 0.014 )
#> Likelihood ratio test= 48.39  on 18 df,   p=1e-04
#> Wald test            = 51.8  on 18 df,   p=4e-05
#> Score (logrank) test = 52.77  on 18 df,   p=3e-05
```

6 Joint model without Rate (only value term of longitudinal submodel)

$$
\begin{aligned}
jmbayes2.fit116: & \\
lme.fit1: \quad & \boldsymbol{m}(time) = (fixed = lamh \sim time,\ random = \sim time|id) \\
surv.fit16: \quad & Surv(etime, event) \sim married + bc\_pills + bmi + factor(site) + \\
& factor(ethnic) + factor(smoke) + \boldsymbol{m}(time)
\end{aligned}
$$

6.1 Longitudinal submodel

Here is the summary for longitudinal submodel:

	Mean	StDev	2.5%	97.5%	P
(Intercept)	7.9150045	0.1167373	7.6776408	8.1358265	0
time	-0.5959353	0.0140724	-0.6213314	-0.5676174	0
sigma	1.3069148	0.0194243	1.2706265	1.3462695	0

6.2 Survival submodel

Here is the summary for survival submodel:

	Mean	StDev	2.5%	97.5%	P
marriedMarried/Partnered	0.1230590	0.1477155	-0.1906037	0.4031406	0.4120
bc_pillsEver use BC pills	-0.0036234	0.1326284	-0.2647300	0.2585364	0.9980
bmi	-0.0482207	0.0086565	-0.0647940	-0.0318024	0.0000
site_ethnic_b_black	-0.0986269	0.2891925	-0.6935329	0.4537392	0.7355
site_ethnic_c_black	-0.1950361	0.2906667	-0.7415467	0.4028777	0.5255
site_ethnic_c_cauca	0.5810621	0.2760849	0.0379913	1.1042824	0.0335
site_ethnic_m_black	0.0391006	0.2629483	-0.4670179	0.5915743	0.8955
site_ethnic_m_cauca	0.4916273	0.2811987	-0.0499484	1.0285136	0.0755
site_ethnic_nj_cauca	0.8146601	0.4858047	-0.1865071	1.7537388	0.1010
site_ethnic_nj_hispa	0.2268313	0.3938292	-0.5491844	0.9797106	0.5680
site_ethnic_p_black	0.4207852	0.3254313	-0.2412357	1.0394935	0.2050
site_ethnic_p_cauca	0.5639798	0.2603183	0.0745456	1.0690264	0.0235
site_ethnic_ucd_cauca	0.2741064	0.2712475	-0.2325808	0.8399108	0.3015
site_ethnic_ucd_chine	0.0442592	0.2599432	-0.4668763	0.5731107	0.8865
site_ethnic_ucla_cauca	0.5793384	0.2698834	0.0789994	1.1293692	0.0230
site_ethnic_ucla_japan	0.5281033	0.2249767	0.0973573	0.9701987	0.0095
smoke_past_only	-0.0616137	0.1362120	-0.3183663	0.2200914	0.6120
smoke_current_smoker	0.2021982	0.1794691	-0.1540481	0.5404030	0.2485
value(lamh)	-1.0162608	0.0650950	-1.1742875	-0.9079182	0.0000

6.3 Joint model

Here are the full summary for the joint model without rate:

```
#>
```

```
#> Call:
#> JMbayes2::jm(Surv_object = surv.fit16, Mixed_objects = lme.fit1,
#>     time_var = "time", control = jmcontrol)
#>
#> Data Descriptives:
#> Number of Groups: 600        Number of events: 600 (100%)
#> Number of Observations:
#>   lamh: 3326
#>
#>                  DIC     WAIC      LPML
#> marginal    14962.45 14972.47 -7499.795
#> conditional 15739.73 15419.67 -8085.768
#>
#> Random-effects covariance matrix:
#>
#>        StdDev   Corr
#> (Intr) 1.6798 (Intr)
#> time   0.1070 -0.2562
#>
#> Survival Outcome:
#>                              Mean  StdDev    2.5%   97.5%      P
#> marriedMarried/Partnered   0.1231 0.1477 -0.1906  0.4031 0.4120
#> bc_pillsEver use BC pills -0.0036 0.1326 -0.2647  0.2585 0.9980
#> bmi                       -0.0482 0.0087 -0.0648 -0.0318 0.0000
#> site_ethnic_b_black       -0.0986 0.2892 -0.6935  0.4537 0.7355
#> site_ethnic_c_black       -0.1950 0.2907 -0.7415  0.4029 0.5255
#> site_ethnic_c_cauca        0.5811 0.2761  0.0380  1.1043 0.0335
#> site_ethnic_m_black        0.0391 0.2629 -0.4670  0.5916 0.8955
#> site_ethnic_m_cauca        0.4916 0.2812 -0.0499  1.0285 0.0755
#> site_ethnic_nj_cauca       0.8147 0.4858 -0.1865  1.7537 0.1010
#> site_ethnic_nj_hispa       0.2268 0.3938 -0.5492  0.9797 0.5680
#> site_ethnic_p_black        0.4208 0.3254 -0.2412  1.0395 0.2050
#> site_ethnic_p_cauca        0.5640 0.2603  0.0745  1.0690 0.0235
#> site_ethnic_ucd_cauca      0.2741 0.2712 -0.2326  0.8399 0.3015
#> site_ethnic_ucd_chine      0.0443 0.2599 -0.4669  0.5731 0.8865
#> site_ethnic_ucla_cauca     0.5793 0.2699  0.0790  1.1294 0.0230
#> site_ethnic_ucla_japan     0.5281 0.2250  0.0974  0.9702 0.0095
#> smoke_past_only           -0.0616 0.1362 -0.3184  0.2201 0.6120
#> smoke_current_smoker       0.2022 0.1795 -0.1540  0.5404 0.2485
#> value(lamh)               -1.0163 0.0651 -1.1743 -0.9079 0.0000
#>
#> Longitudinal Outcome: lamh (family = gaussian, link = identity)
#>                Mean  StdDev    2.5%   97.5% P
#> (Intercept)  7.9150 0.1167  7.6776  8.1358 0
#> time        -0.5959 0.0141 -0.6213 -0.5676 0
#> sigma        1.3069 0.0194  1.2706  1.3463 0
#>
#> MCMC summary:
#> chains: 1
#> iterations per chain: 5000
#> burn-in per chain: 1000
#> thinning: 1
#> time: 26 sec
```

7 Joint model with rate (value and rate terms of longitudinal submodel)

$$
\begin{aligned}
jmbayes2.fit116.d: & \\
lme.fit1: \quad & \boldsymbol{m}(time) = (fixed = lamh \sim time,\ random = \sim time|id) \\
surv.fit16: \quad & Surv(etime, event) \sim married + bc\_pills + bmi + \\
& factor(site) + factor(ethnic) + factor(smoke) + \boldsymbol{m}(time) + \boldsymbol{m}'(time)
\end{aligned}
$$

7.1 Longitudinal submodel

Here is the summary for longitudinal submodel:

	Mean	StDev	2.5%	97.5%	P
(Intercept)	7.8009991	0.0856675	7.6390793	7.9778063	0
time	-0.5831007	0.0078334	-0.6016161	-0.5718443	0
sigma	1.3158656	0.0183958	1.2788111	1.3525139	0

7.2 Survival submodel

Here is the summary for survival submodel:

	Mean	StDev	2.5%	97.5%	P
marriedMarried/Partnered	0.2417305	0.2101977	-0.1655492	0.6652135	0.2330
bc_pillsEver use BC pills	-0.0394215	0.2006604	-0.4541247	0.3595743	0.8500
bmi	-0.0607746	0.0156032	-0.0932495	-0.0334083	0.0000
site_ethnic_b_black	-0.1296034	0.4137167	-0.8825379	0.7732577	0.7025
site_ethnic_c_black	-0.4345540	0.3957967	-1.2237136	0.4189339	0.2310
site_ethnic_c_cauca	0.6873707	0.4119251	-0.1019593	1.4818400	0.0905
site_ethnic_m_black	0.0418710	0.3230775	-0.5470842	0.7552422	0.9190
site_ethnic_m_cauca	0.6366866	0.3826280	-0.0415340	1.4331901	0.0560
site_ethnic_nj_cauca	1.0990258	0.7955822	-0.2368824	2.7695308	0.1305
site_ethnic_nj_hispa	0.1942595	0.5524206	-1.0104444	1.2960723	0.6885
site_ethnic_p_black	0.4803200	0.4891255	-0.4177802	1.4976000	0.3180
site_ethnic_p_cauca	0.7271998	0.4069664	0.0146010	1.6170665	0.0440
site_ethnic_ucd_cauca	0.2539384	0.4054615	-0.5534879	1.0510744	0.5115
site_ethnic_ucd_chine	0.0126214	0.3259992	-0.5450049	0.7250946	0.9860
site_ethnic_ucla_cauca	0.7145777	0.4227695	-0.0328034	1.5574396	0.0615
site_ethnic_ucla_japan	0.6833081	0.3408692	0.0293766	1.3331523	0.0370
smoke_past_only	-0.0991718	0.2126347	-0.5532838	0.2985079	0.6515
smoke_current_smoker	0.4043501	0.2890467	-0.1059751	1.0048318	0.1635
value(lamh)	-1.1322009	0.1265345	-1.3717799	-0.8975461	0.0000
slope(lamh)	-24.5107006	15.6472310	-50.3095234	-0.2016081	0.0445

7.3 Joint model

Here are the full summary for the joint model with rate:

```
#>
#> Call:
#> JMbayes2::jm(Surv_object = surv.fit16, Mixed_objects = lme.fit1,
#>     time_var = "time", functional_forms = list(lamh = ~value(lamh) +
#>         slope(lamh)), control = jmcontrol, seed = 55555)
#>
#> Data Descriptives:
#> Number of Groups: 600        Number of events: 600 (100%)
#> Number of Observations:
#>   lamh: 3326
#>
#>                  DIC     WAIC      LPML
#> marginal    14827.79 14888.48 -7504.700
#> conditional 14538.29 14379.46 -7573.724
#>
#> Random-effects covariance matrix:
#>
#>        StdDev   Corr
#> (Intr) 1.5620 (Intr)
#> time   0.0605 0.1060
#>
#> Survival Outcome:
#>                               Mean   StdDev     2.5%   97.5%      P
#> marriedMarried/Partnered    0.2417  0.2102  -0.1655  0.6652 0.2330
#> bc_pillsEver use BC pills  -0.0394  0.2007  -0.4541  0.3596 0.8500
#> bmi                        -0.0608  0.0156  -0.0932 -0.0334 0.0000
#> site_ethnic_b_black        -0.1296  0.4137  -0.8825  0.7733 0.7025
#> site_ethnic_c_black        -0.4346  0.3958  -1.2237  0.4189 0.2310
#> site_ethnic_c_cauca         0.6874  0.4119  -0.1020  1.4818 0.0905
#> site_ethnic_m_black         0.0419  0.3231  -0.5471  0.7552 0.9190
#> site_ethnic_m_cauca         0.6367  0.3826  -0.0415  1.4332 0.0560
#> site_ethnic_nj_cauca        1.0990  0.7956  -0.2369  2.7695 0.1305
#> site_ethnic_nj_hispa        0.1943  0.5524  -1.0104  1.2961 0.6885
#> site_ethnic_p_black         0.4803  0.4891  -0.4178  1.4976 0.3180
#> site_ethnic_p_cauca         0.7272  0.4070   0.0146  1.6171 0.0440
#> site_ethnic_ucd_cauca       0.2539  0.4055  -0.5535  1.0511 0.5115
#> site_ethnic_ucd_chine       0.0126  0.3260  -0.5450  0.7251 0.9860
#> site_ethnic_ucla_cauca      0.7146  0.4228  -0.0328  1.5574 0.0615
#> site_ethnic_ucla_japan      0.6833  0.3409   0.0294  1.3332 0.0370
#> smoke_past_only            -0.0992  0.2126  -0.5533  0.2985 0.6515
#> smoke_current_smoker        0.4044  0.2890  -0.1060  1.0048 0.1635
#> value(lamh)                -1.1322  0.1265  -1.3718 -0.8975 0.0000
#> slope(lamh)               -24.5107 15.6472 -50.3095 -0.2016 0.0445
#>
#> Longitudinal Outcome: lamh (family = gaussian, link = identity)
#>                Mean  StdDev    2.5%   97.5% P
#> (Intercept)  7.8010 0.0857  7.6391  7.9778 0
#> time        -0.5831 0.0078 -0.6016 -0.5718 0
#> sigma        1.3159 0.0184  1.2788  1.3525 0
#>
#> MCMC summary:
#> chains: 1
#> iterations per chain: 5000
#> burn-in per chain: 1000
```

```
#> thinning: 1
#> time: 29 sec
```

8 Comparison for model with and without rate

```
#>
#>                          DIC     WAIC      LPML
#>  jmbayes2.fit116.d 14827.79 14888.48 -7504.700
#>    jmbayes2.fit116 14962.45 14972.47 -7499.795
#>
#> The criteria are calculated based on the marginal log-likelihood.
```