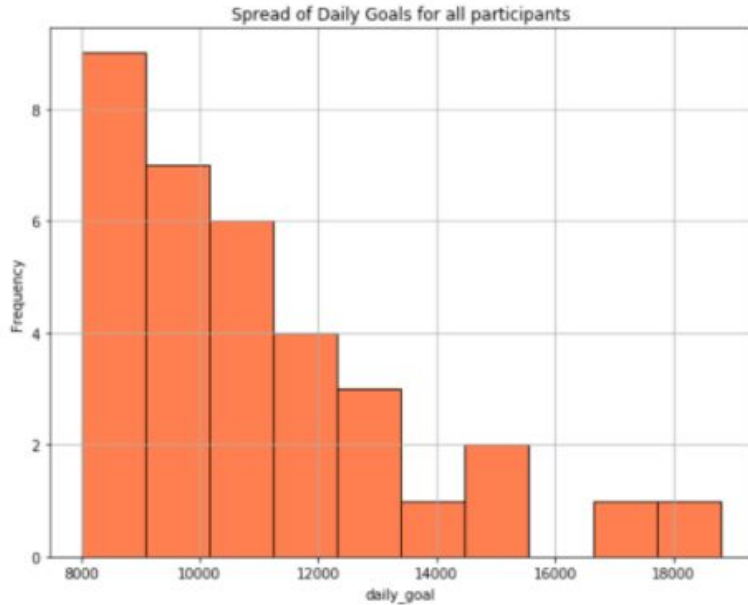


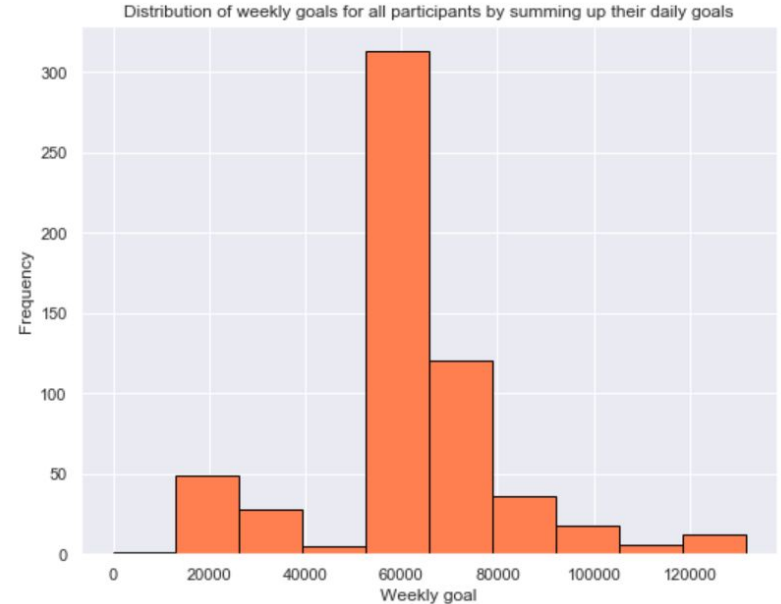
20/10/2020

FYP 5th meeting

Variable daily_goal vs weekly_goal

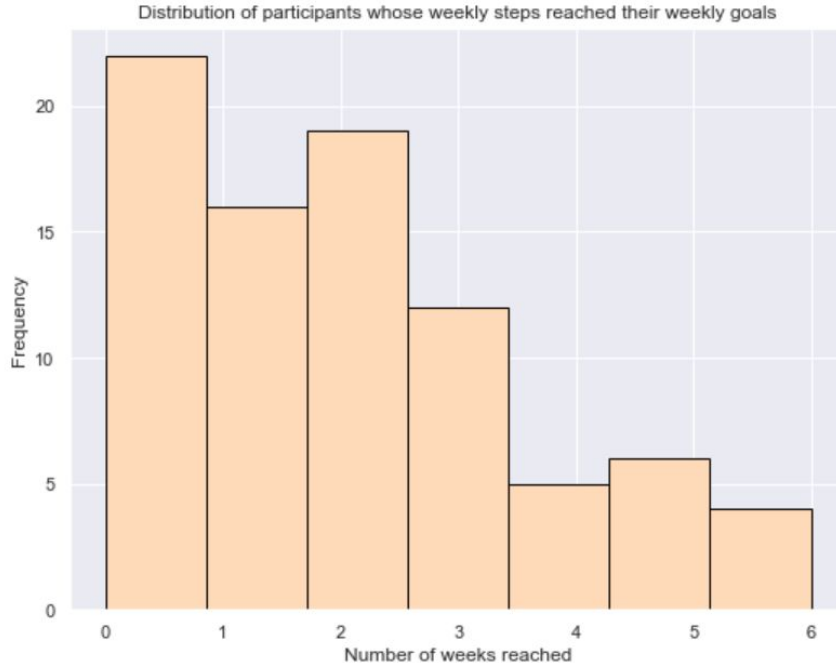


- Original variable daily goal from the data set



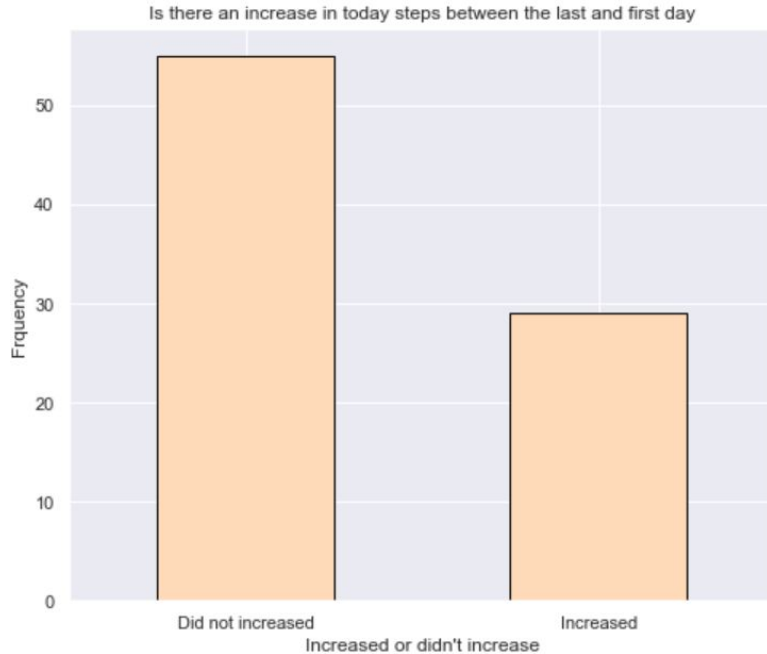
- Weekly goal is calculated by summing up the daily goal for each week

Distribution of participants who reached their weekly goal



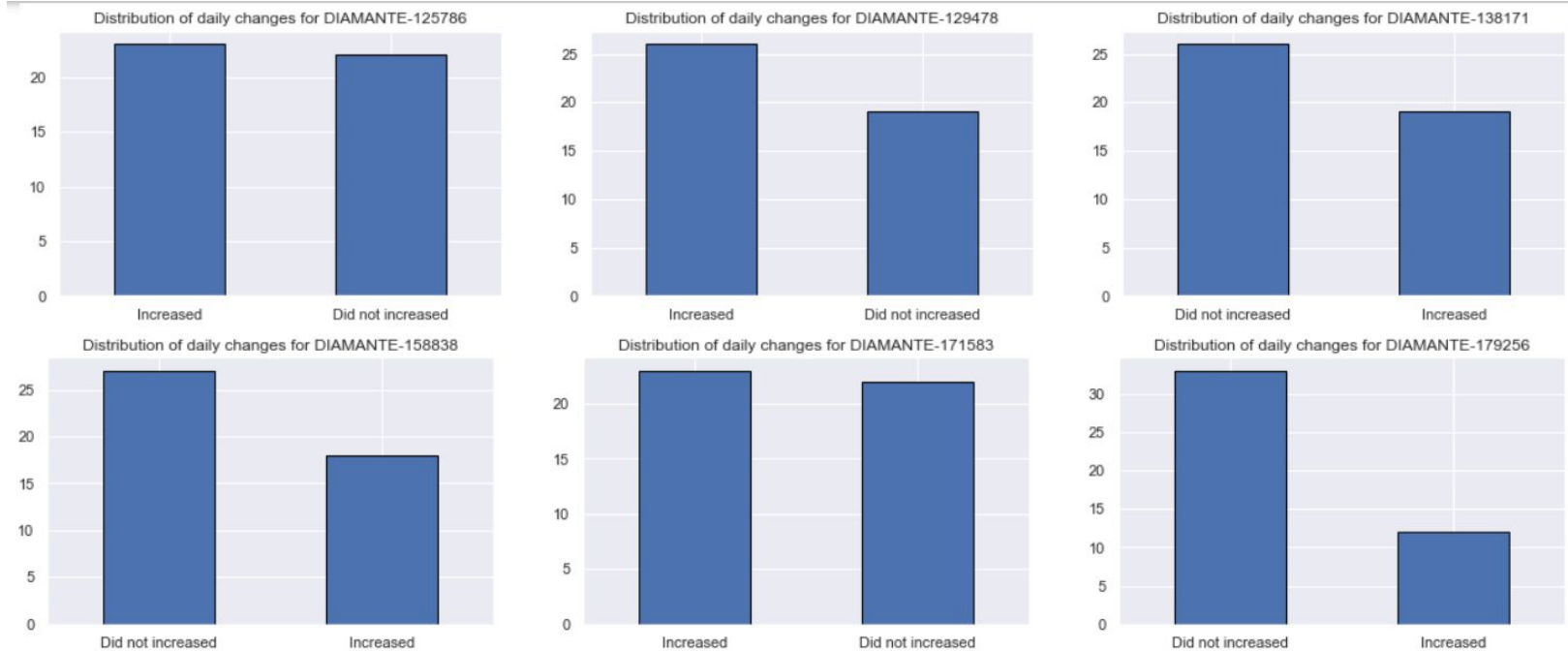
- `weekly_goal` is summed up using `daily_goal` for 1 whole week (7 days)
- Since most participants have an entire study duration of 45 days, they would have a total of 6 weeks and 3 days remaining
- The participants' weekly steps are calculated by summing up their `daily_steps` for the week
- Majority of the participants reached about 0 to 2 weeks of their weekly goals
- Replaced missing data in `today_steps` with previous day steps


Distribution of first and last day steps



- Participants whose last day steps were lower than their first day: 55
- Participants whose last day steps were greater than their first day: 29
- More participants seem to have not improved their daily steps after the entire study duration
- Replaced missing data in `today_steps` with previous day steps

Distribution of increase/decrease in steps as compared to previous day



A large orange geometric shape, resembling a stylized 'L' or a corner, occupies the left side of the slide. It has a diagonal cutout in the upper right corner.

Different combinations of feedback/motivational/timing messages

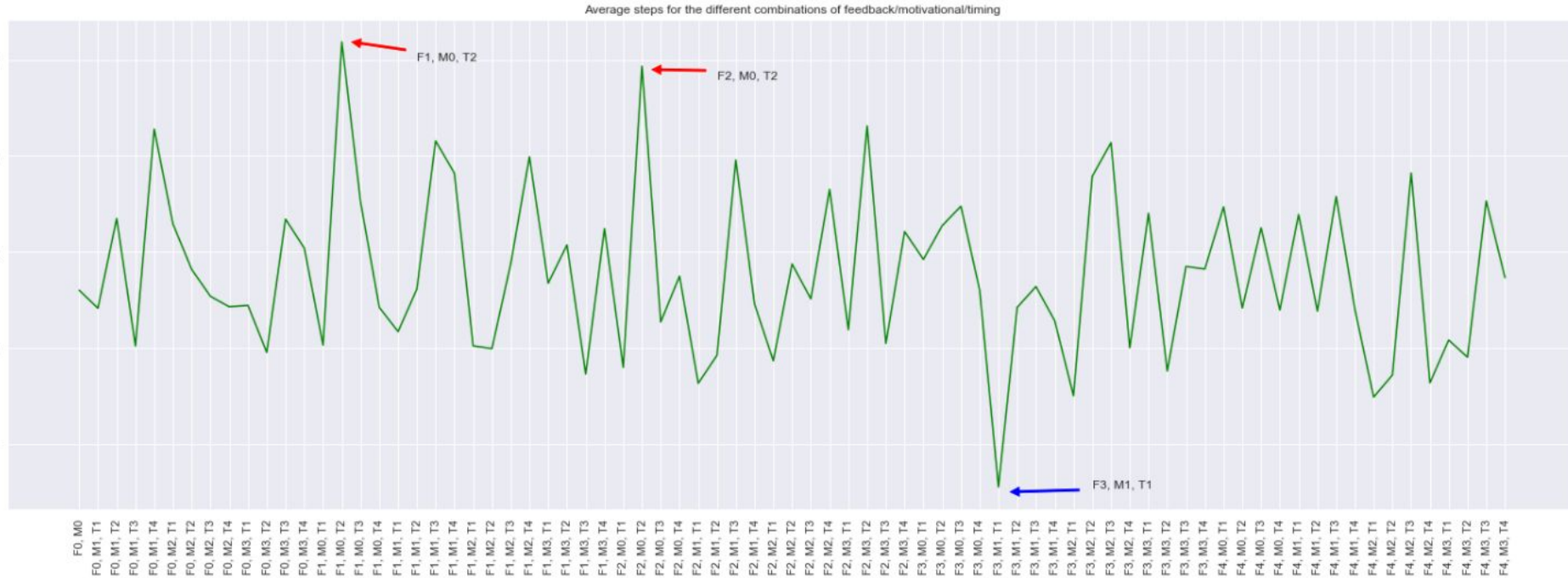
Different motivation/feedback/timing combinations

Combinations	Counts	Average steps	Combinations	Counts	Average steps	Combinations	Counts	Average steps
F0, M0	705	8602.51	F1, M0, T1	40	8030.45	F2, M0, T1	46	7799.34
F0, M1, T1	25	8414.75	F1, M0, T2	41	11186.94	F2, M0, T2	27	7799.34
F0, M1, T2	31	9348.75	F1, M0, T3	49	9520.76	F2, M0, T3	36	8271.66
F0, M1, T3	25	8021.53	F1, M0, T4	37	8423.44	F2, M0, T4	44	8748.32
F0, M1, T4	18	10278.17	F1, M1, T1	23	8171.38	F2, M1, T1	35	7633.84
F0, M2, T1	30	9291.21	F1, M1, T2	30	8613.95	F2, M1, T2	36	7925.59
F0, M2, T2	28	8817.96	F1, M1, T3	23	10156.05	F2, M1, T3	28	9957.44
F0, M2, T3	34	8538.35	F1, M1, T4	39	9820.22	F2, M1, T4	33	8458.13
F0, M2, T4	29	8429.76	F1, M2, T1	37	8023.15	F2, M2, T1	34	7867.48
F0, M3, T1	33	8443.83	F1, M2, T2	35	7994.65	F2, M2, T2	39	8875.19
F0, M3, T2	33	7954.68	F1, M2, T3	25	8872.63	F2, M2, T3	34	8512.12
F0, M3, T3	33	9341.83	F1, M2, T4	38	9991.57	F2, M2, T4	30	9652.24
F0, M3, T4	33	9040.52	F1, M3, T1	28	8674.74	F2, M3, T1	32	8190.29
			F1, M3, T2	31	9073.16	F2, M3, T2	39	10312.51
			F1, M3, T3	27	7730.25	F2, M3, T3	37	8049.11
			F1, M3, T2	36	9242.90	F2, M3, T4	23	9211.91

Different motivation/feedback/timing combinations

Combinations	Counts	Average steps	Combinations	Counts	Average steps
F3, M0, T1	32	8922.83	F4, M0, T1	40	9469.73
F3, M0, T2	42	9273.64	F4, M0, T2	39	8417.07
F3, M0, T3	30	9476.50	F4, M0, T3	46	9251.26
F3, M0, T4	30	8603.57	F4, M0, T4	47	8396.44
F3, M1, T1	33	6554.82	F4, M1, T1	29	9390.26
F3, M1, T2	32	8423.39	F4, M1, T2	28	8384.14
F3, M1, T3	31	8640.30	F4, M1, T3	27	9577.67
F3, M1, T4	32	8284.06	F4, M1, T4	28	8403.51
F3, M2, T1	33	7504.47	F4, M2, T1	30	7490.38
F3, M2, T2	27	9787.37	F4, M2, T2	42	7720.09
F3, M2, T3	34	10137.41	F4, M2, T3	33	9821.72
F3, M2, T4	36	8003.00	F4, M2, T4	20	7638.40
F3, M3, T1	29	9402.22	F4, M3, T1	31	8083.75
F3, M3, T2	34	7761.62	F4, M3, T2	24	7904.75
F3, M3, T3	42	8849.82	F4, M3, T3	29	9530.60
F3, M3, T4	38	8822.47	F4, M3, T4	30	8733.60

Different motivation/feedback/timing combinations

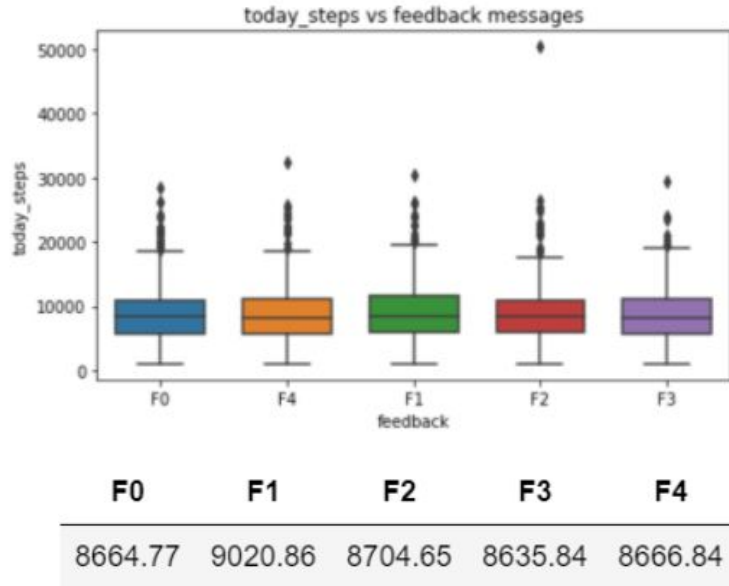


- Distribution of average steps for the different combinations of messages and timing
- Highest average steps: "F1, M0, T2" and "F2, M0, T2"
- Lowest average steps: "F3, M1, T1"

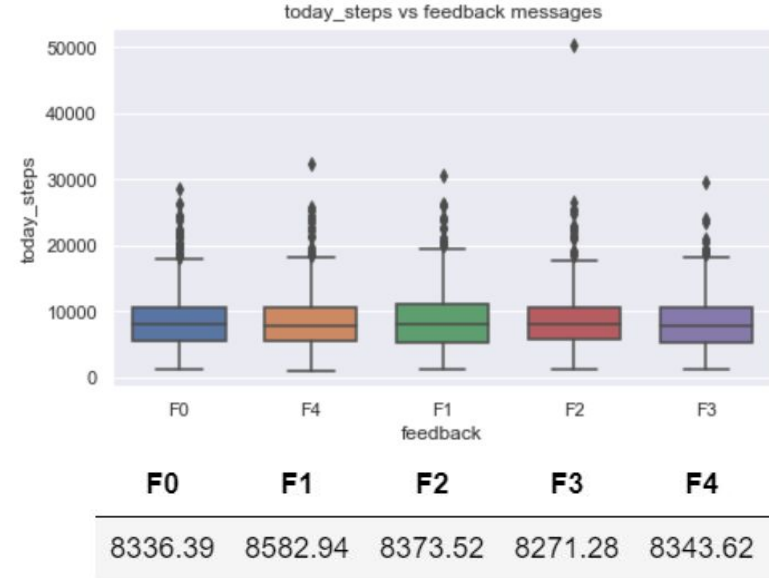
A large orange geometric shape, resembling a stylized 'L' or a corner, occupies the left side of the slide. It has a diagonal cutout in the upper right corner.

Comparison of boxplots using imputation of previous day steps vs removing NAN

Comparison of boxplot of today_steps and feedback

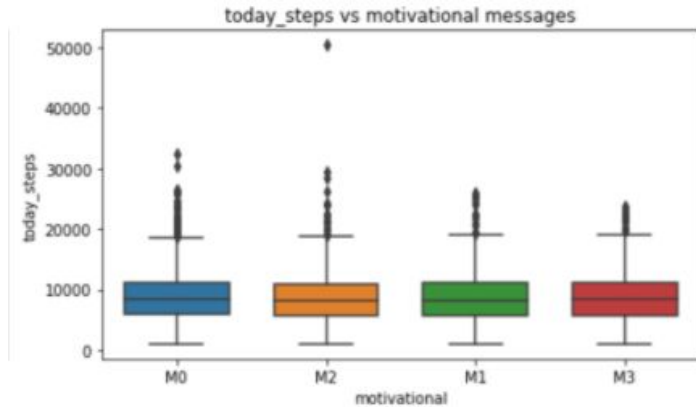


Removed NAN in today_steps

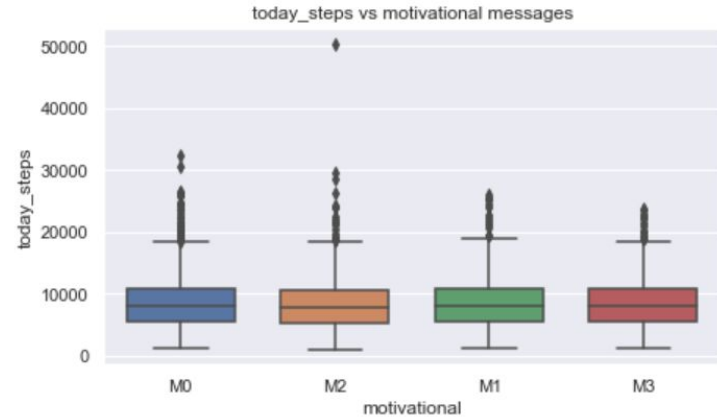


Replaced NAN in today_steps with yesterday steps

Comparison of boxplot of today_steps and motivational

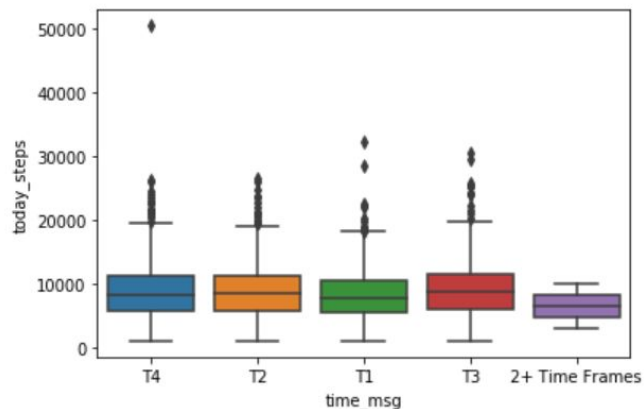


Removed NAN in today_steps



Replaced NAN in today_steps with yesterday steps

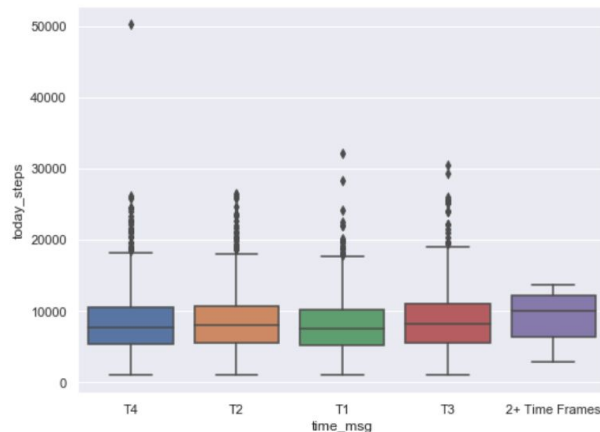
Comparison of boxplot of today_steps and time message



T1 T2 T3 T4 2+ Time Frames

8259.30 8887.75 9063.80 8843.22 6502.67

Removed NAN in today_steps



T1 T2 T3 T4 2+ Time Frames

8059.70 8497.44 8580.97 8354.16 9098.8

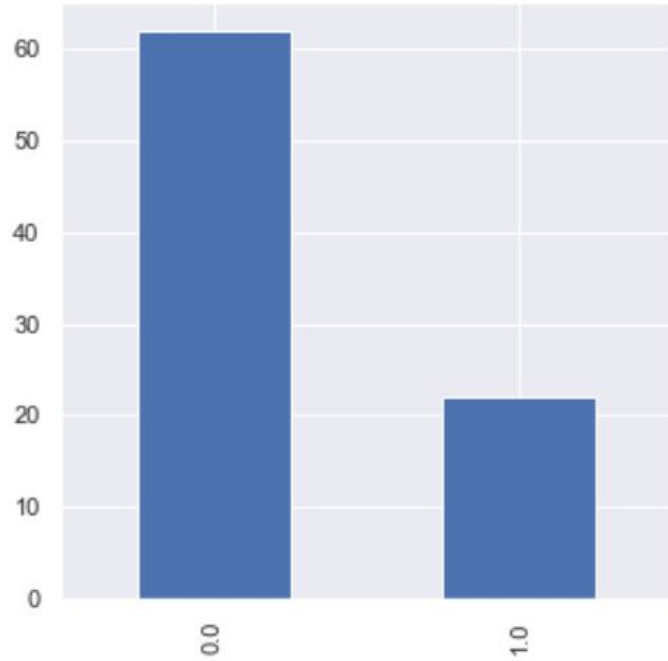
Replaced NAN in today_steps with yesterday steps



Analysis of the different arm group

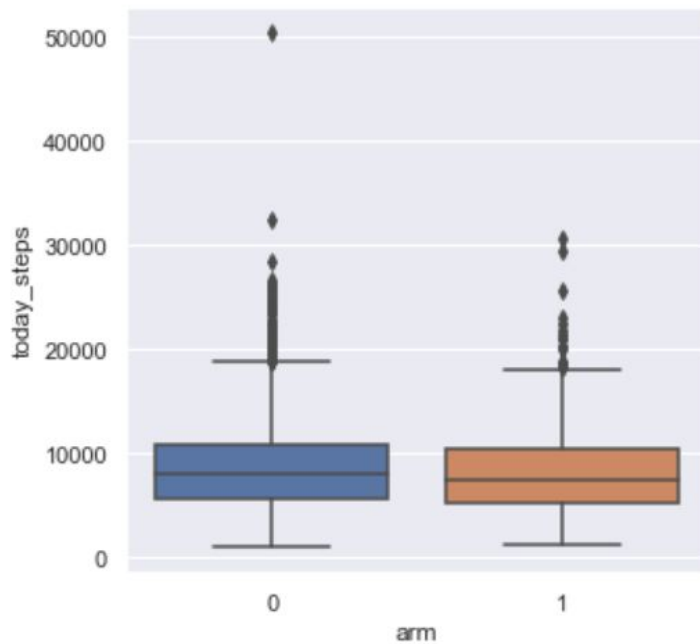


Arm group



- Uniform group: 62 participants
- Adaptive group: 22 participants

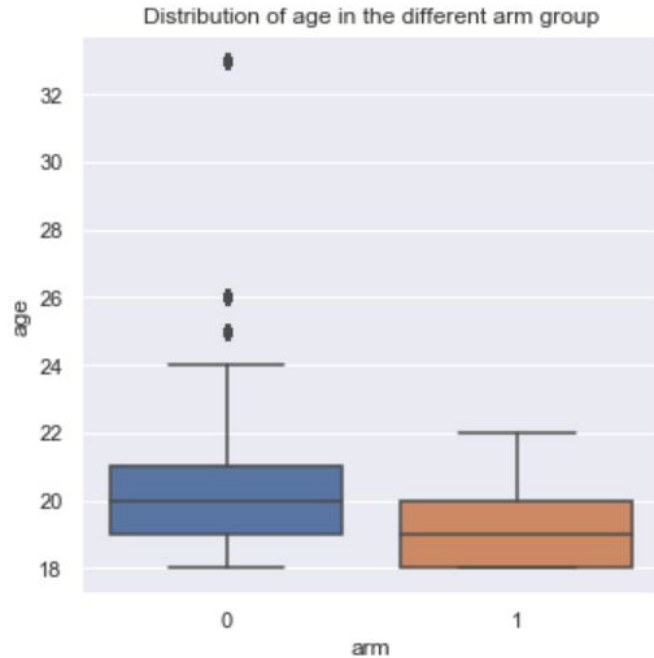
Arm group



Average today_steps:

- Adaptive group: 7943.97
- Uniform group: 8524.60

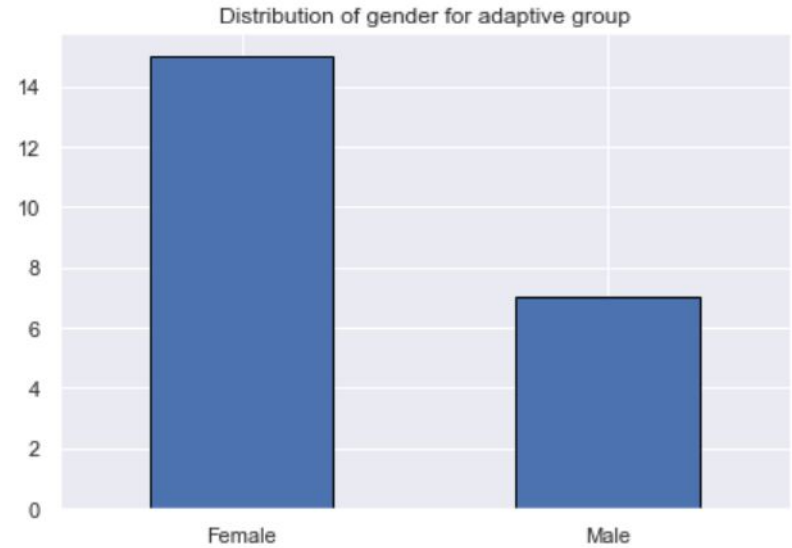
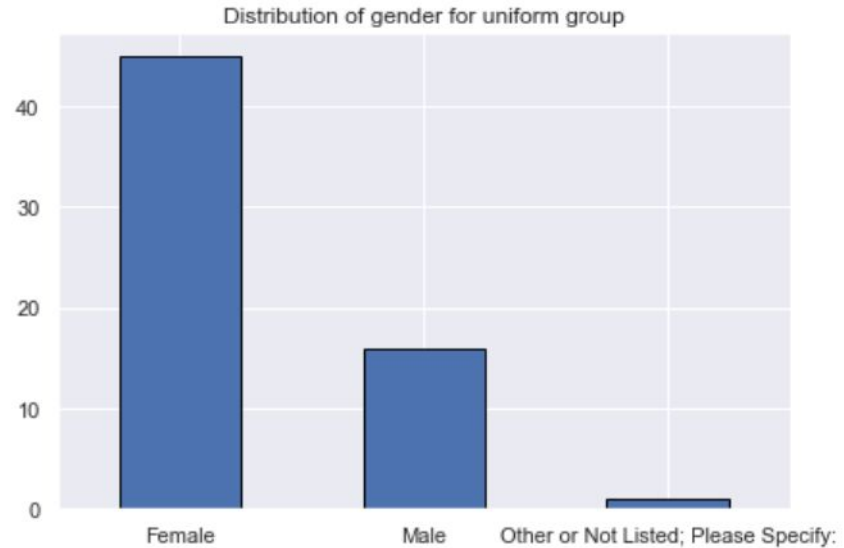
Distribution of ages among different arm group



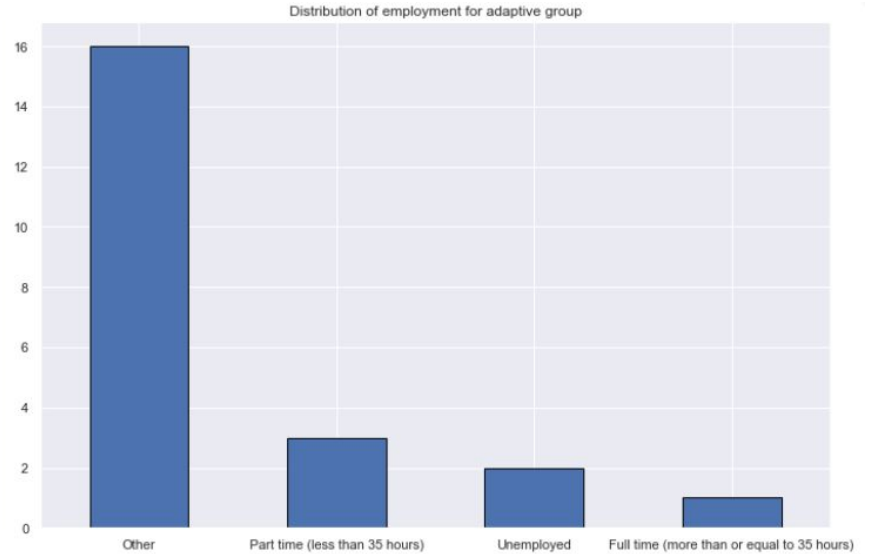
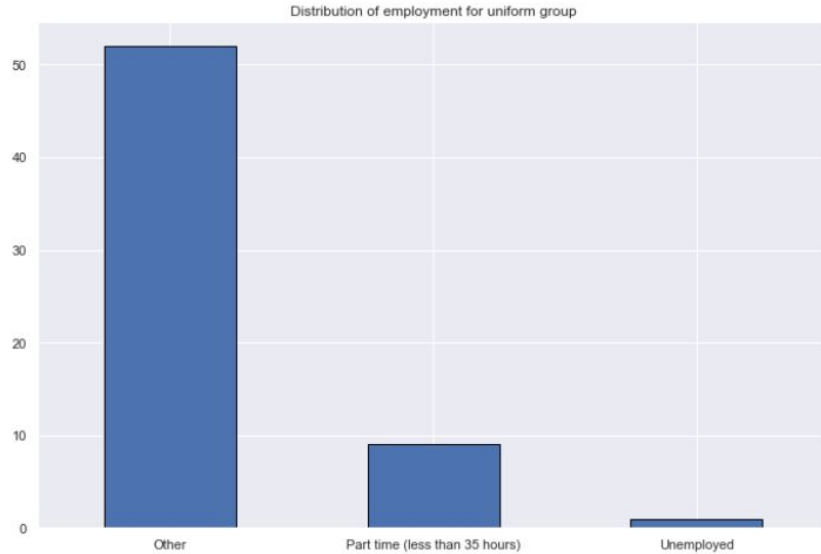
Average age:

- Adaptive group: 19.14
- Uniform group: 20.40

Distribution of gender in different arm group

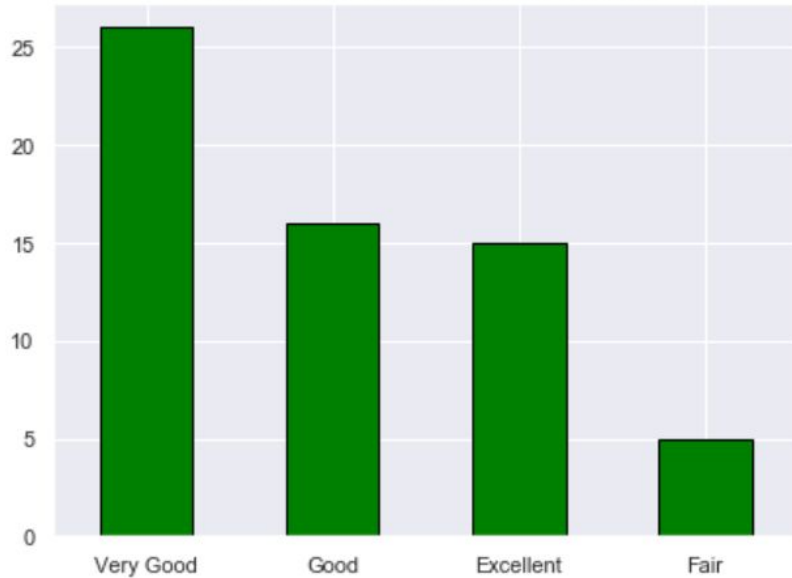


Distribution of employment in different arm group

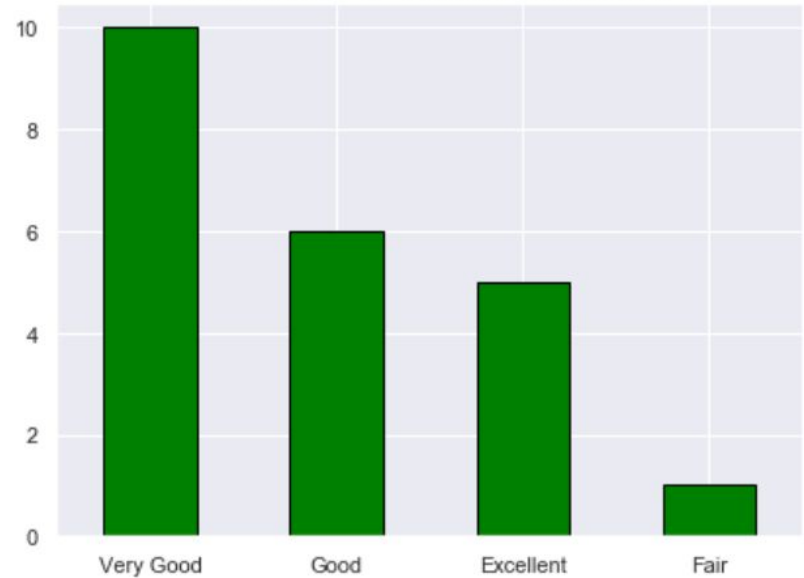


Distribution of health status in different arm group

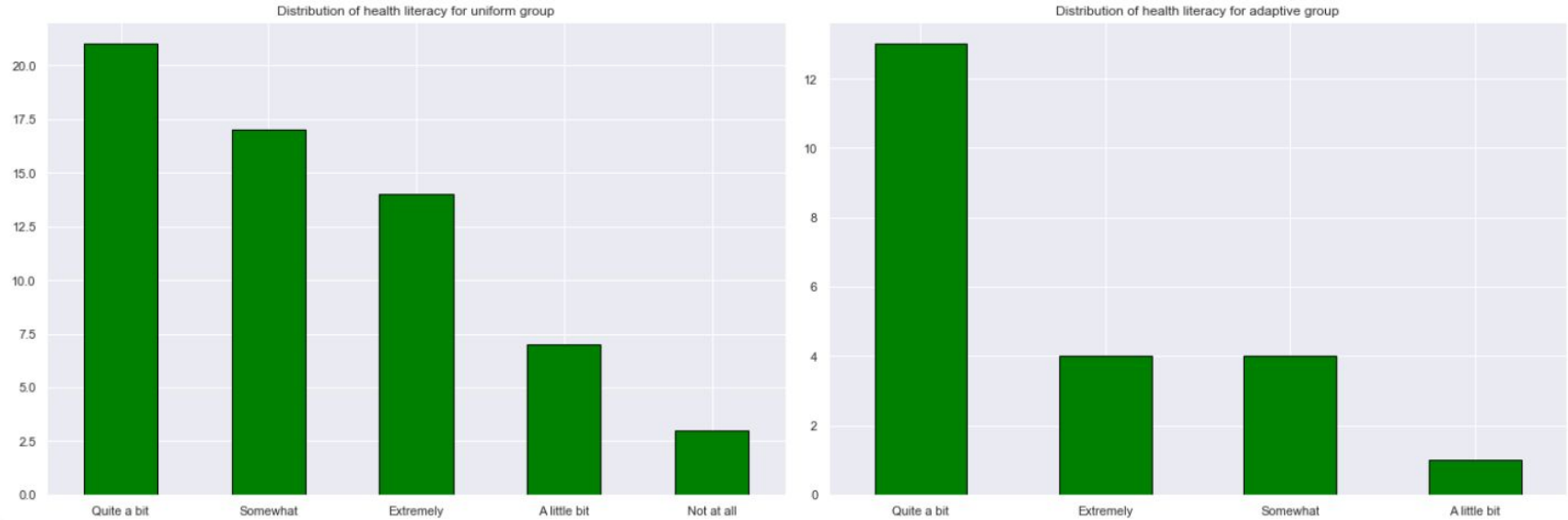
Distribution of health status for uniform group



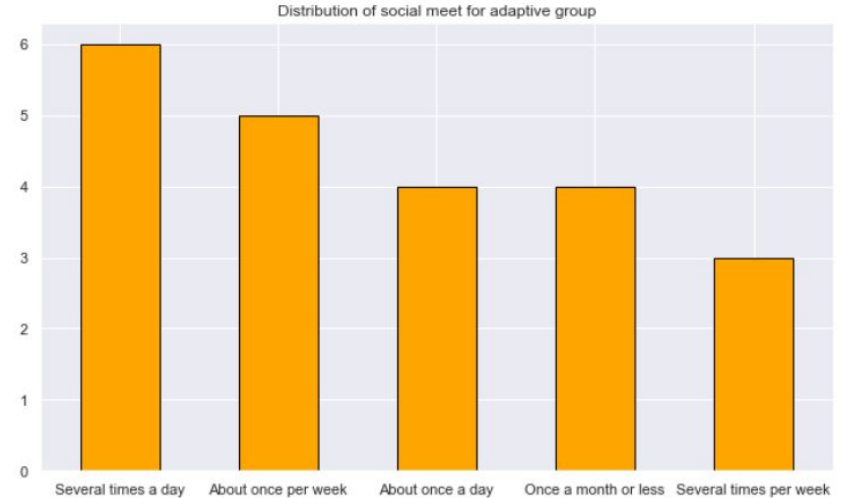
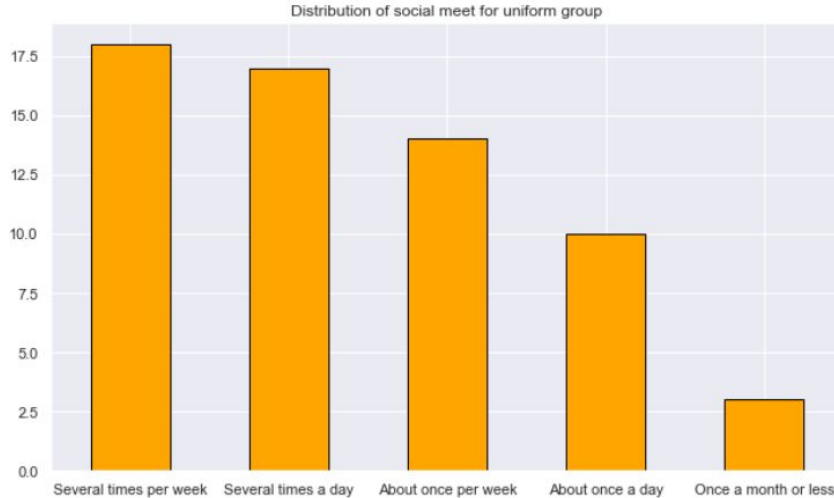
Distribution of health status for adaptive group



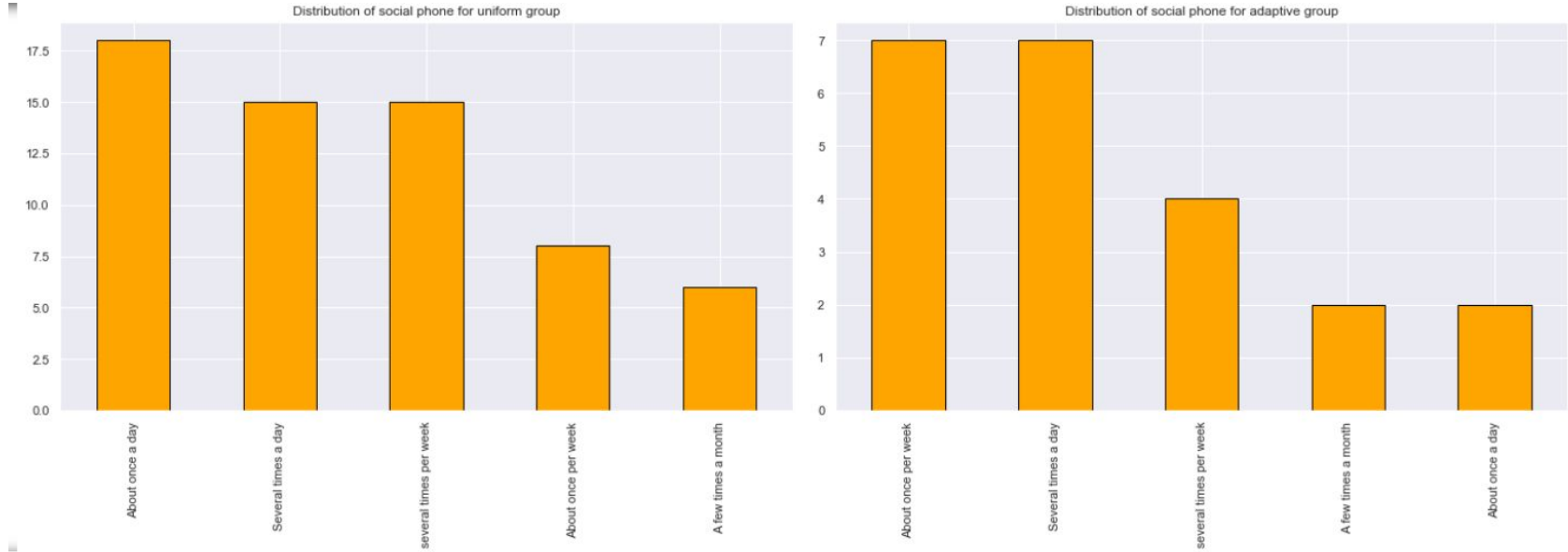
Distribution of health literacy in different arm group



Distribution of social meet among different arm group



Distribution of social phone in different arm group



A large orange geometric shape, resembling a stylized 'L' or a corner, occupies the left side of the slide. It has a diagonal cutout in the upper right corner.

Fitting Multilevel effects model

```
f1 = "today_steps ~ age + C(arm)"
mod_lme = MixedLM.from_formula(f1, groups="ID_DIAMANTE", re_formula="Study_Day", data=df1)
mod_lme = mod_lme.fit()
mod_lme.summary()
```

Model:	MixedLM	Dependent Variable:	today_steps
No. Observations:	3770	Method:	REML
No. Groups:	84	Scale:	12561317.4539
Min. group size:	41	Likelihood:	-36322.0487
Max. group size:	45	Converged:	Yes
Mean group size:	44.9		

response: today_steps

predictors: age, arm

groups: random intercept for each participants

re_formula: Study_Day (to allow for different slope for the different participants (random slopes))

	Coef.	Std.Err.	z	P> z	[0.025	0.975]
Intercept	13792.498	2250.924	6.127	0.000	9380.769	18204.228
C(arm)[T.1]	-779.830	581.495	-1.341	0.180	-1919.540	359.880
age	-252.656	109.324	-2.311	0.021	-466.927	-38.385
ID_DIAMANTE Var	6074442.315	330.958				
ID_DIAMANTE x Study_Day Cov	-82835.240	8.147				
Study_Day Var	5160.587	0.301				