

Deadline Stress Work Patterns

Contents

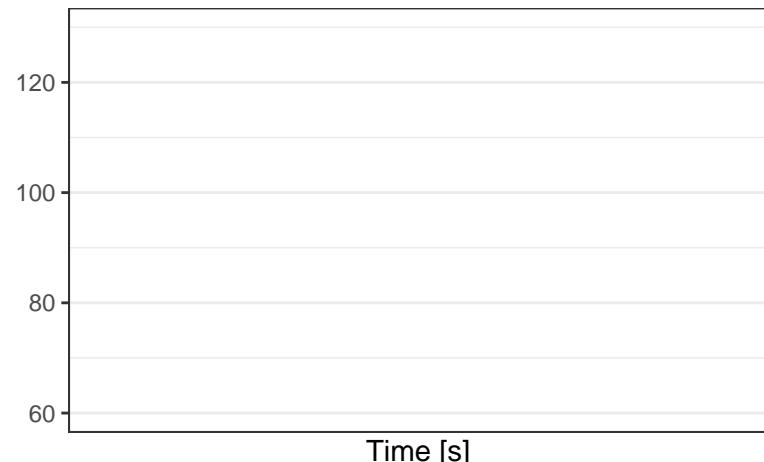
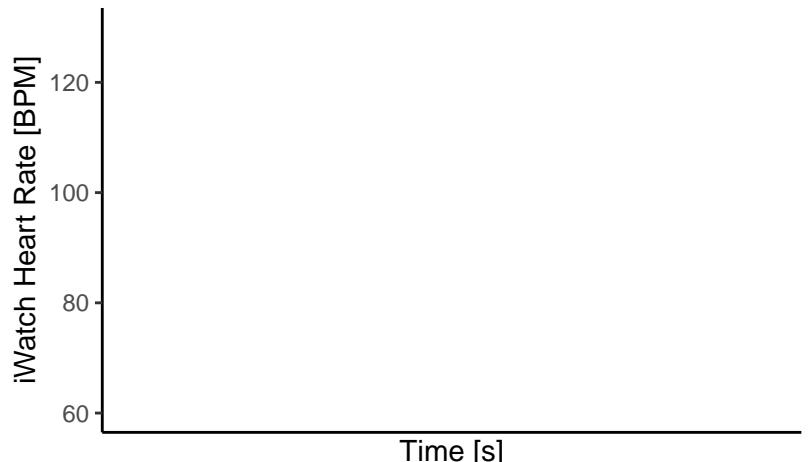
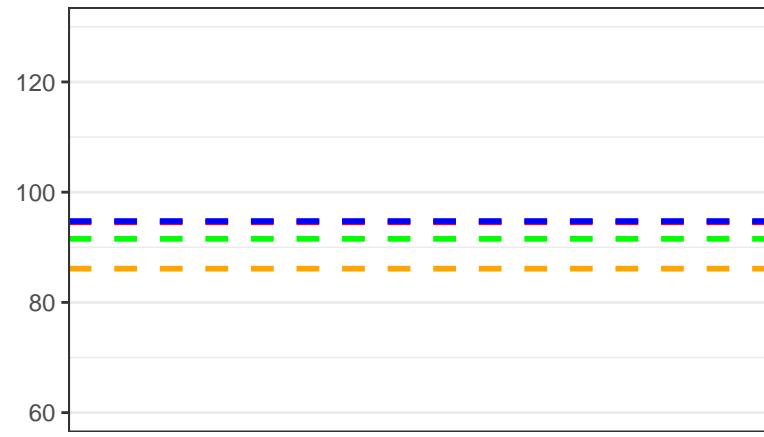
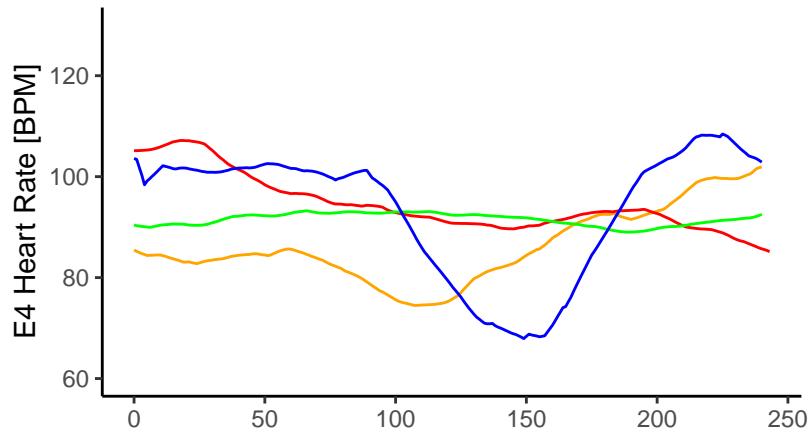
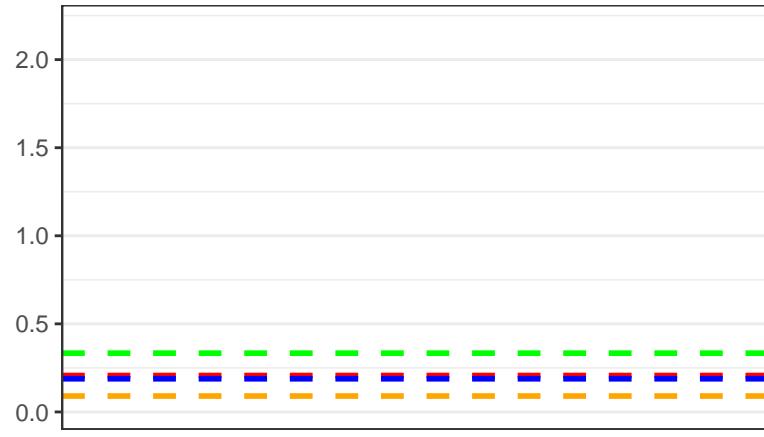
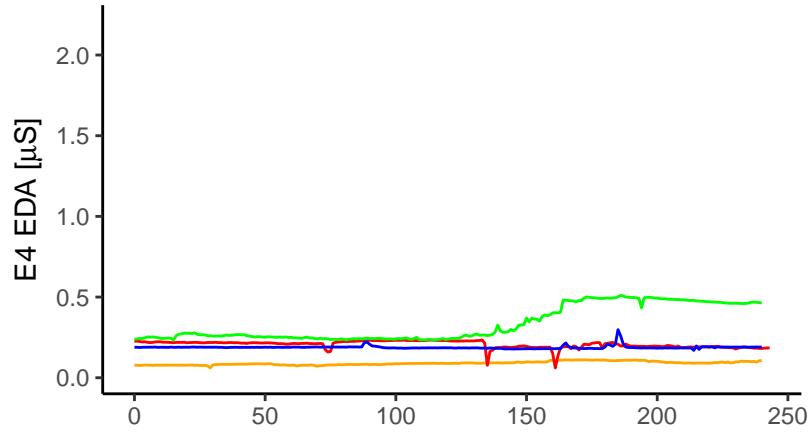
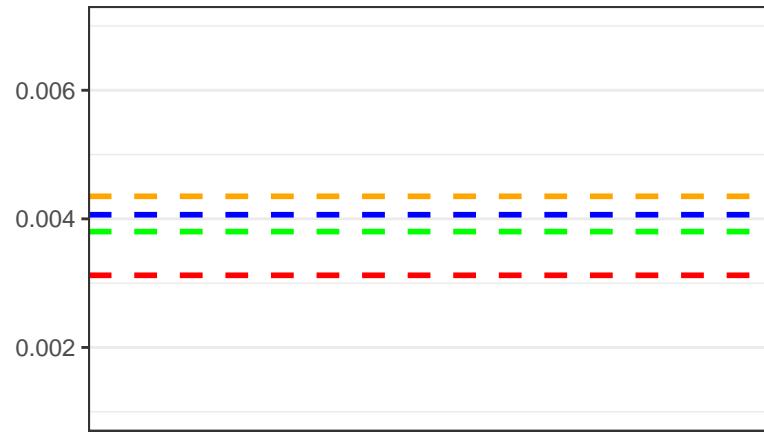
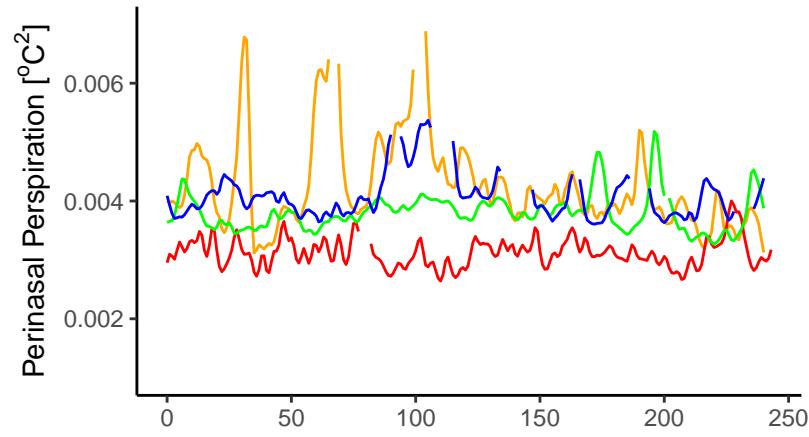
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1 Chapter 1

1.1 Physiological Data

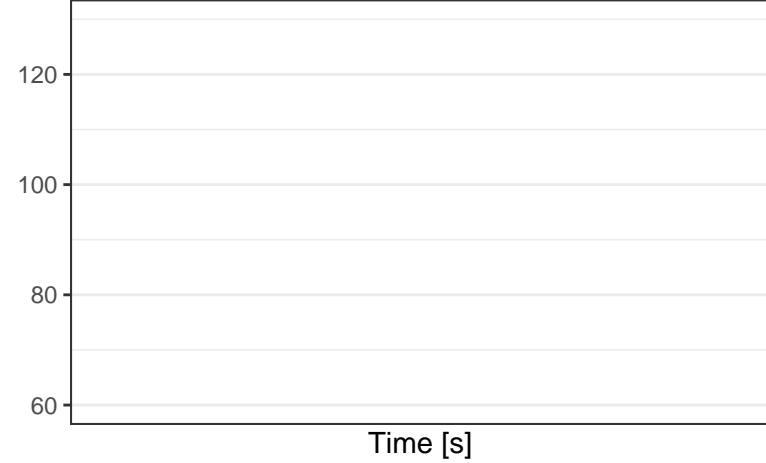
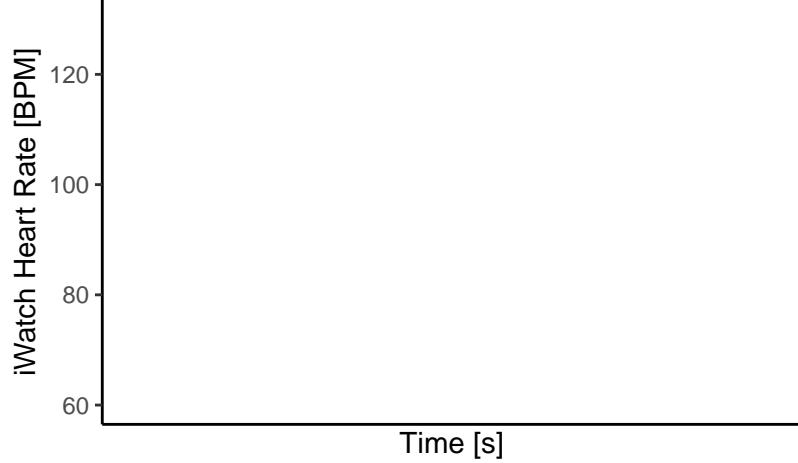
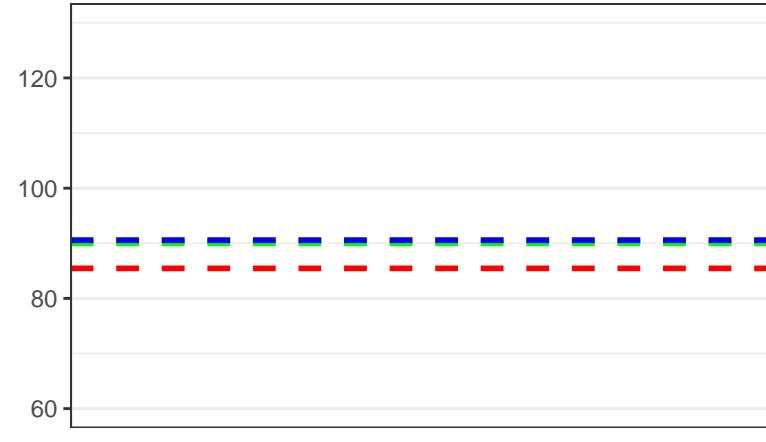
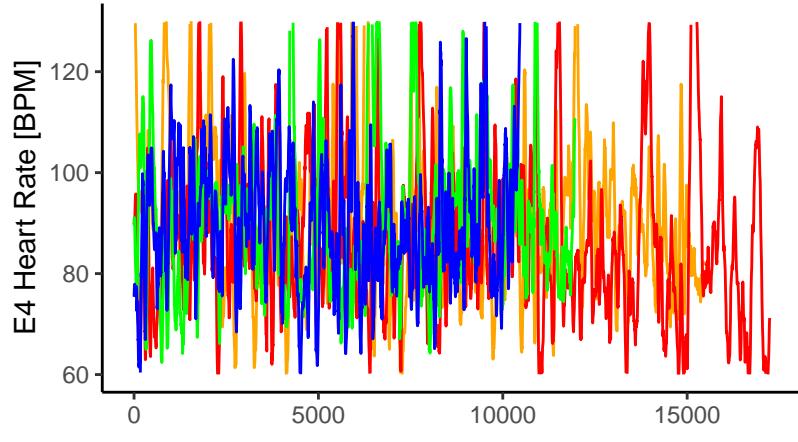
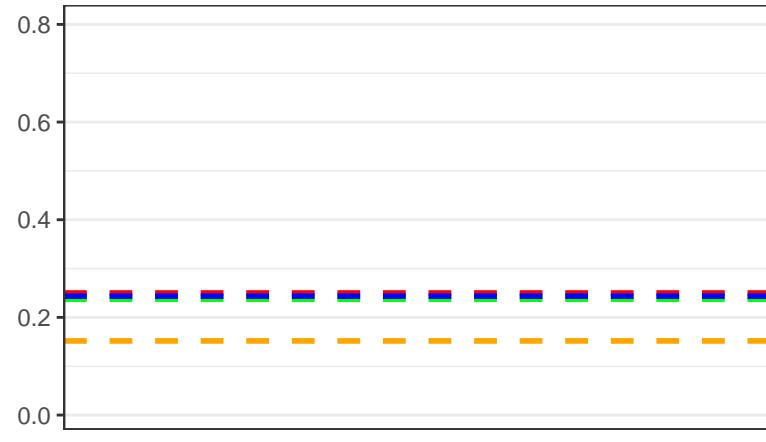
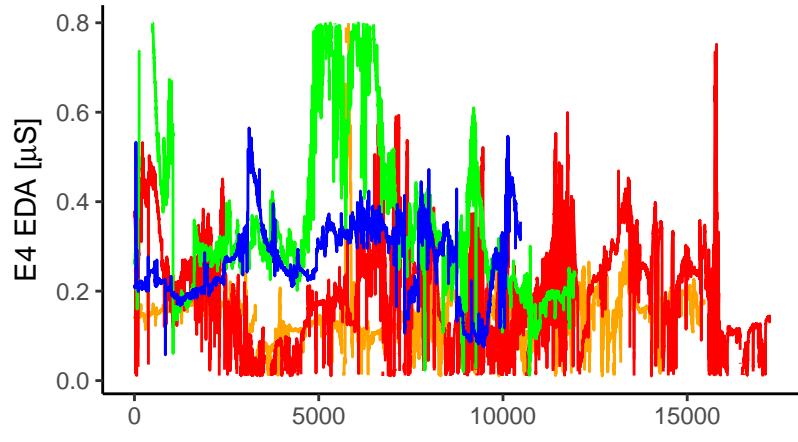
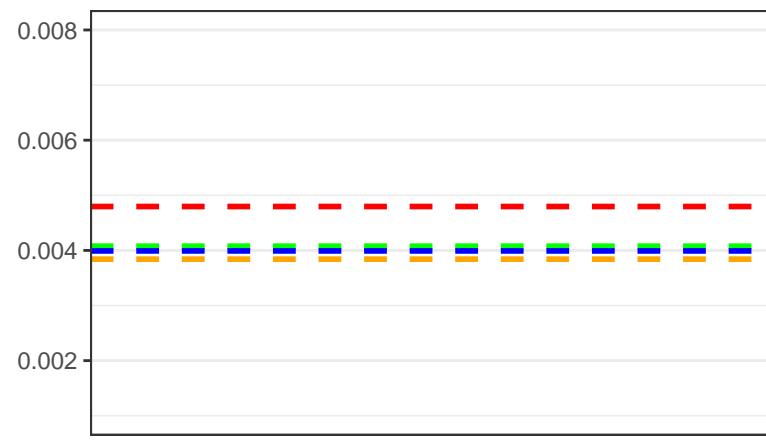
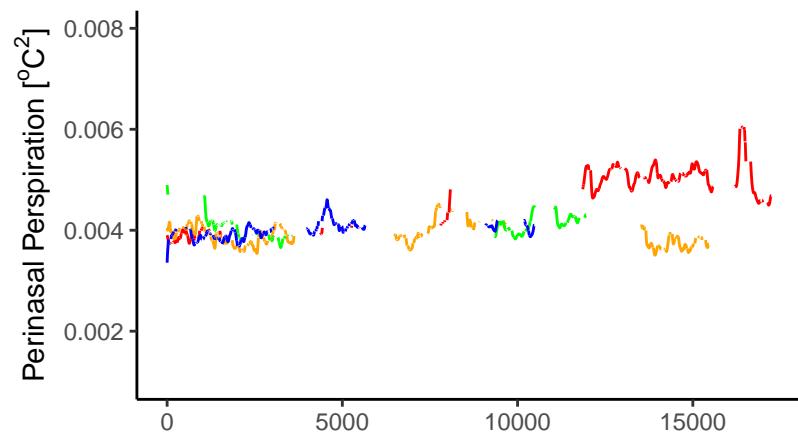
Physiological data includes perinasal perspiration, wrist heart rate and wrist EDA (electrodermal activity). We have used sensor devices like thermal camera, E4 watch and iWatch to collect those data. These physiological data have been plotted for the Baseline and Working session for the four days of the experiment.

T001 Baseline



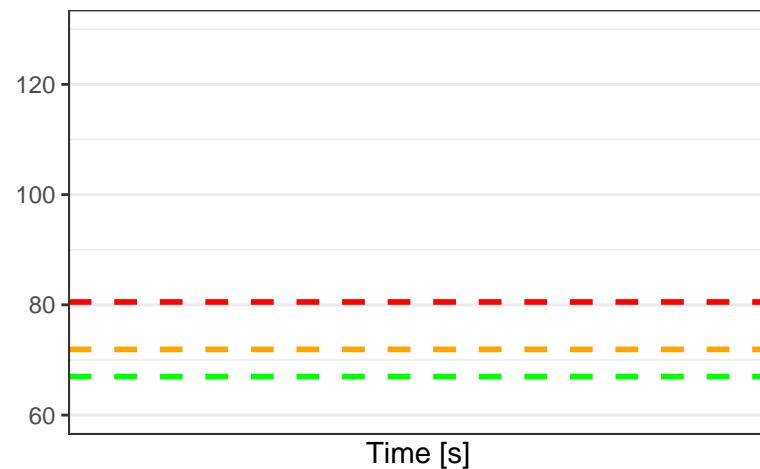
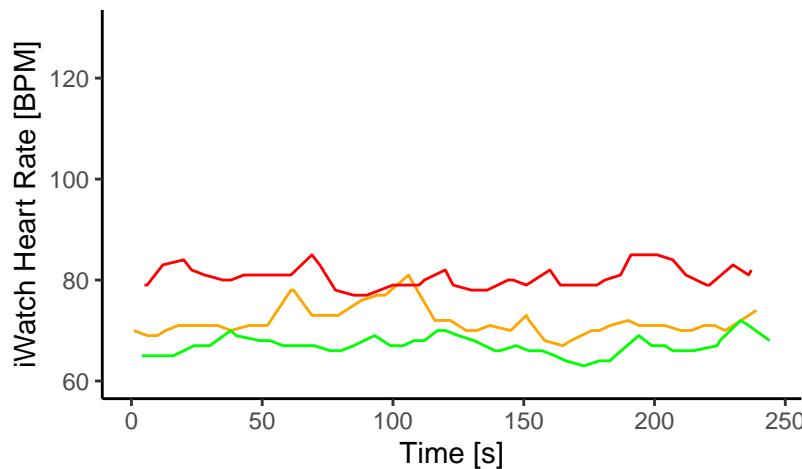
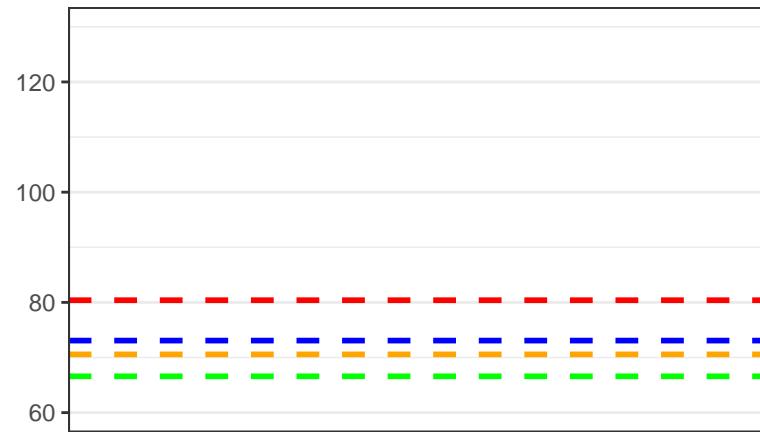
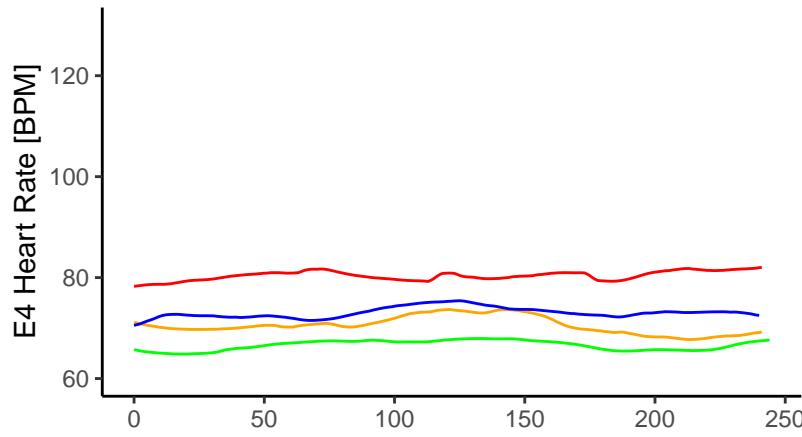
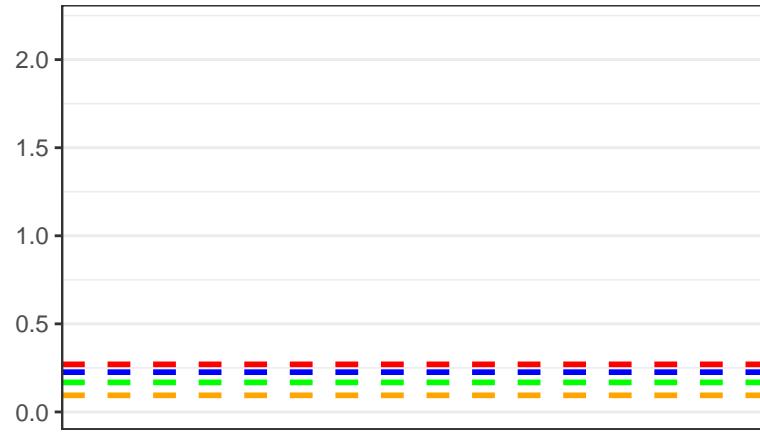
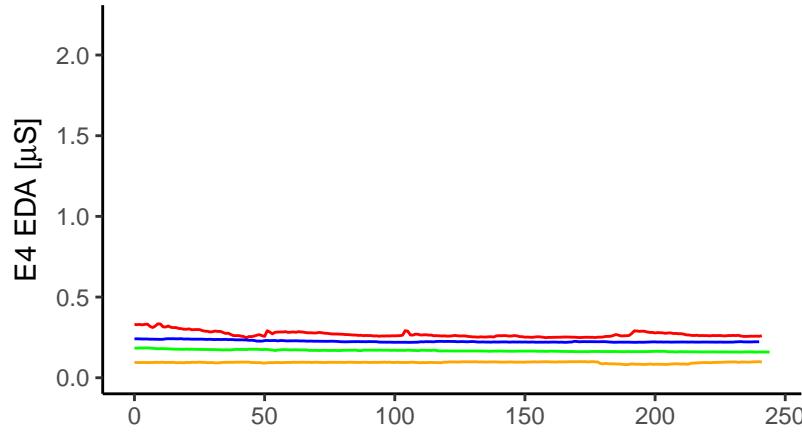
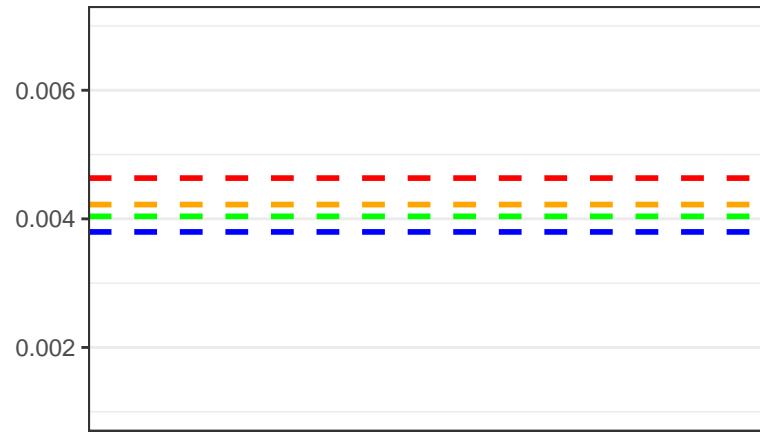
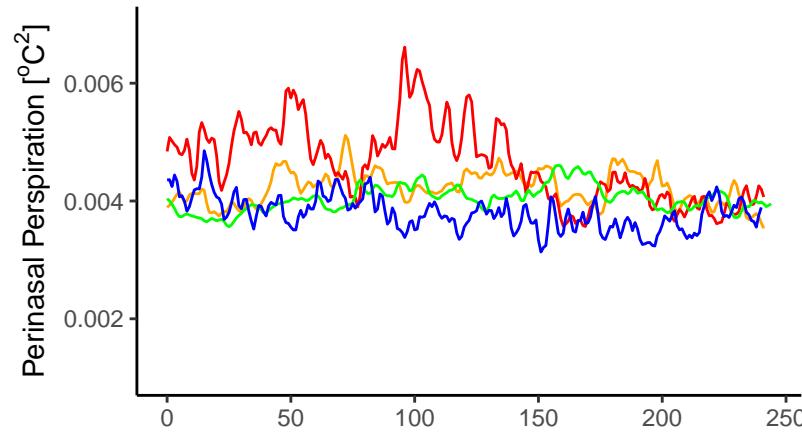
— Day1 — Day2 — Day3 — Day4

T001 Working Session



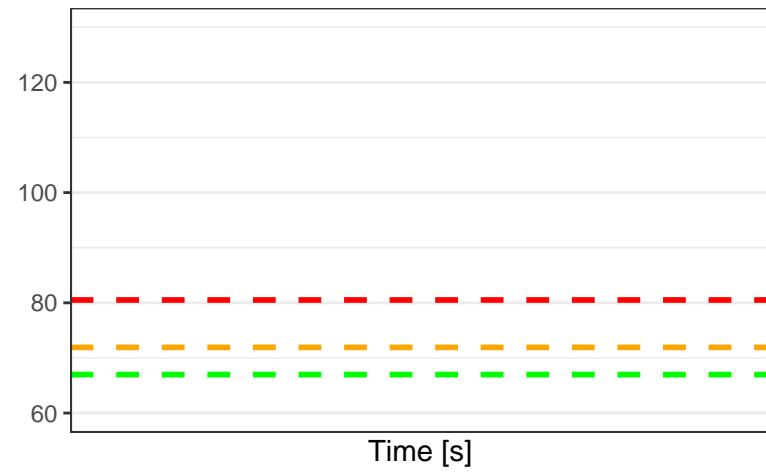
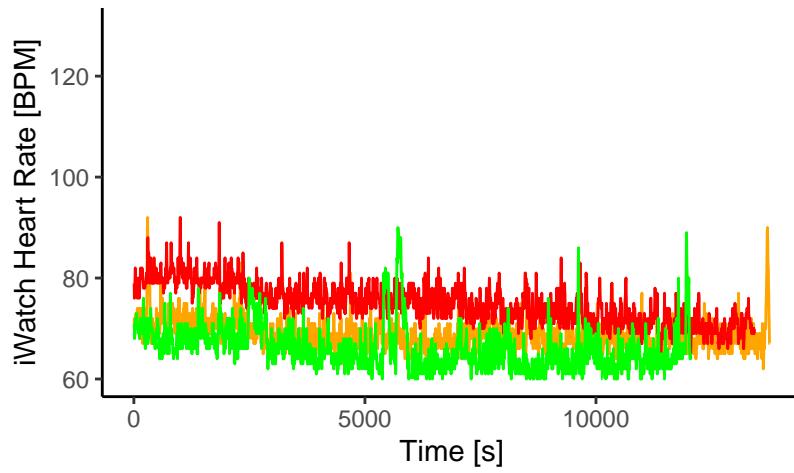
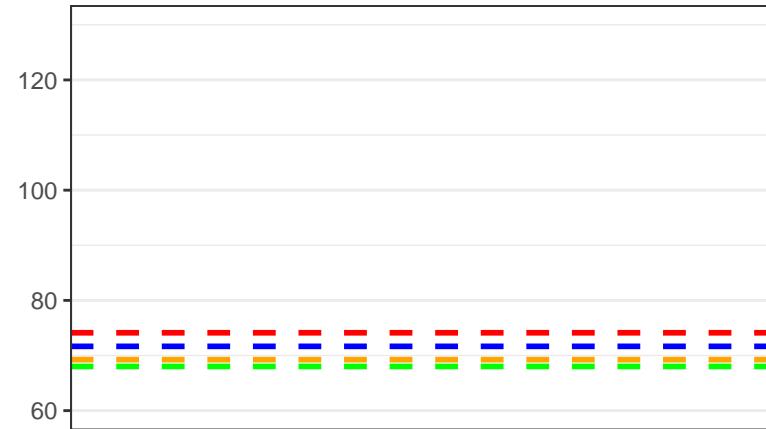
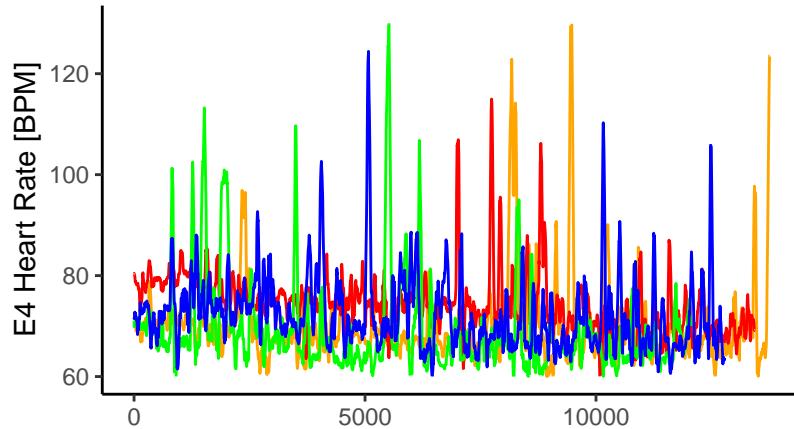
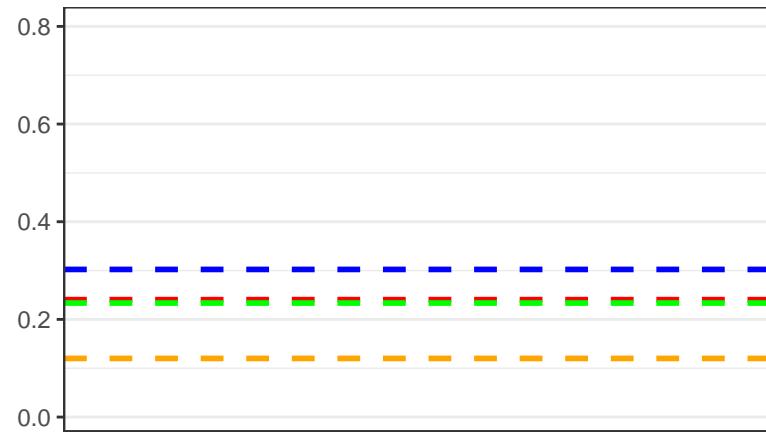
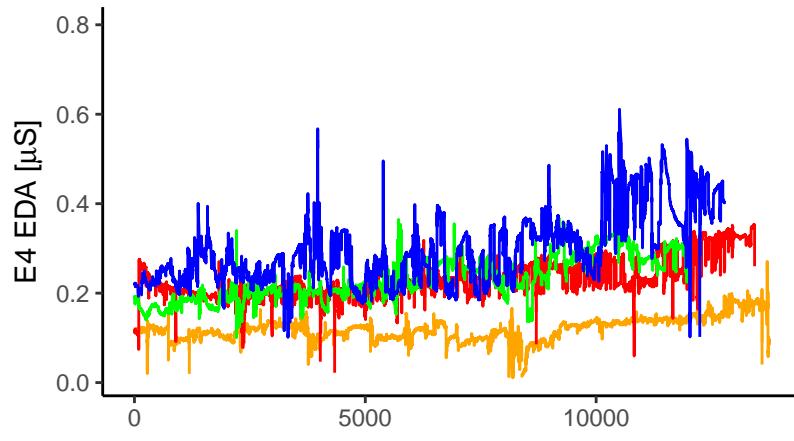
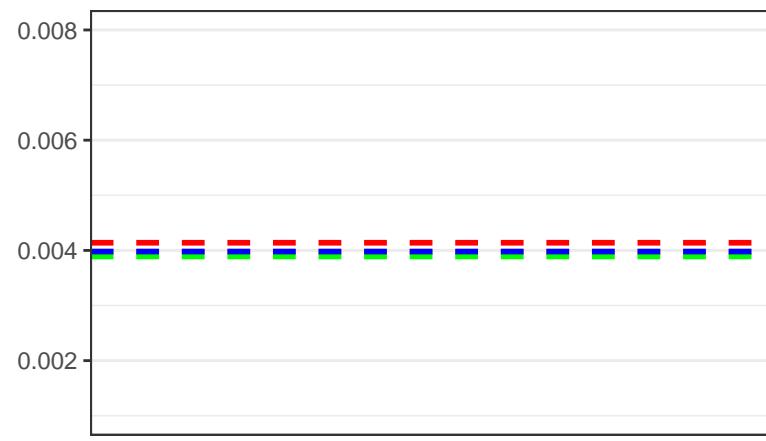
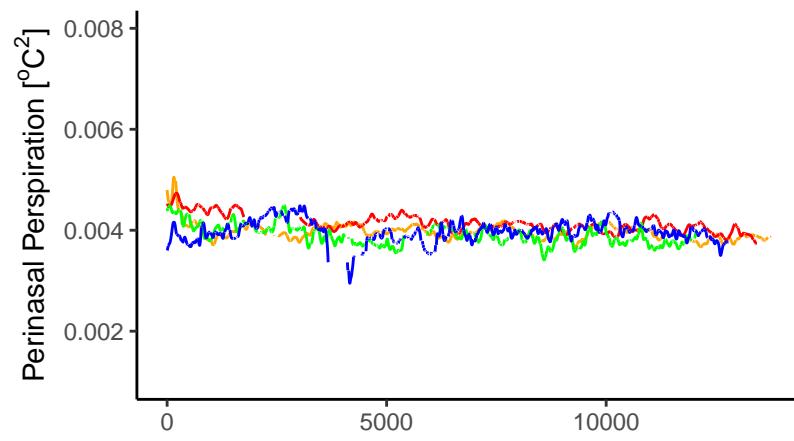
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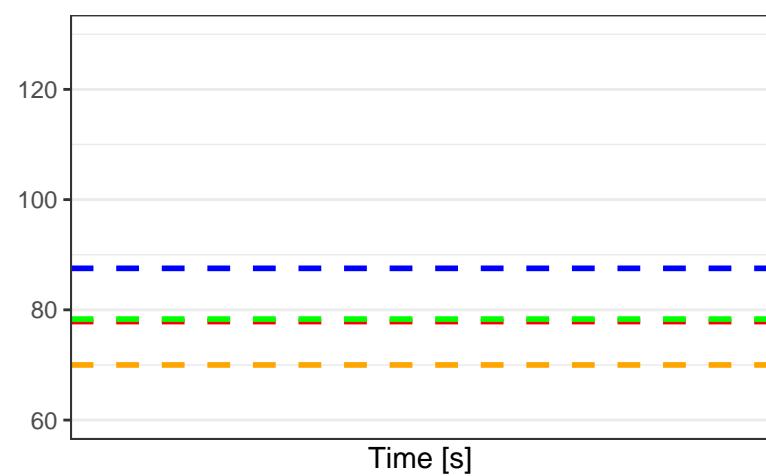
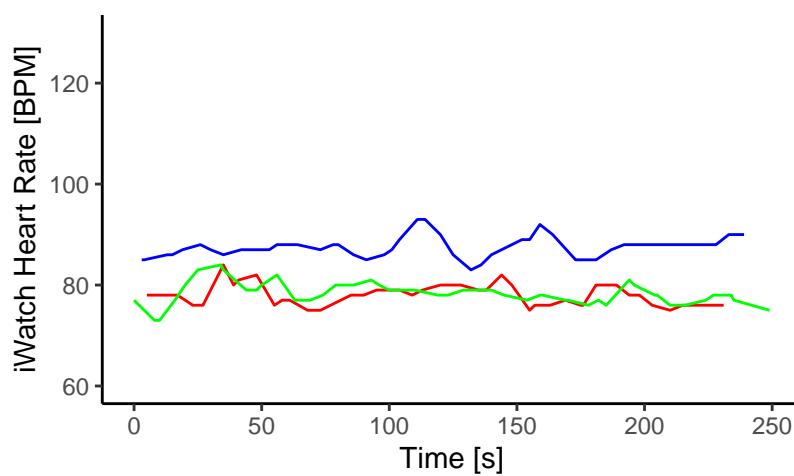
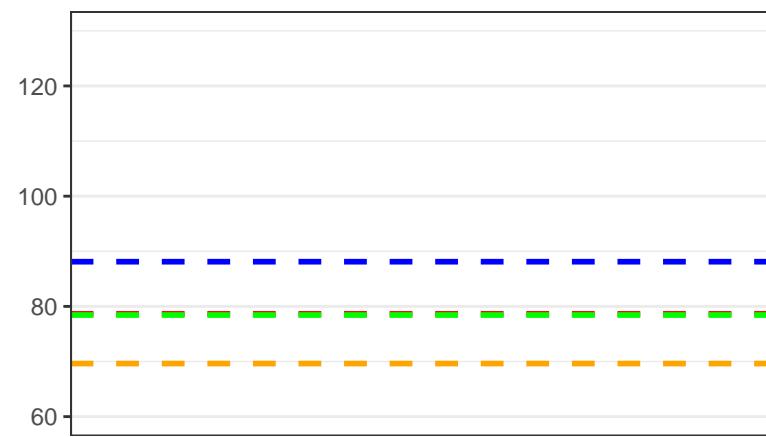
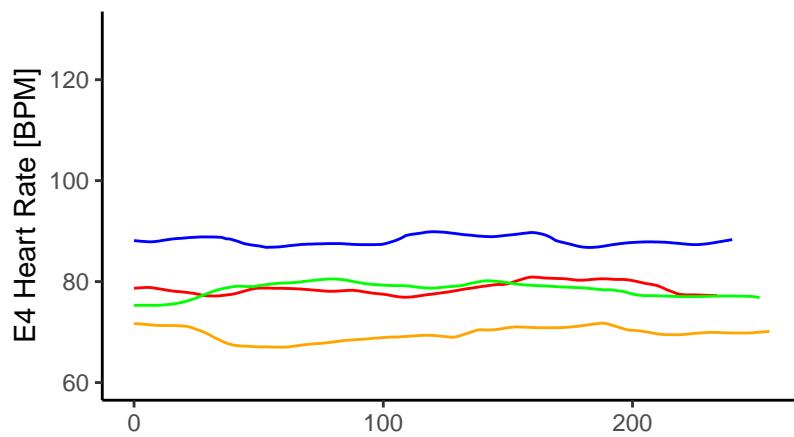
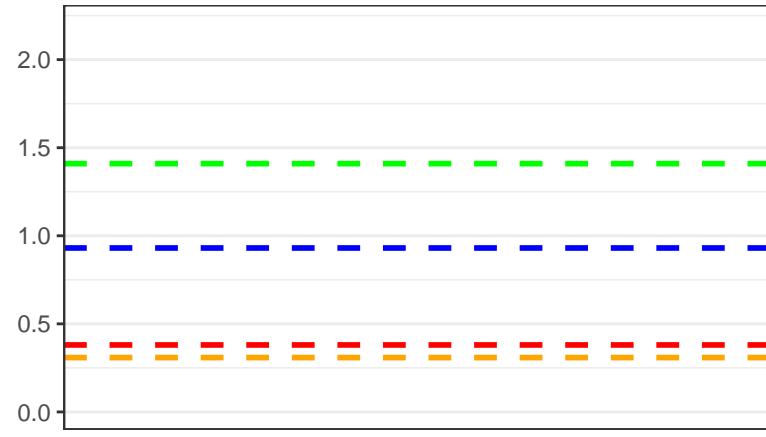
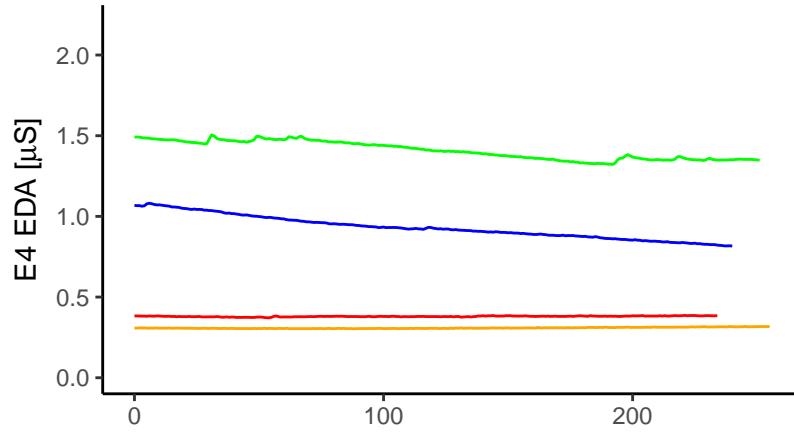
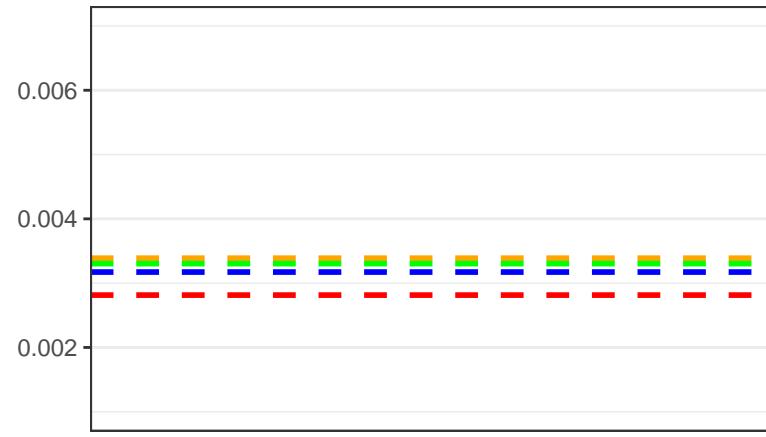
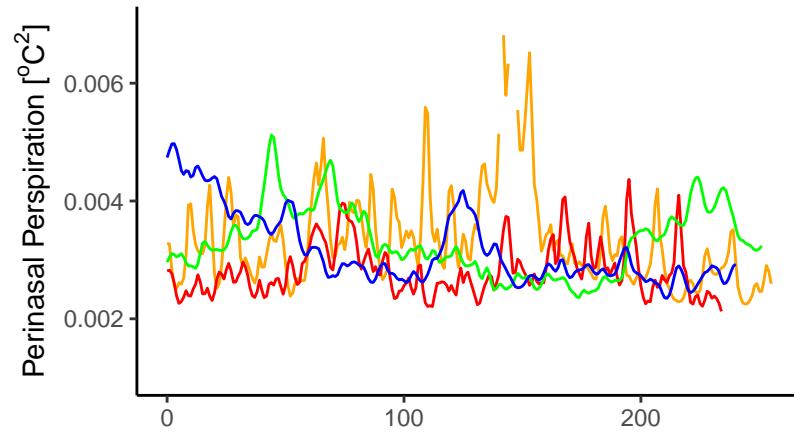
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T003 Working Session



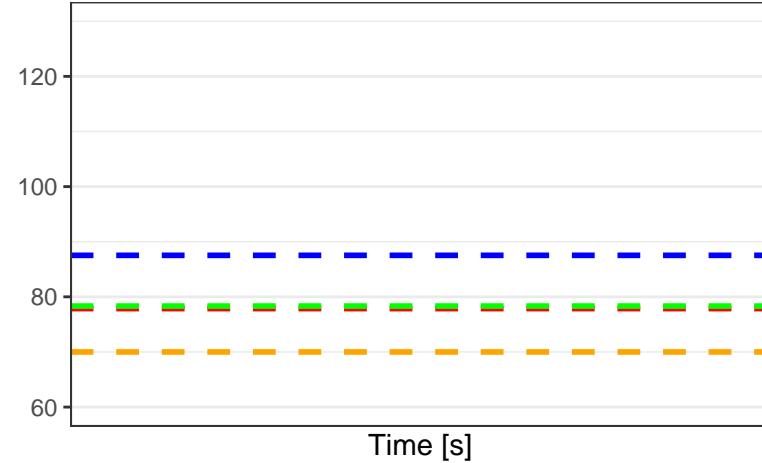
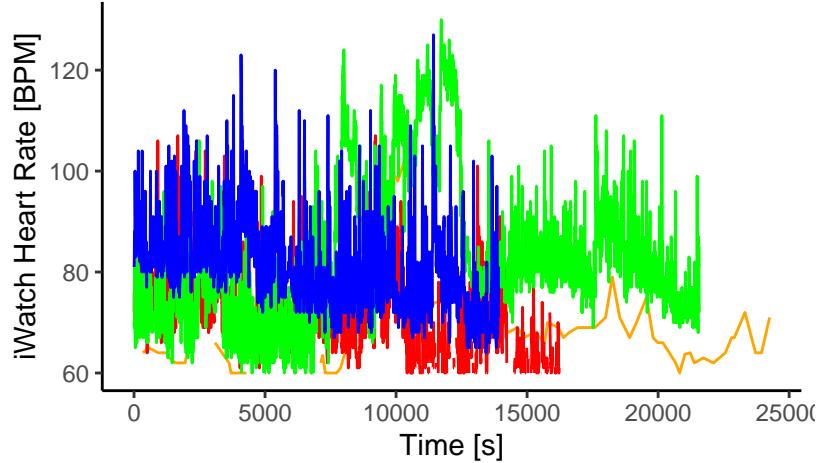
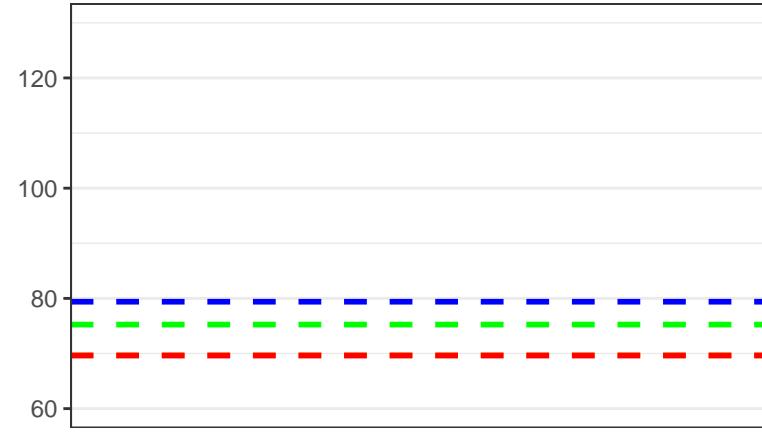
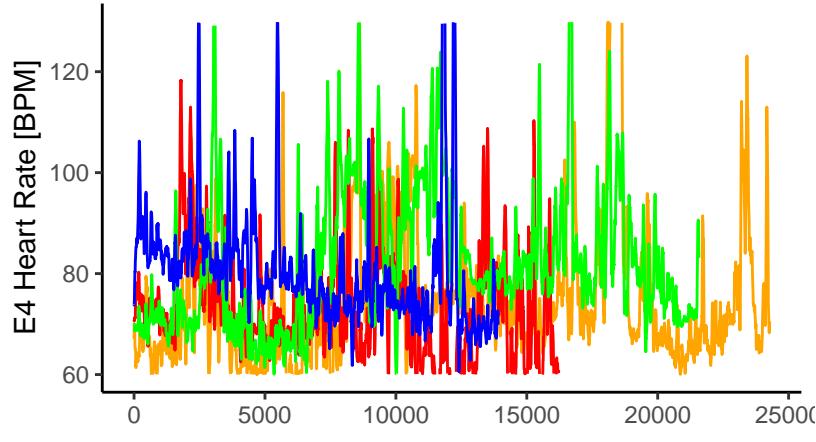
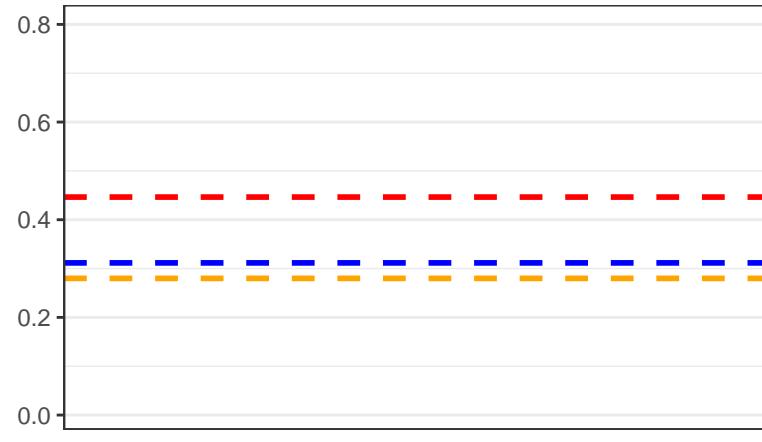
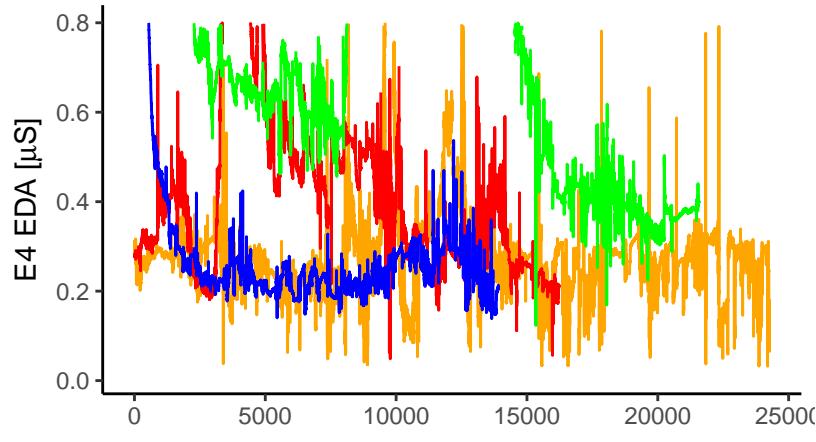
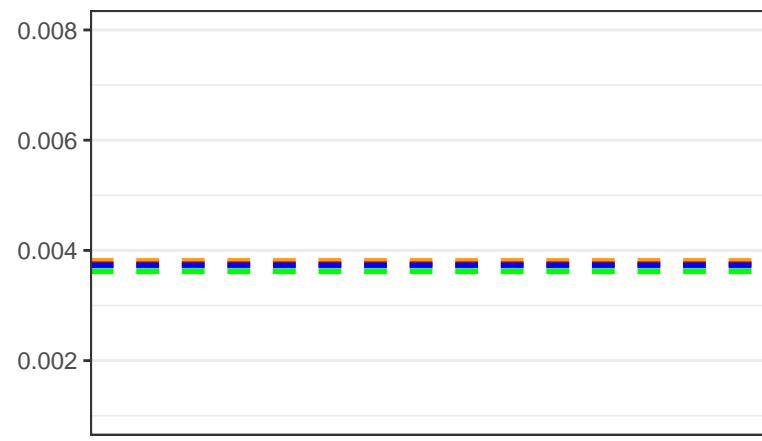
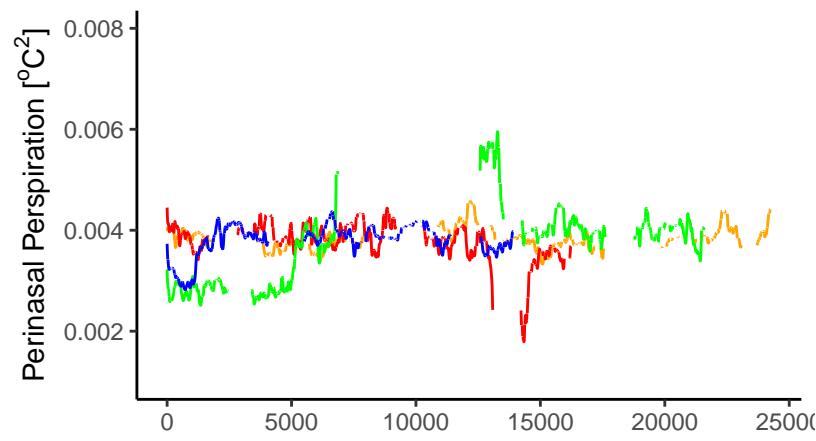
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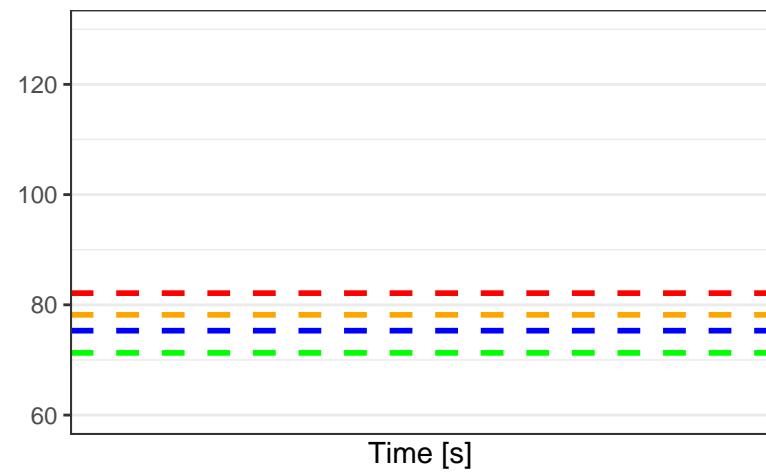
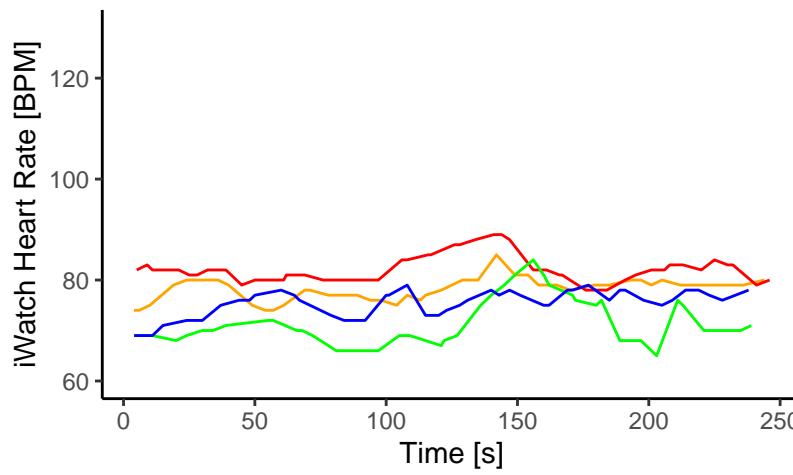
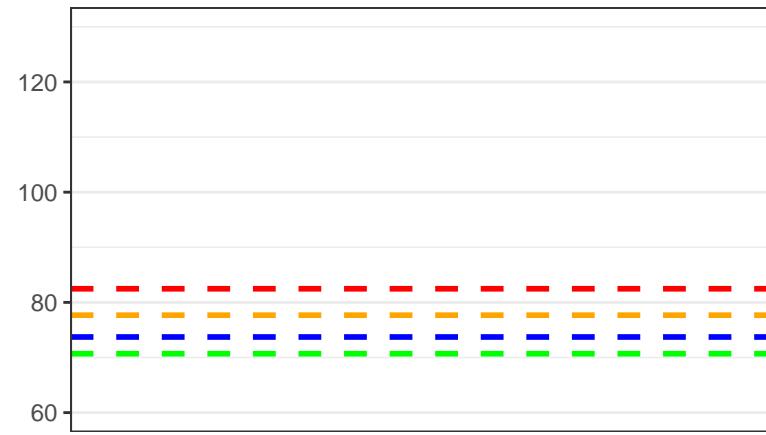
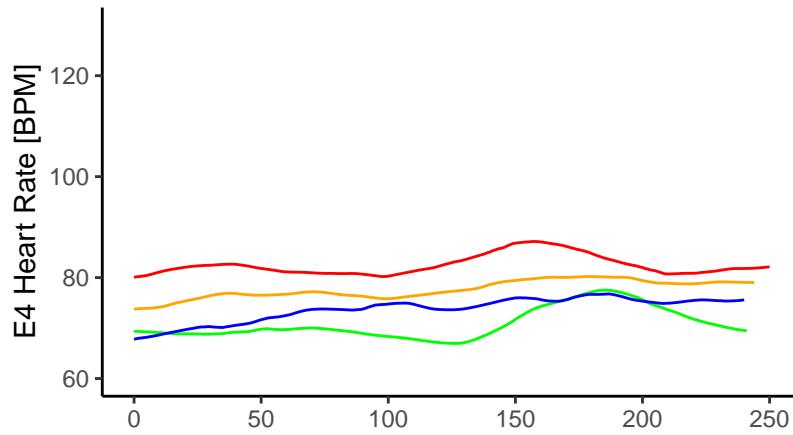
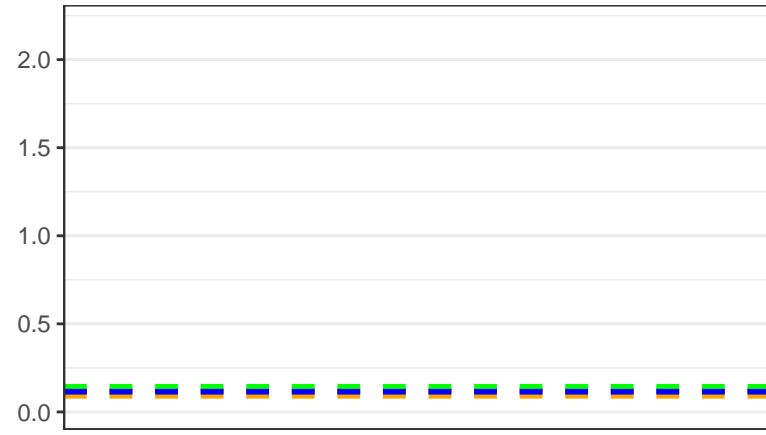
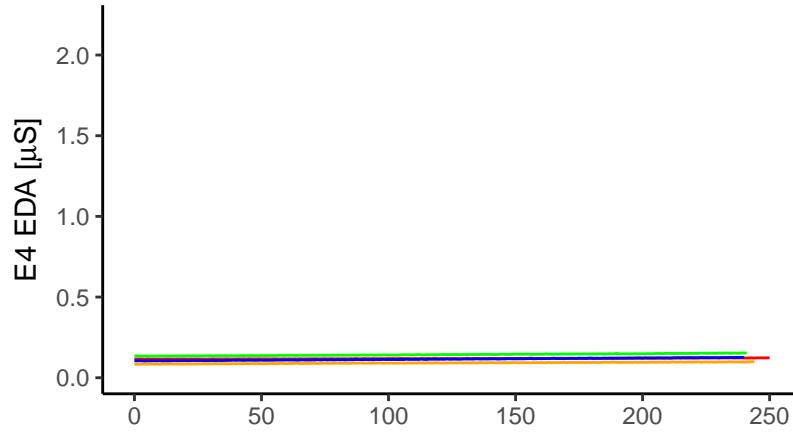
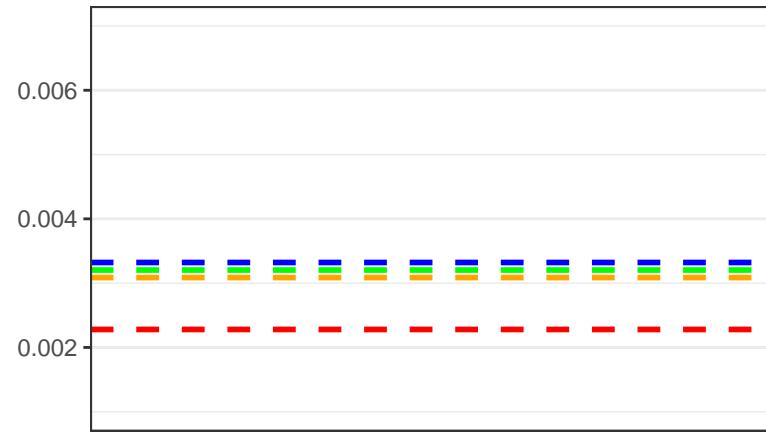
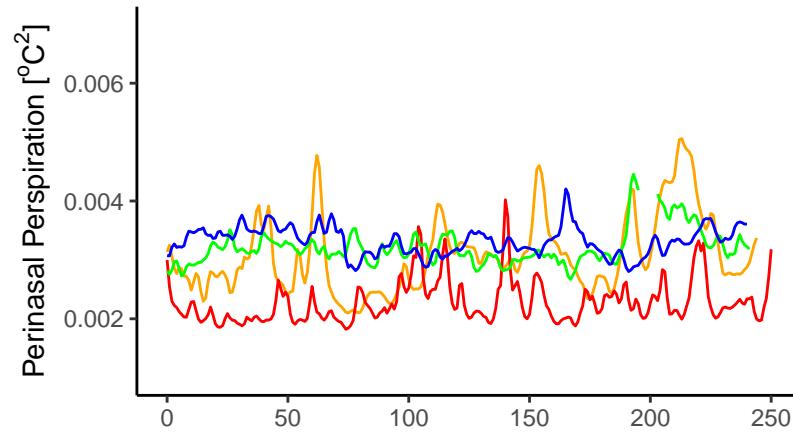
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T005 Working Session



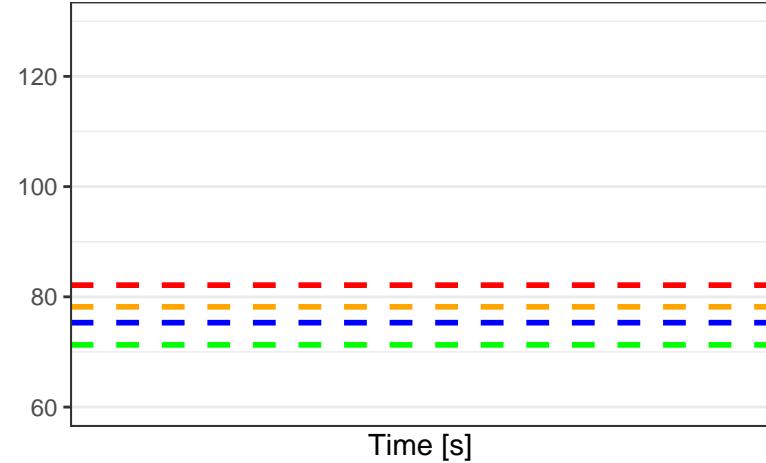
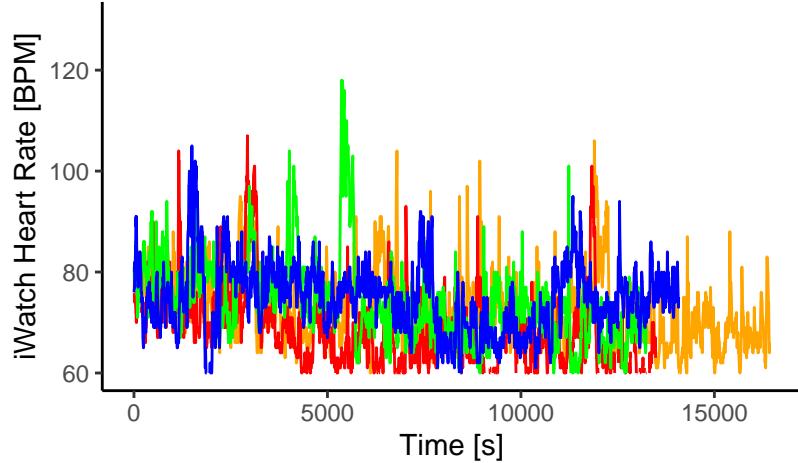
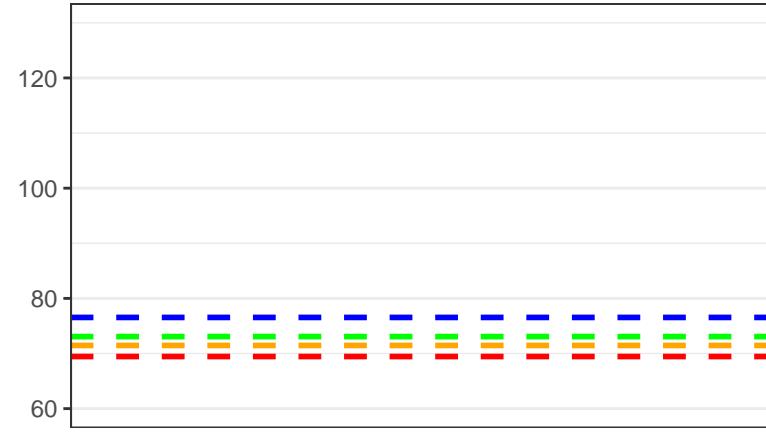
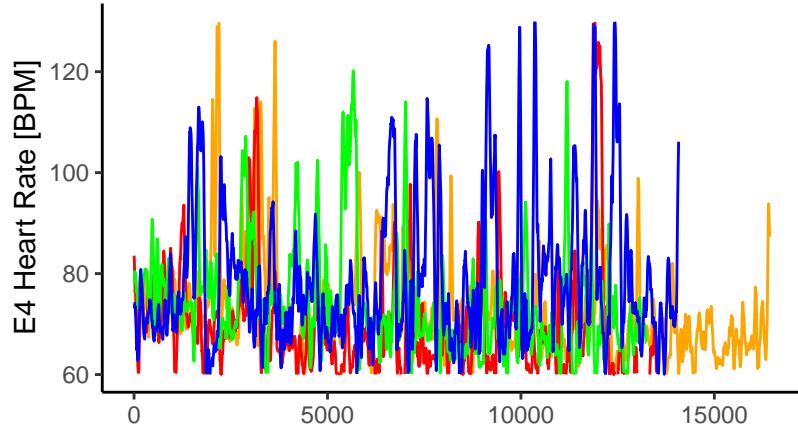
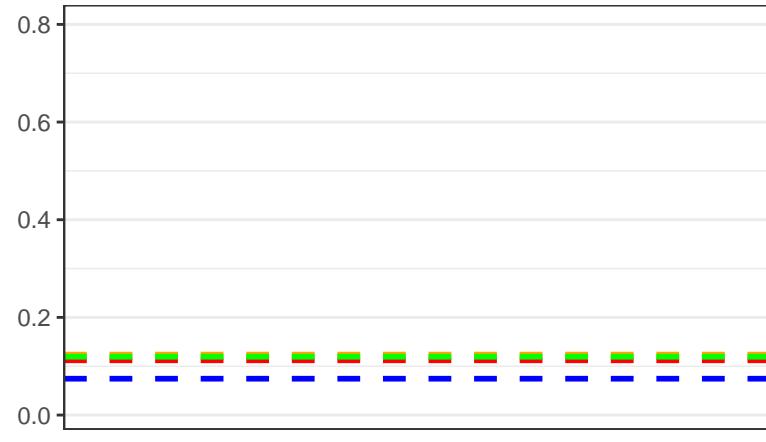
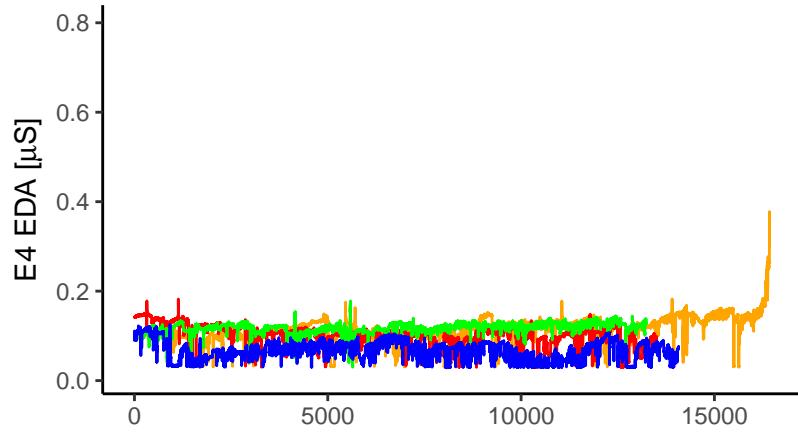
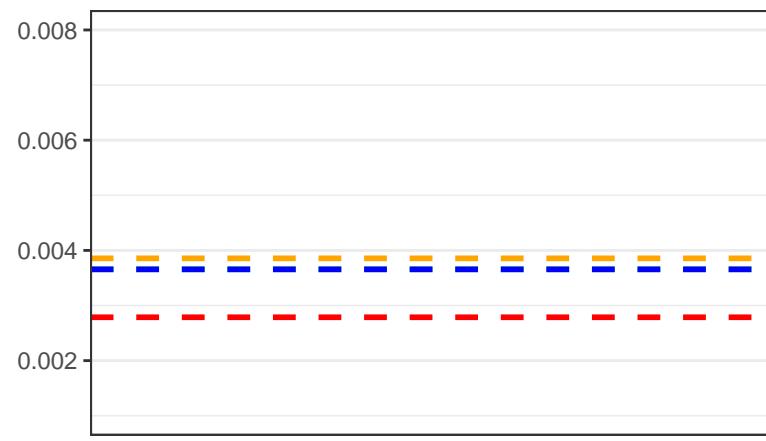
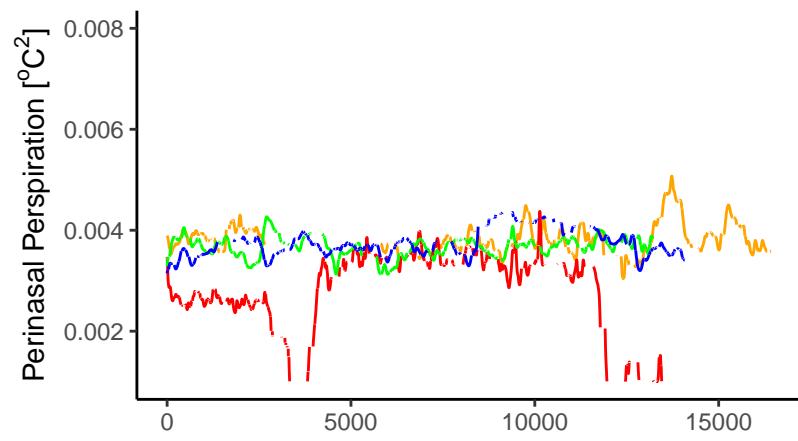
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T007 Baseline



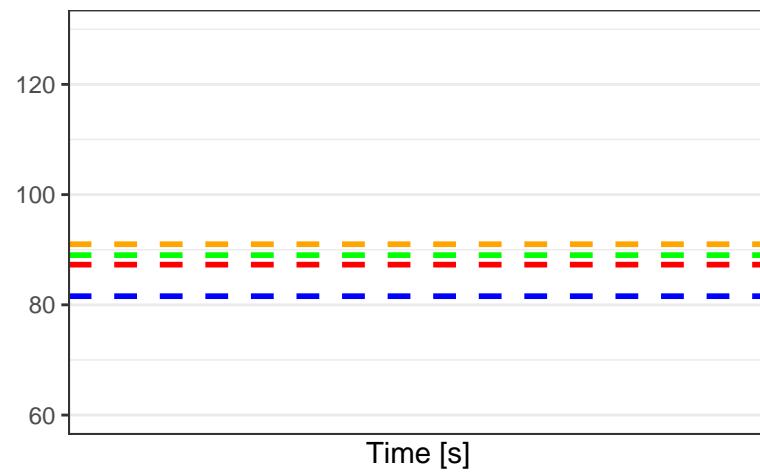
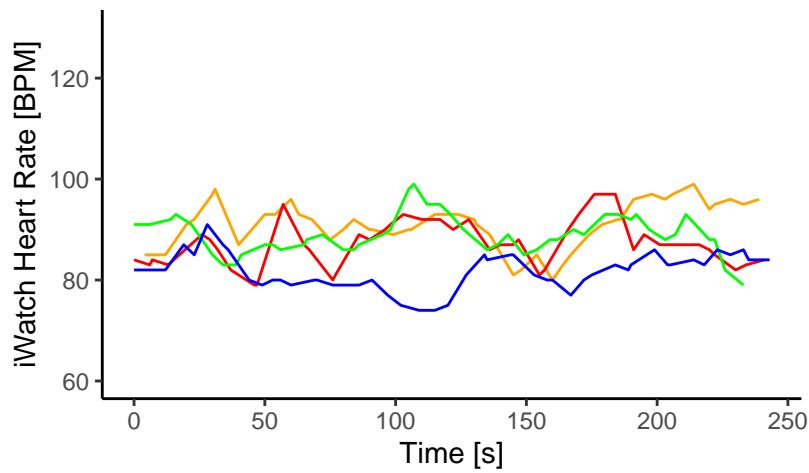
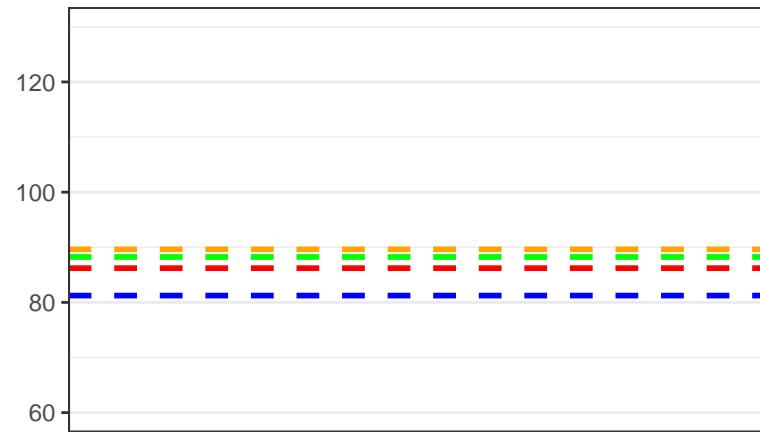
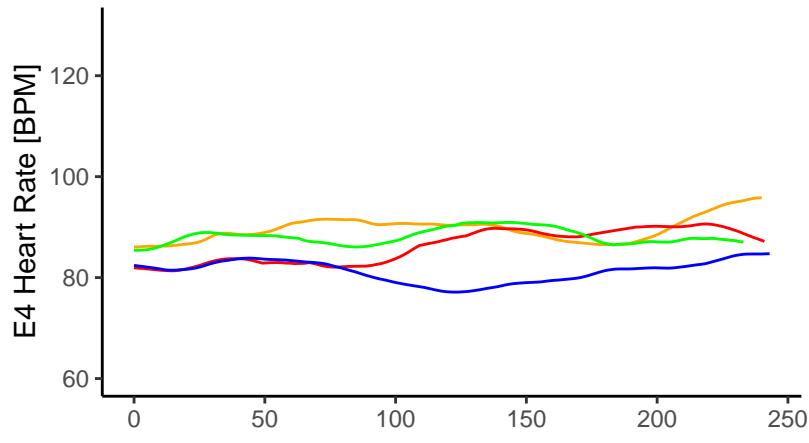
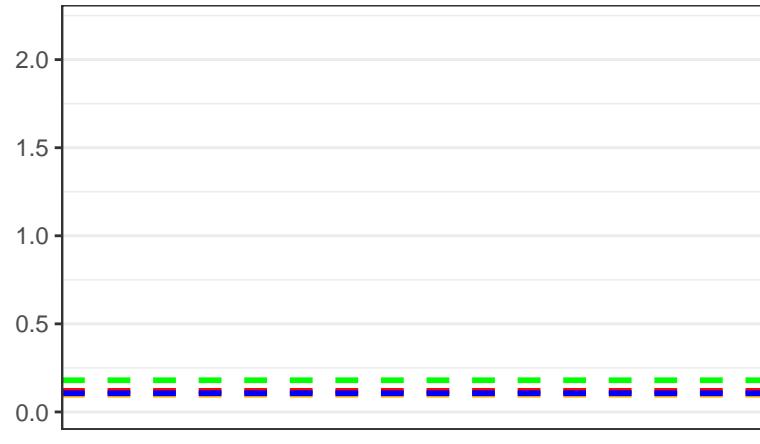
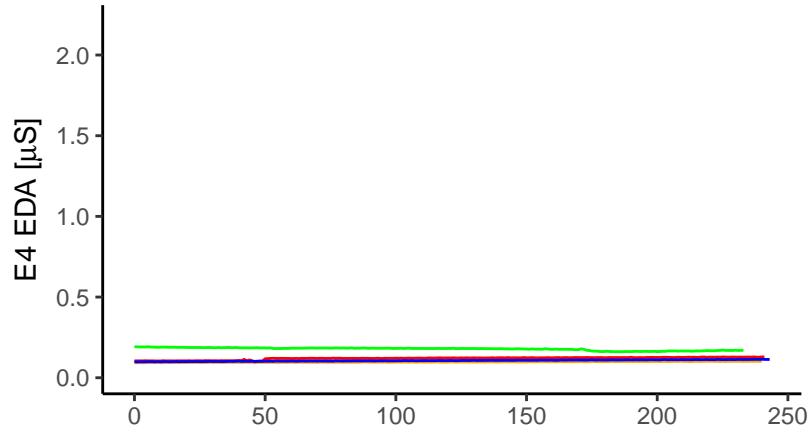
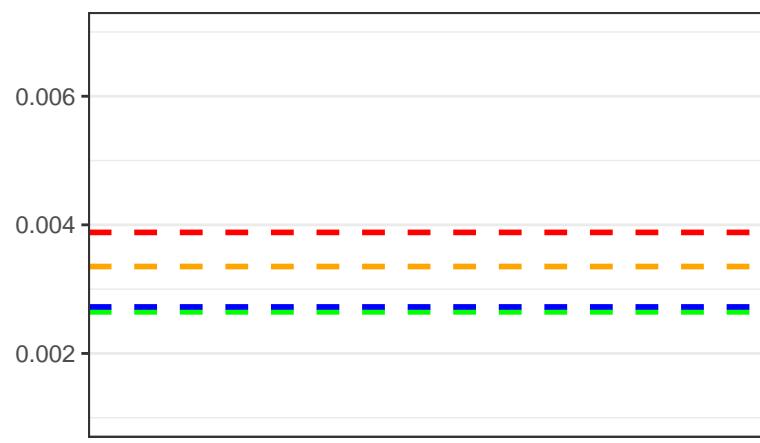
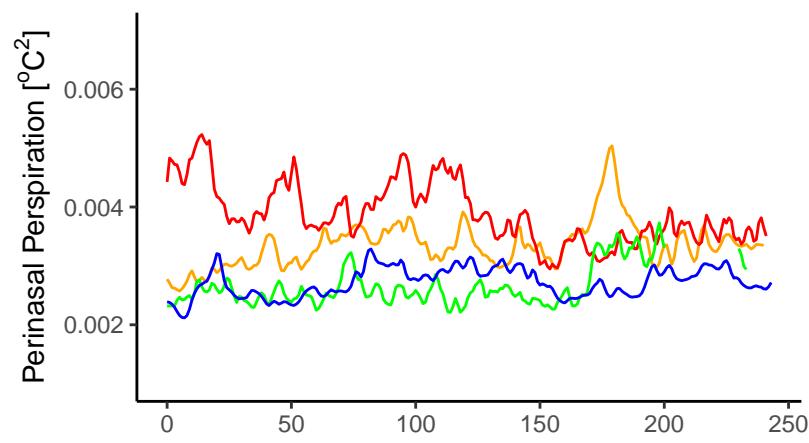
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T007 Working Session



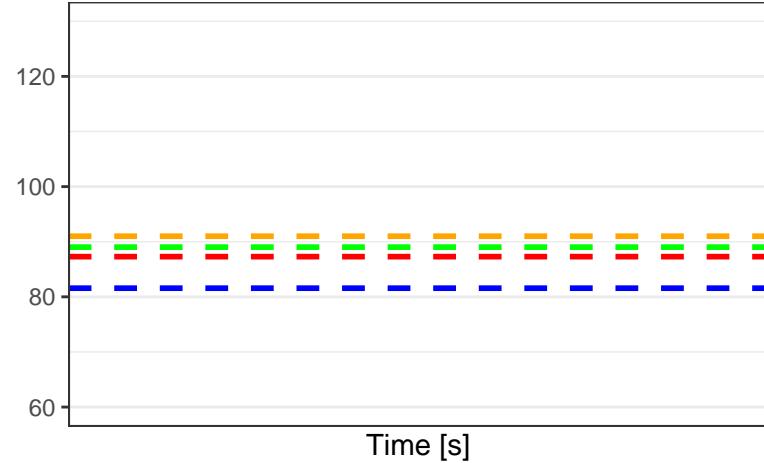
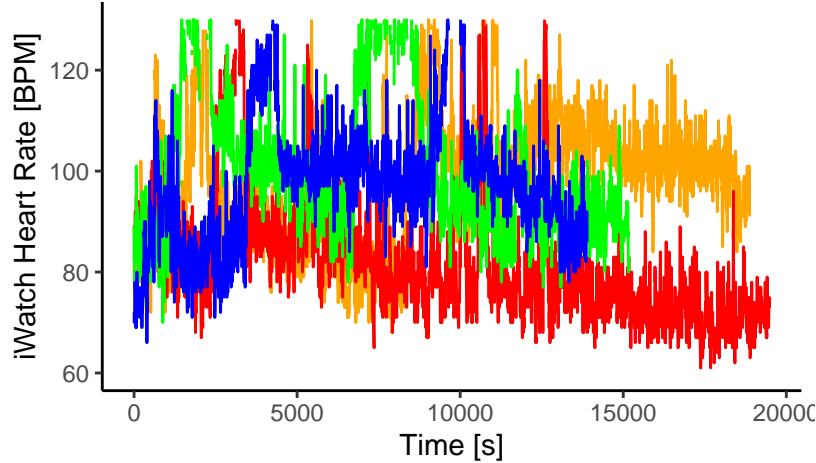
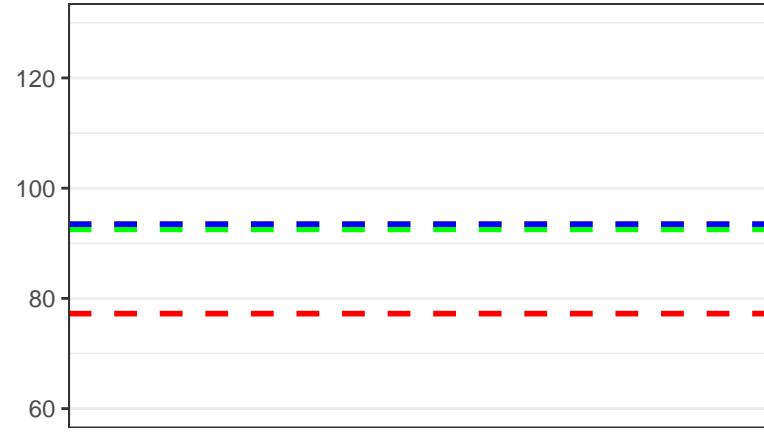
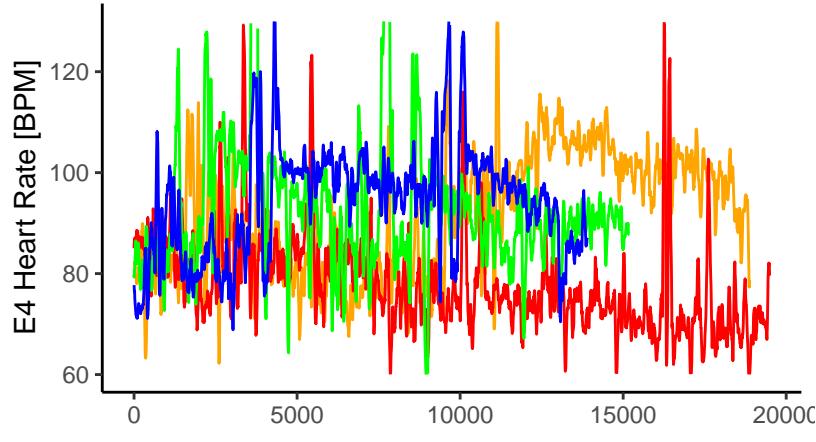
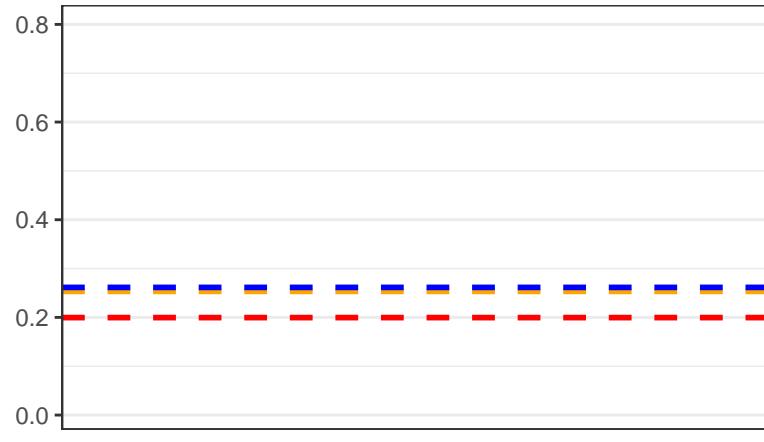
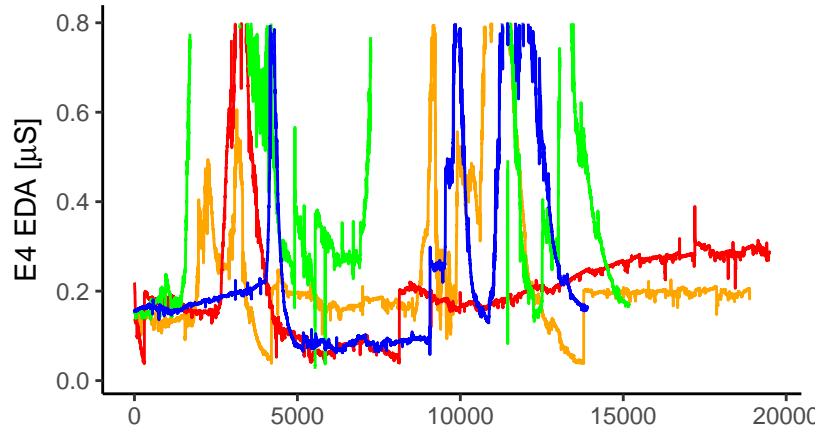
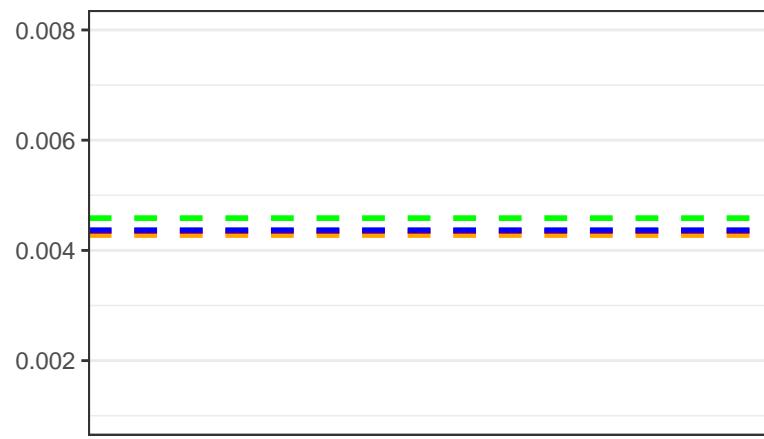
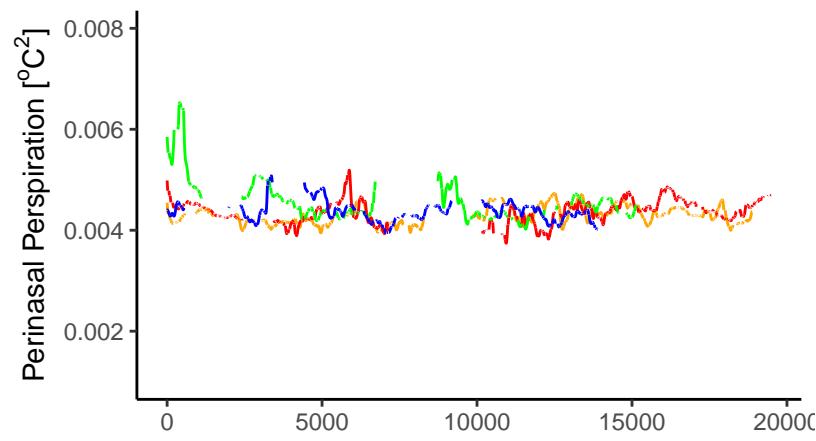
— Day1 — Day2 — Day3 — Day4

T009 Baseline



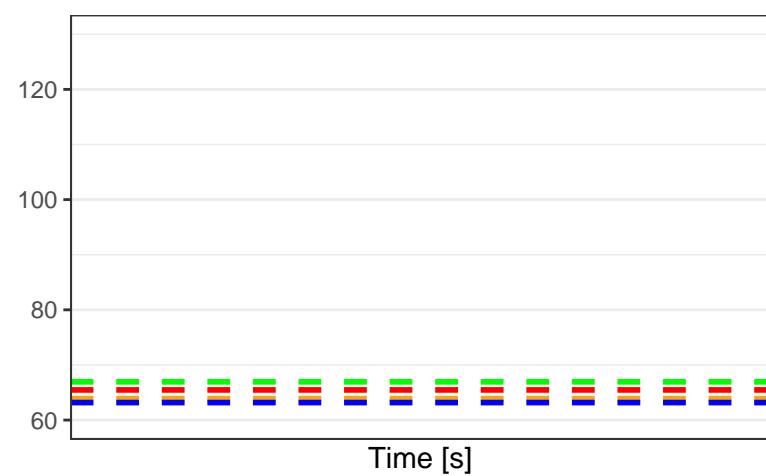
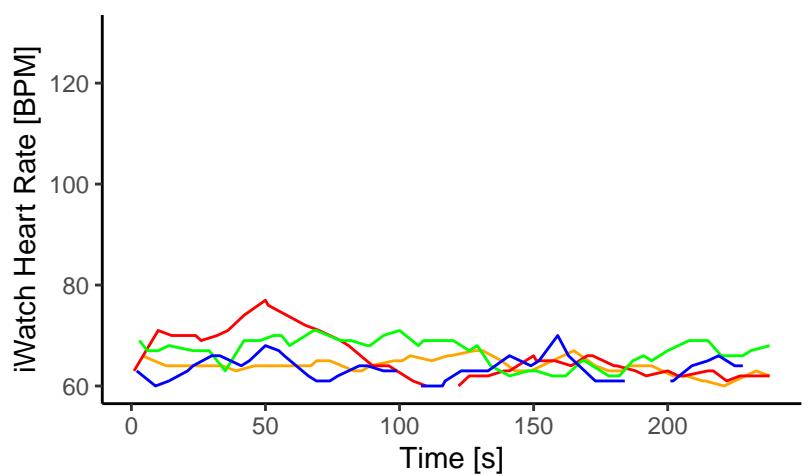
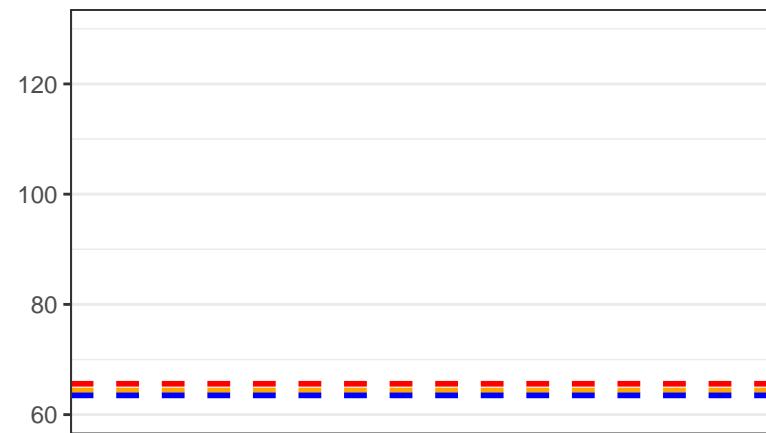
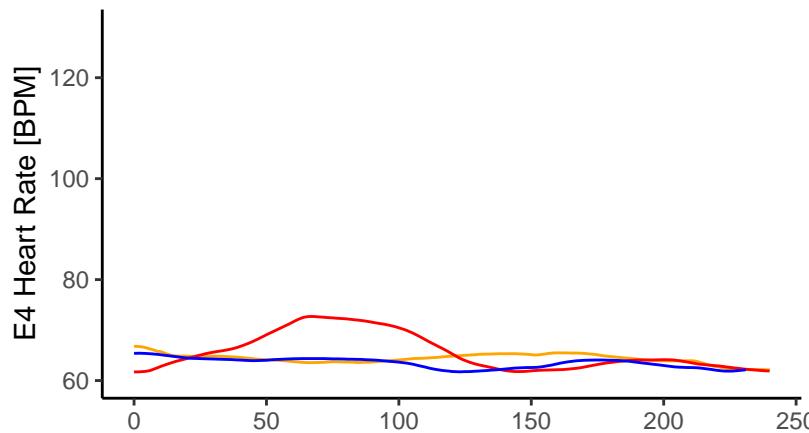
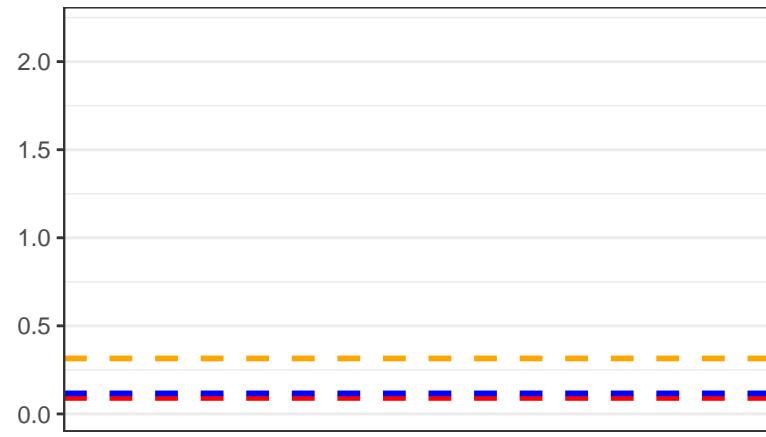
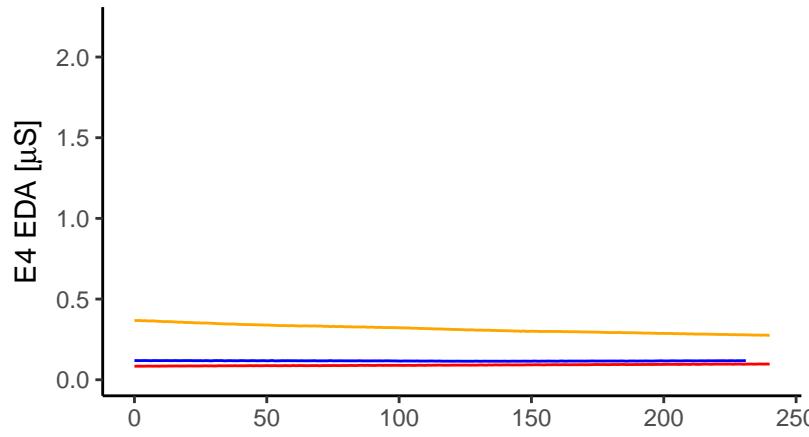
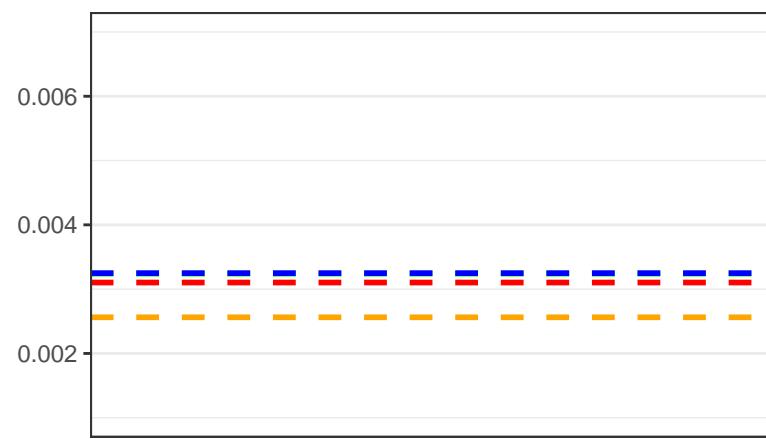
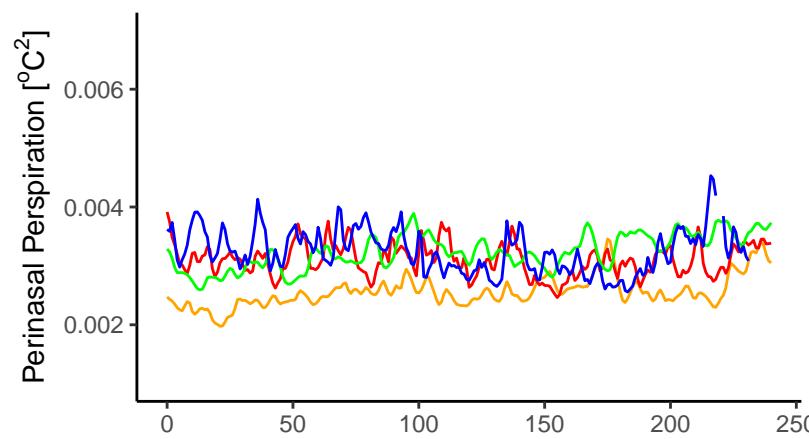
— Day1 — Day2 — Day3 — Day4

T009 Working Session



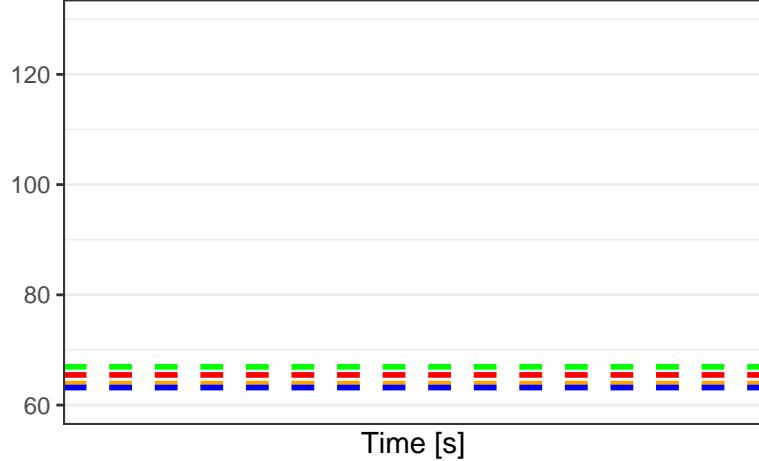
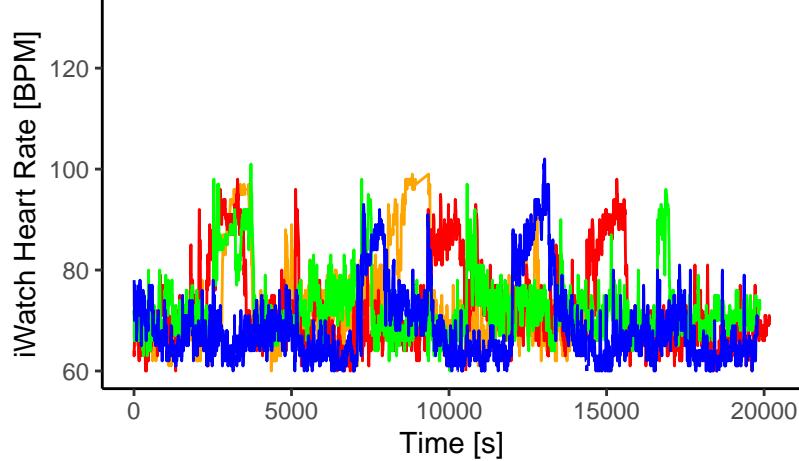
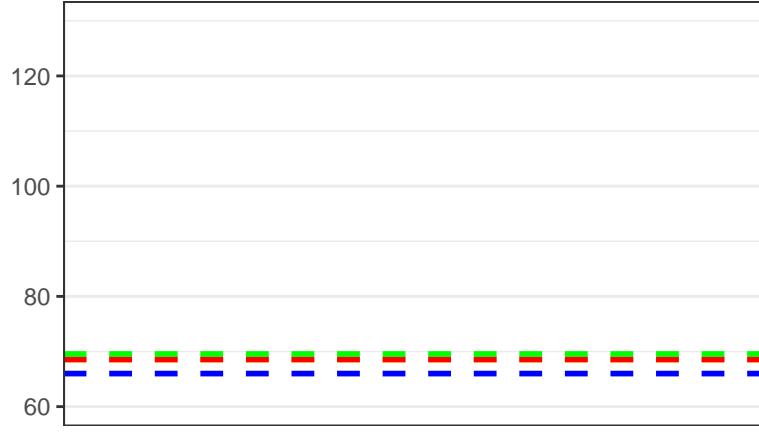
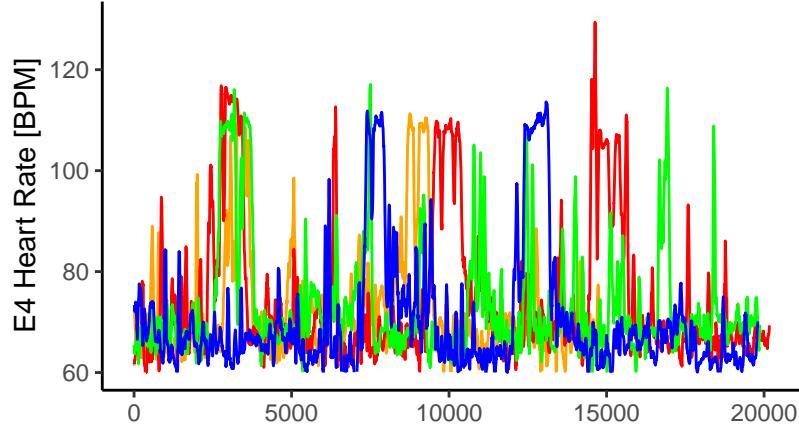
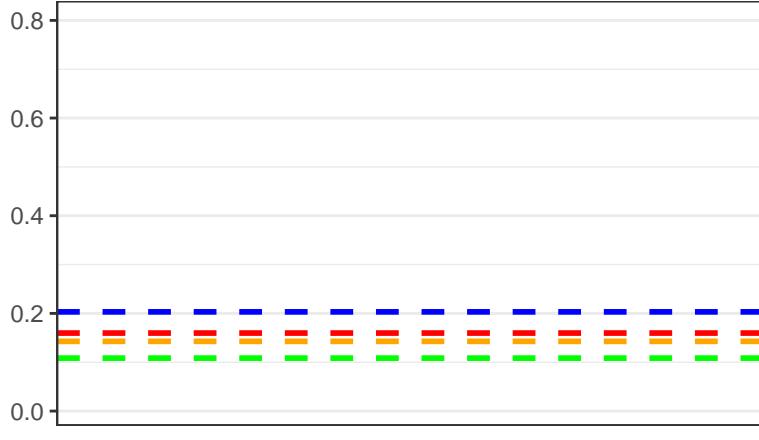
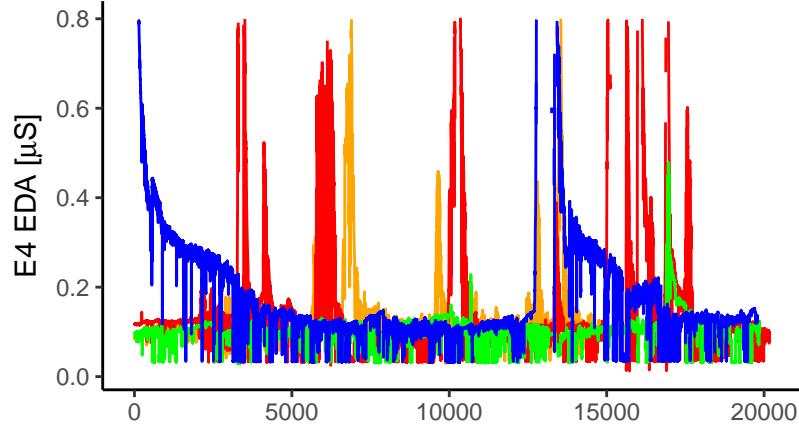
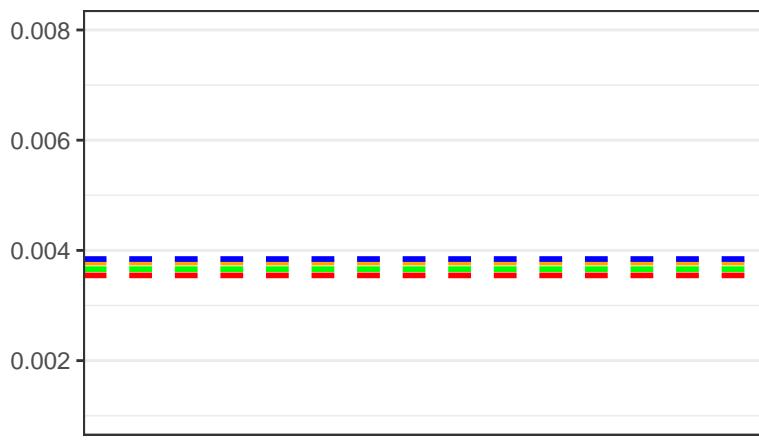
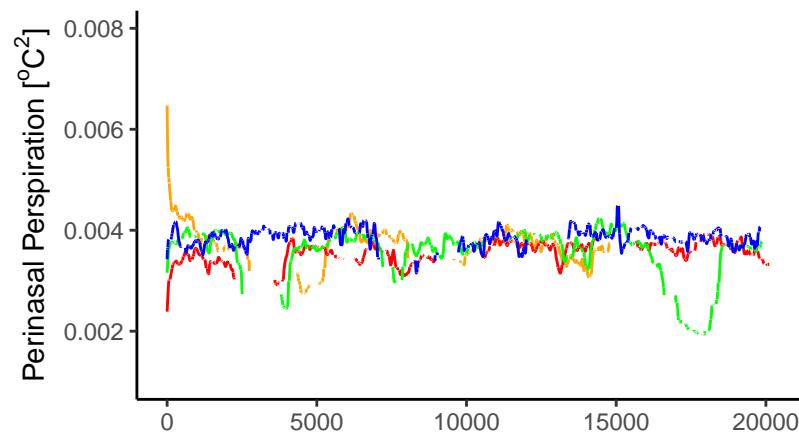
— Day1 — Day2 — Day3 — Day4

T011 Baseline



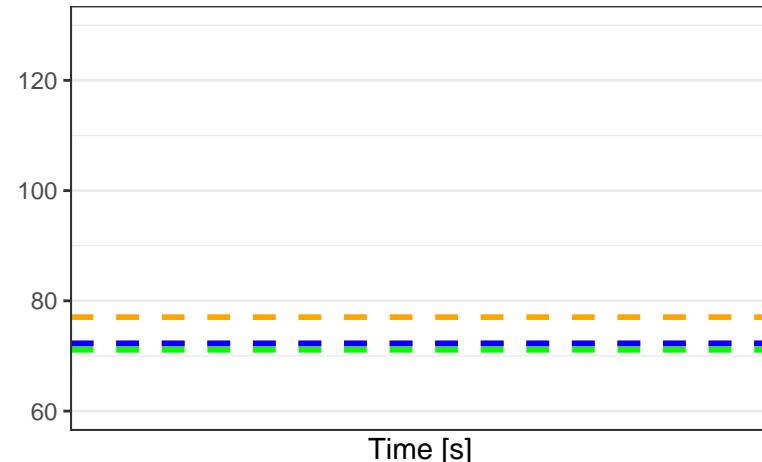
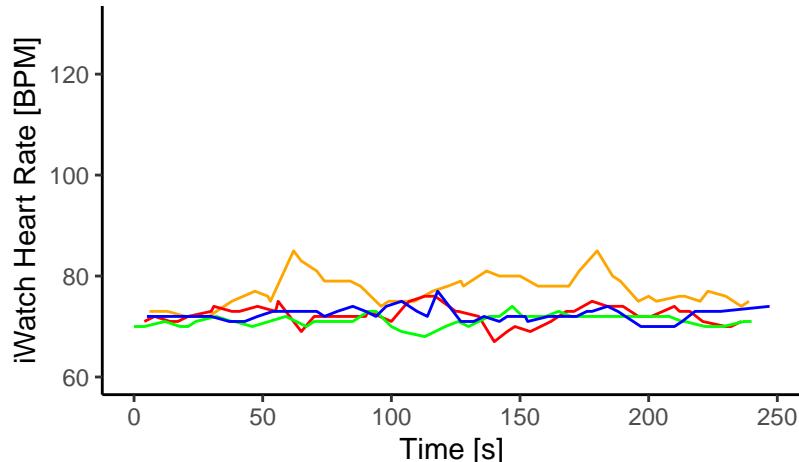
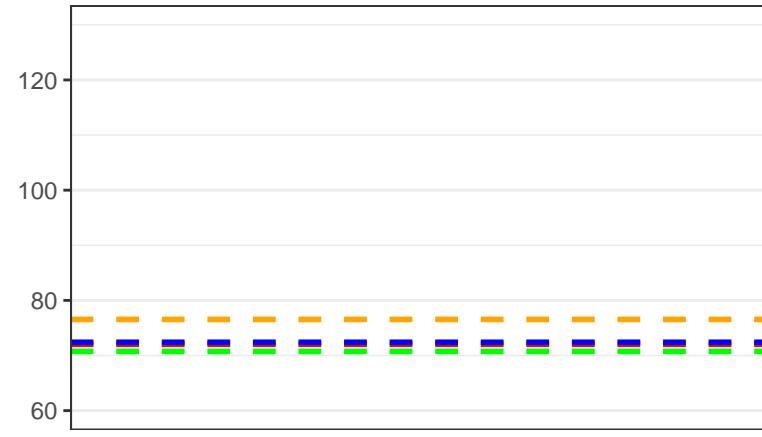
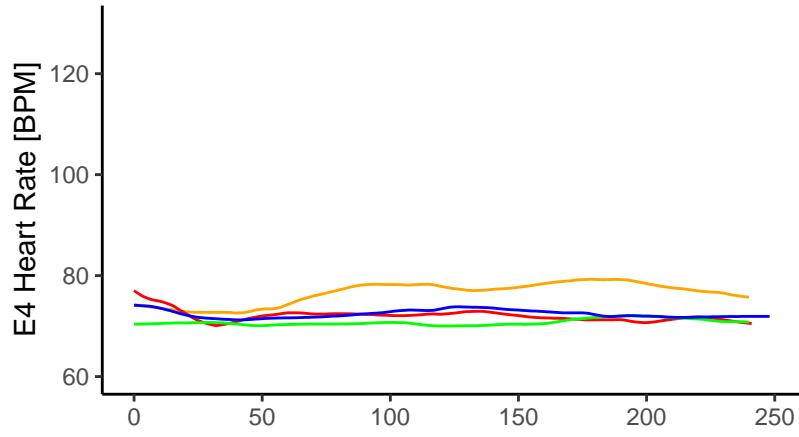
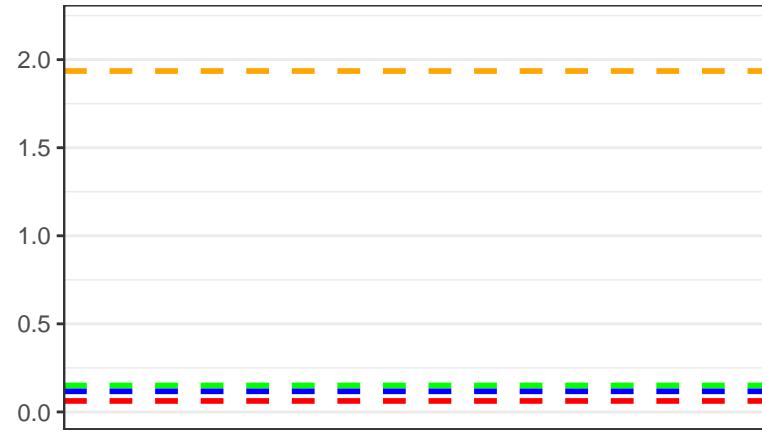
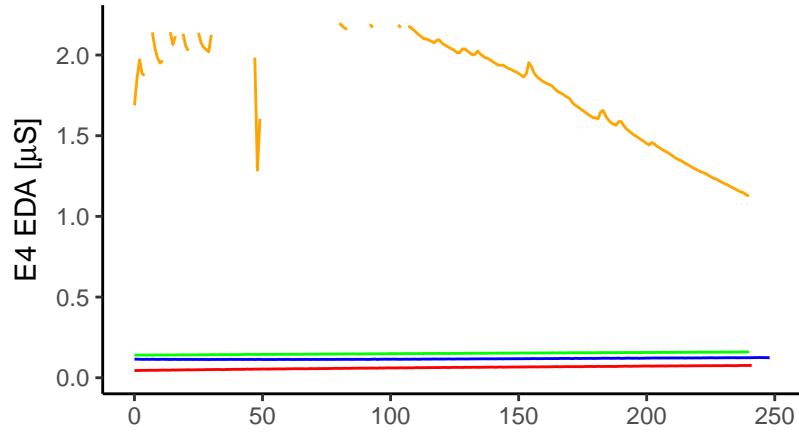
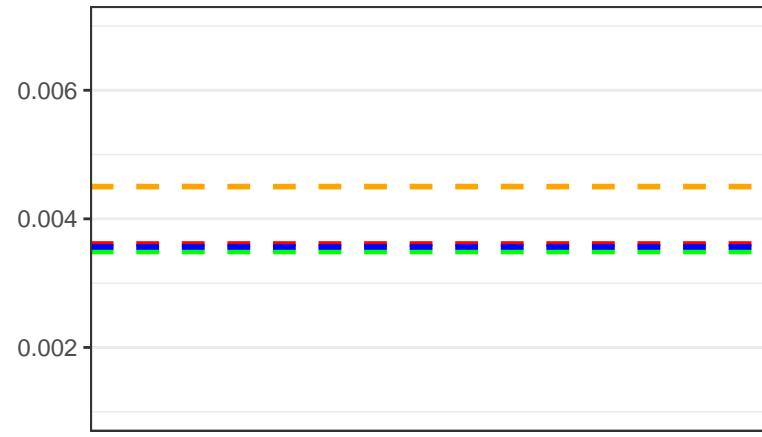
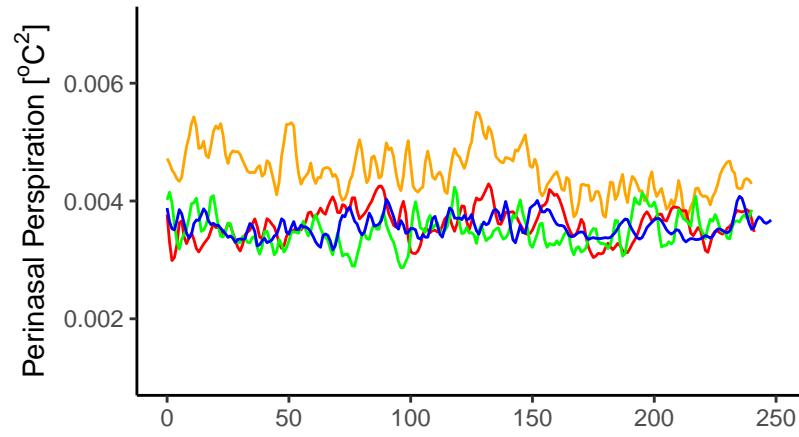
— Day1 — Day2 — Day3 — Day4

T011 Working Session



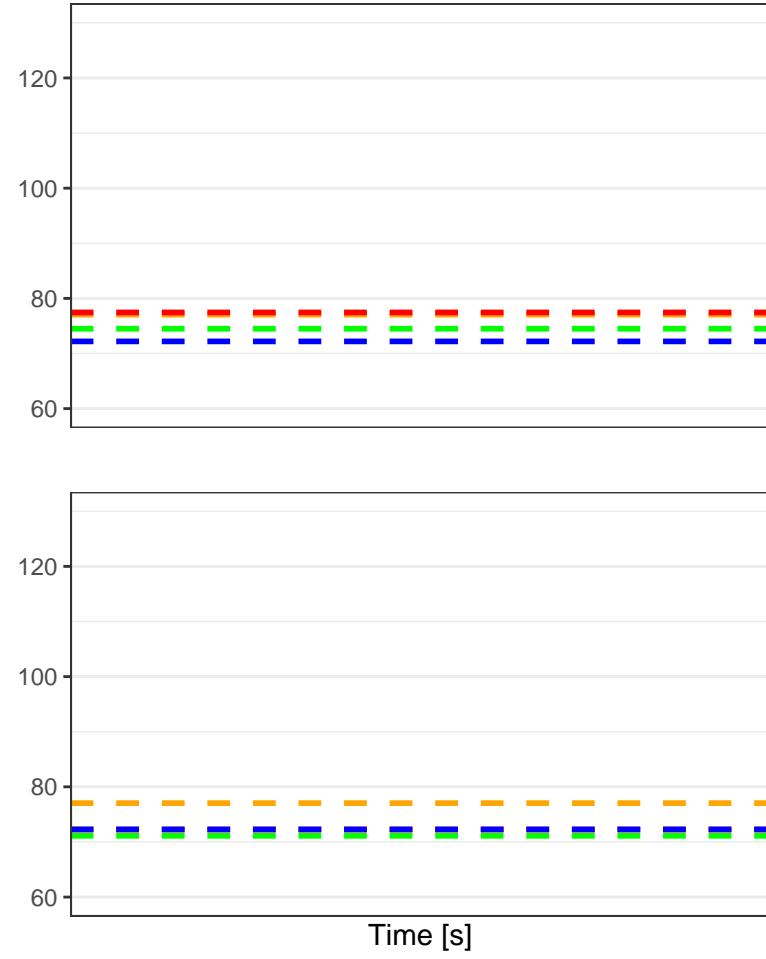
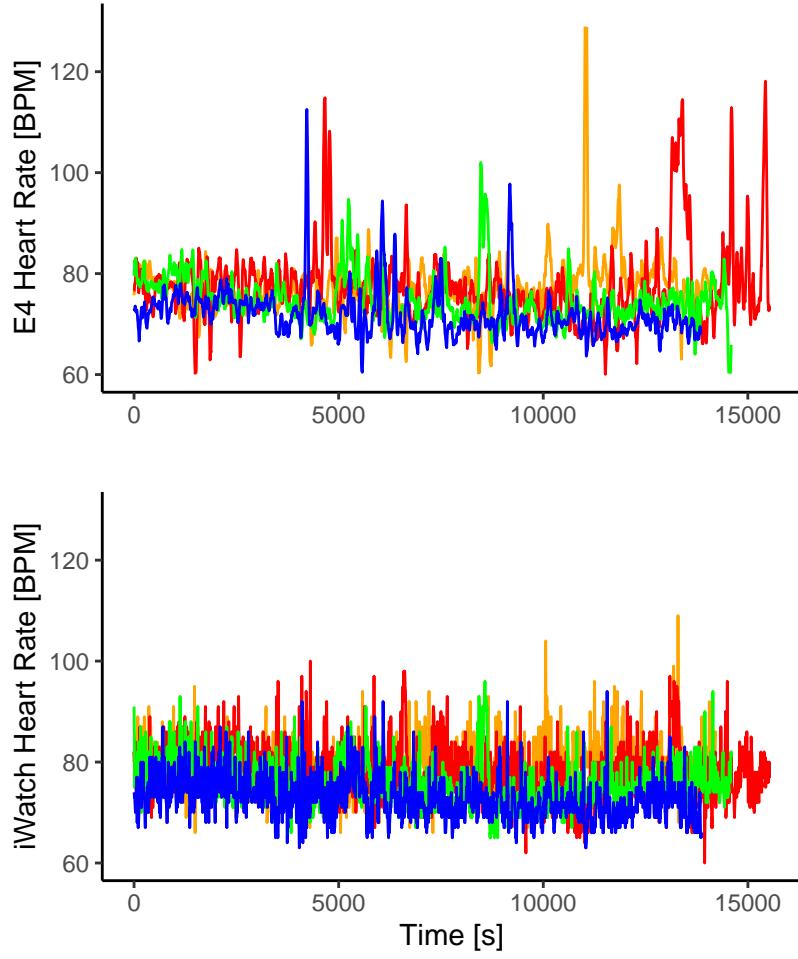
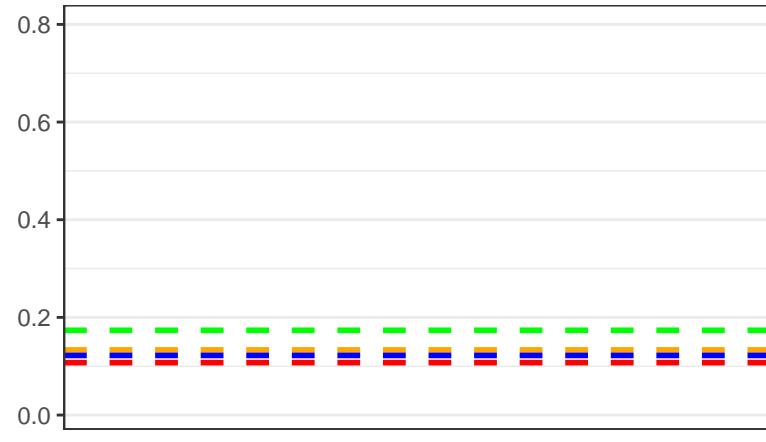
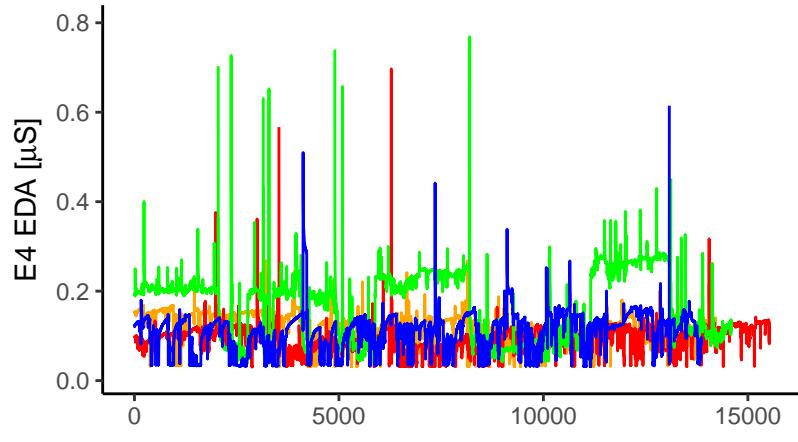
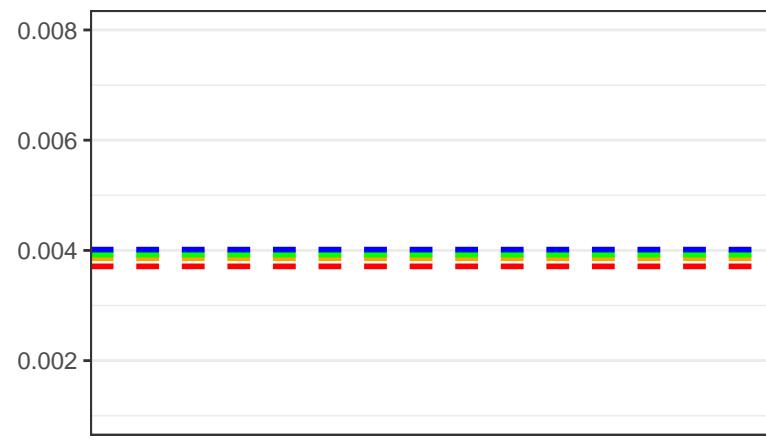
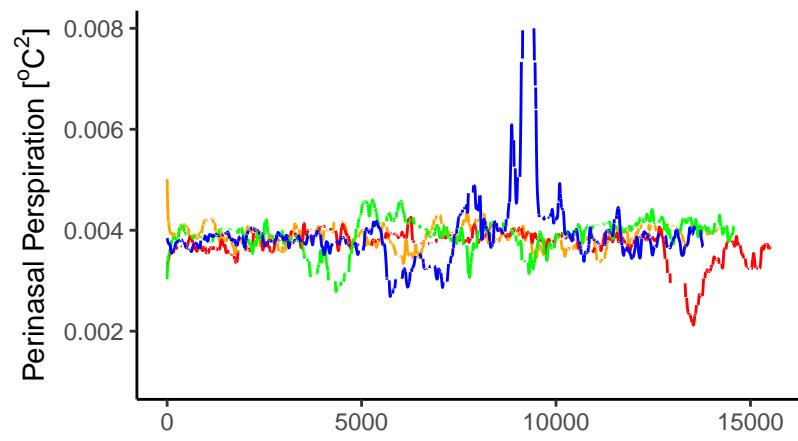
— Day1 — Day2 — Day3 — Day4

T013 Baseline



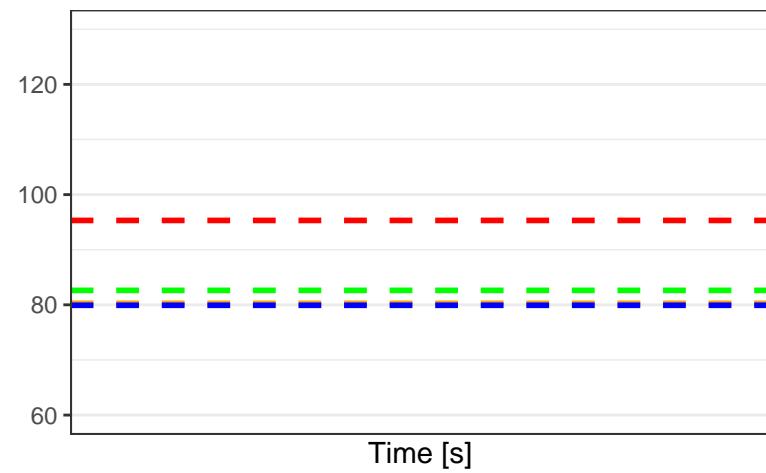
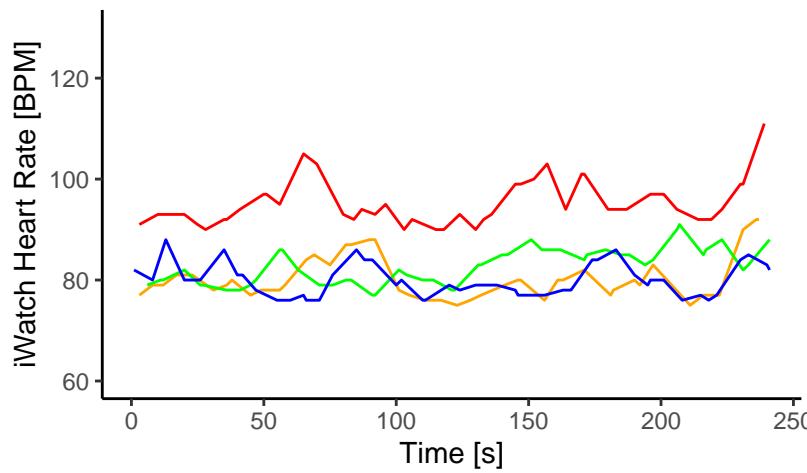
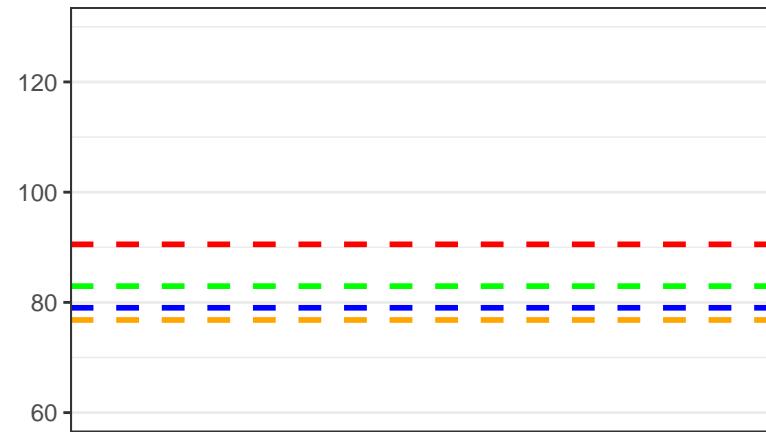
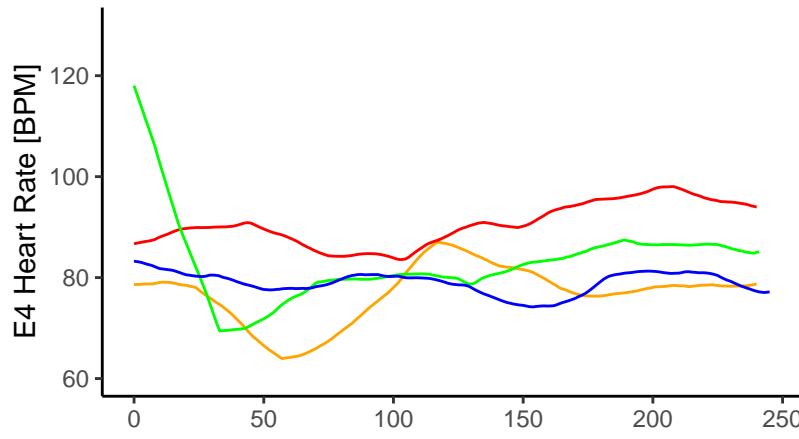
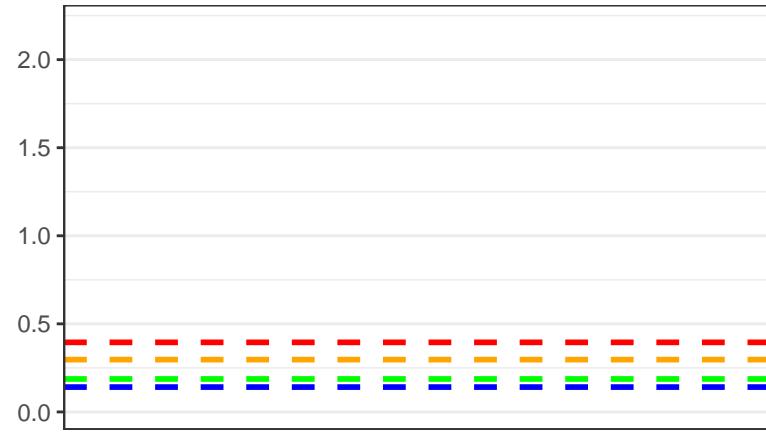
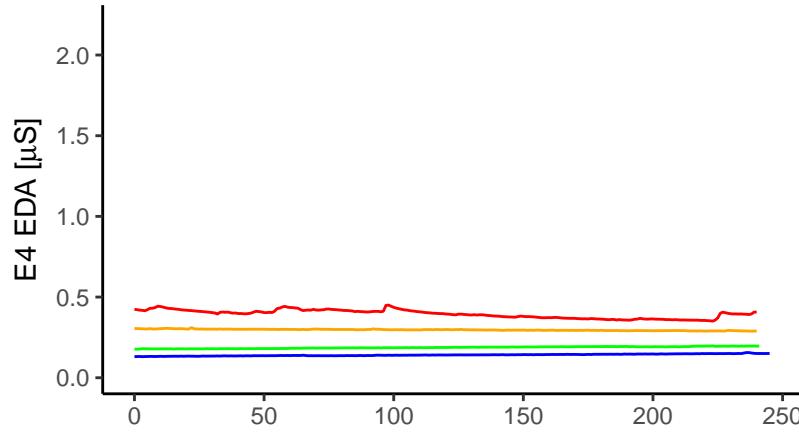
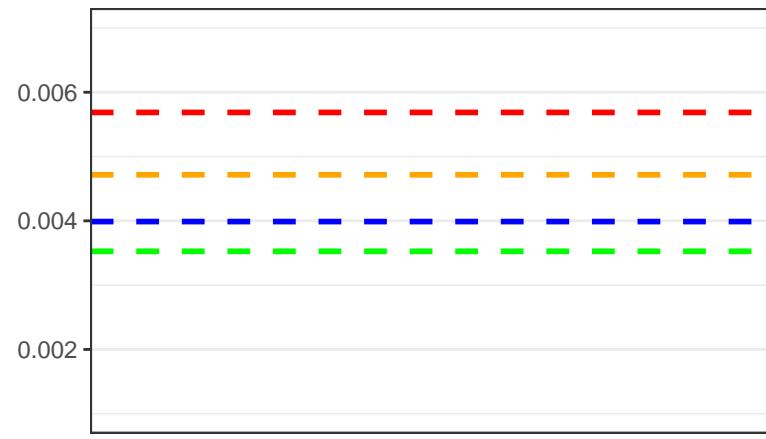
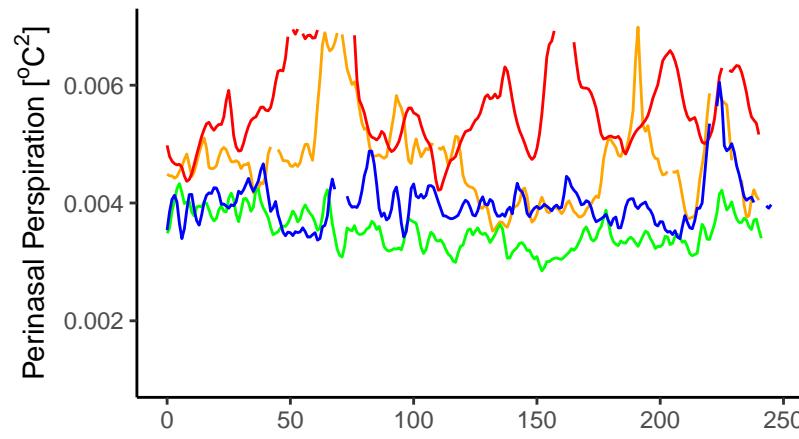
— Day1 — Day2 — Day3 — Day4

T013 Working Session



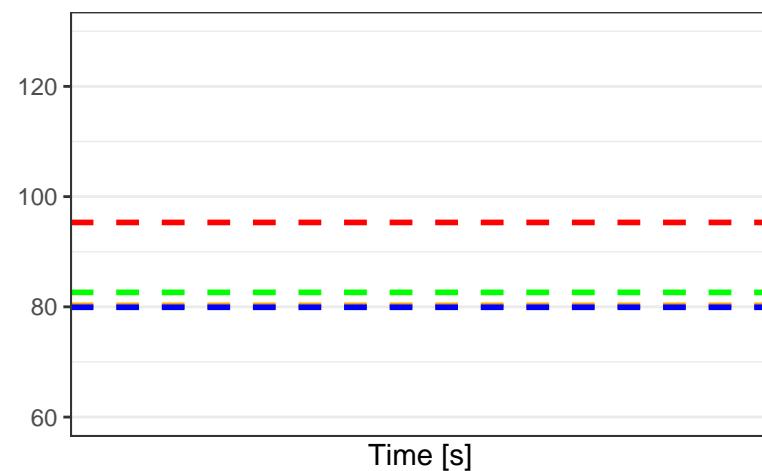
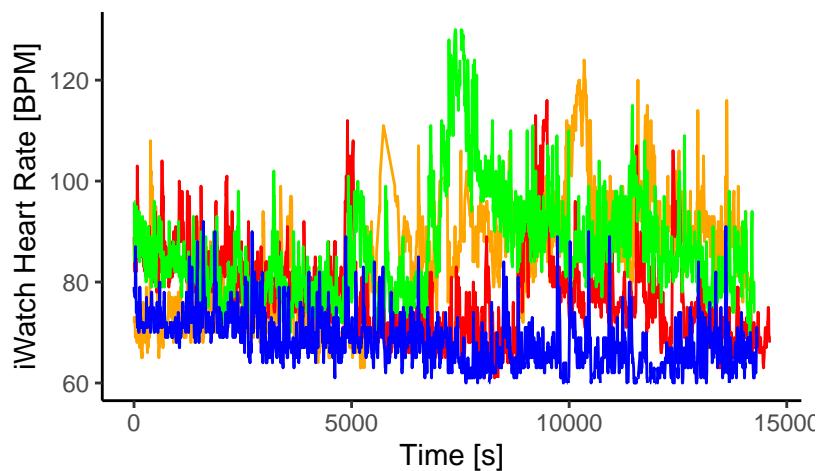
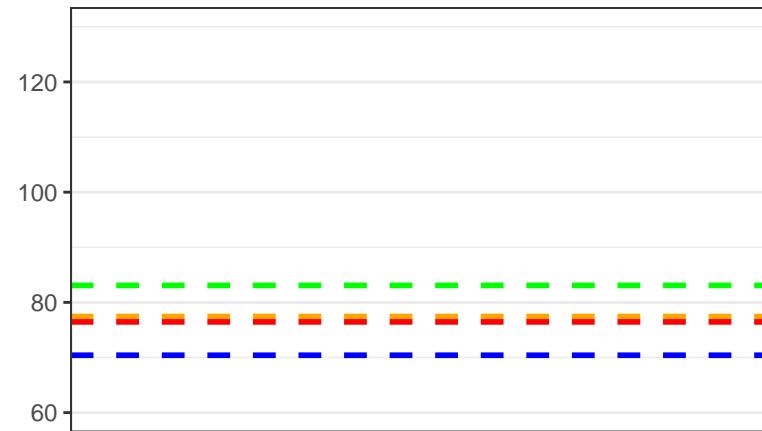
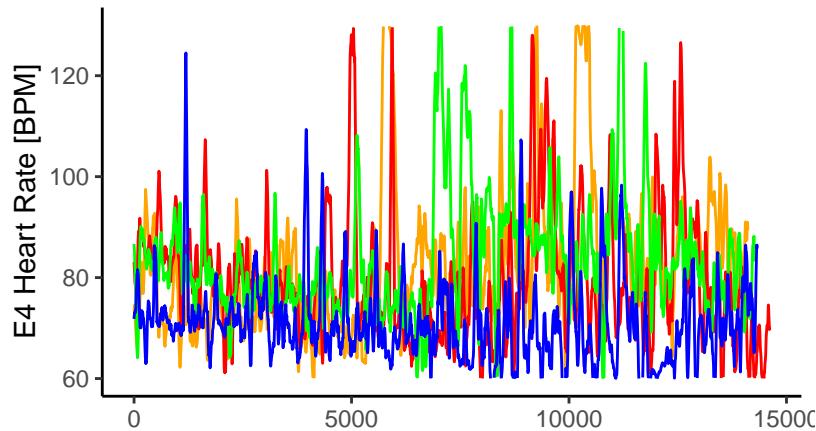
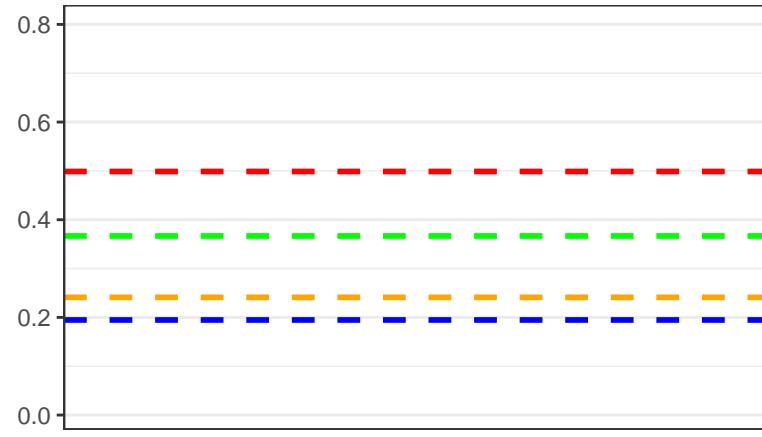
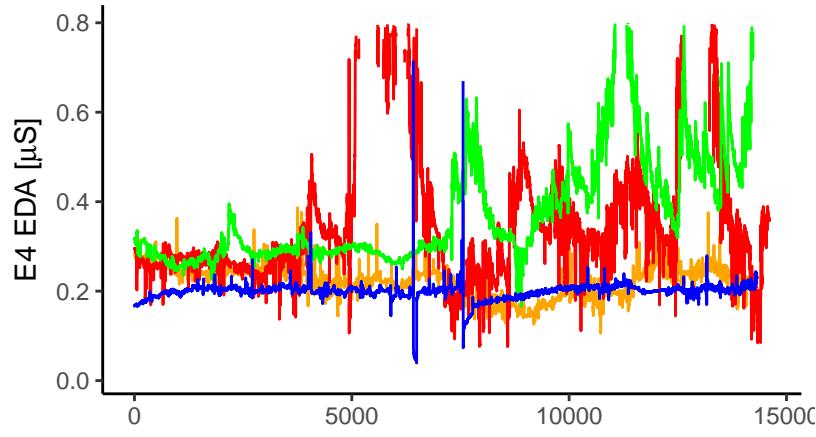
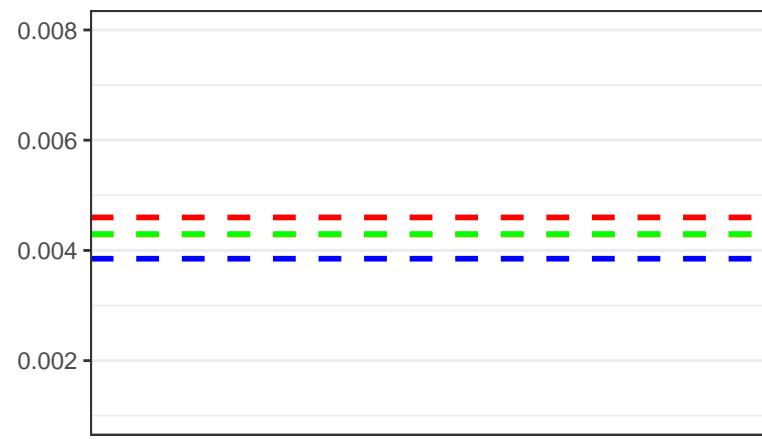
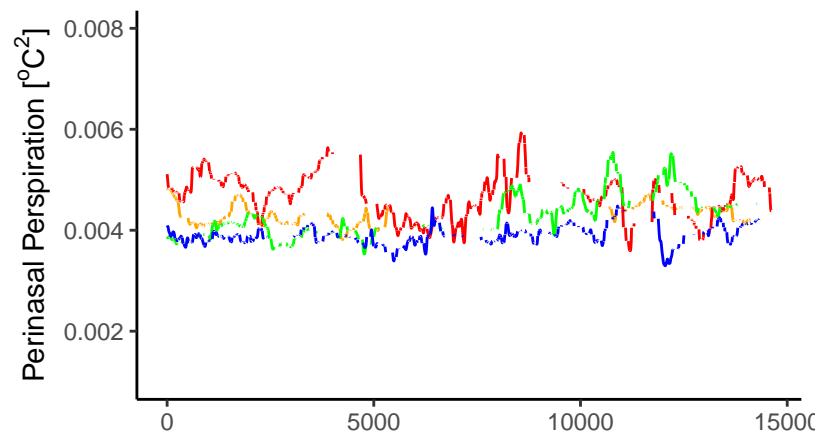
Day1 Day2 Day3 Day4

T015 Baseline



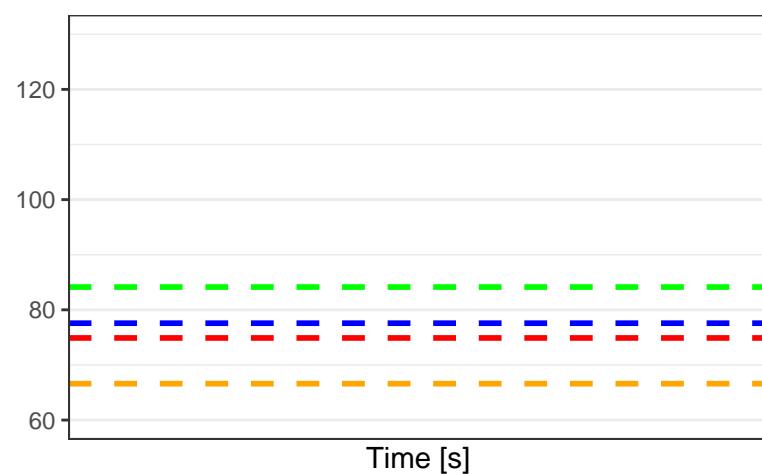
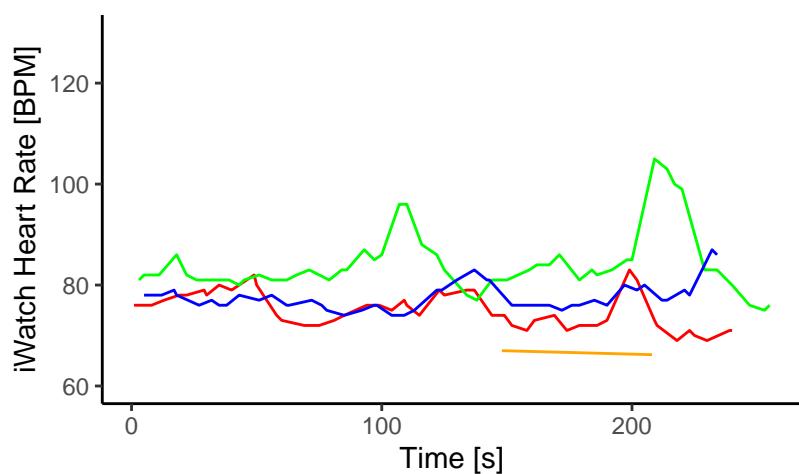
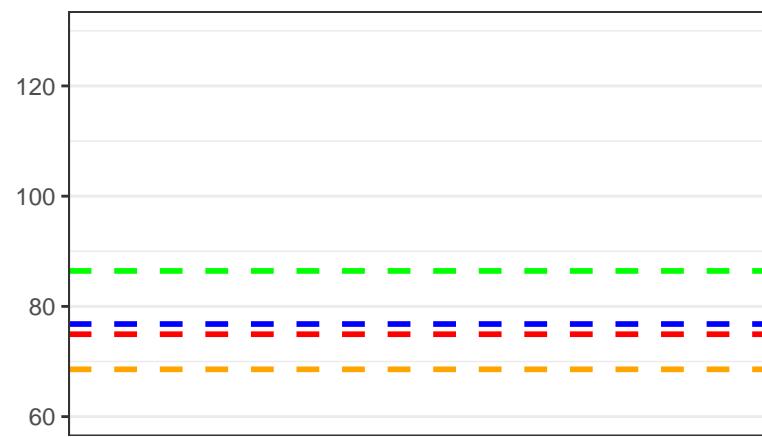
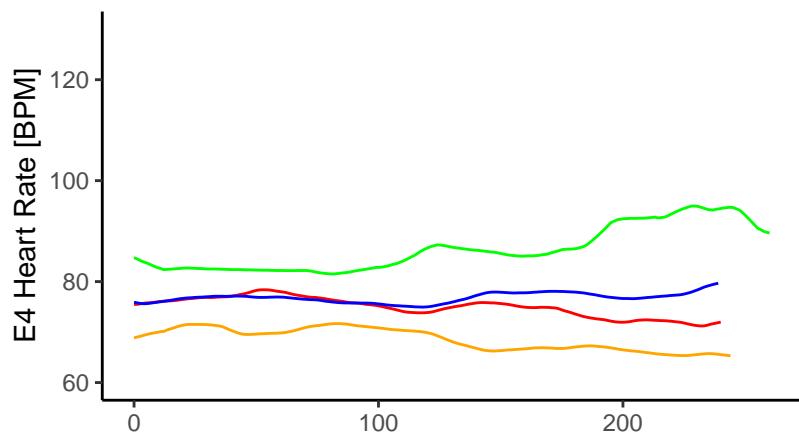
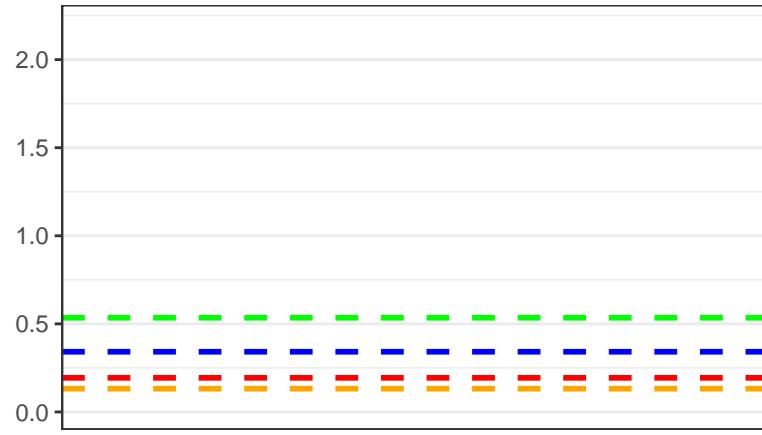
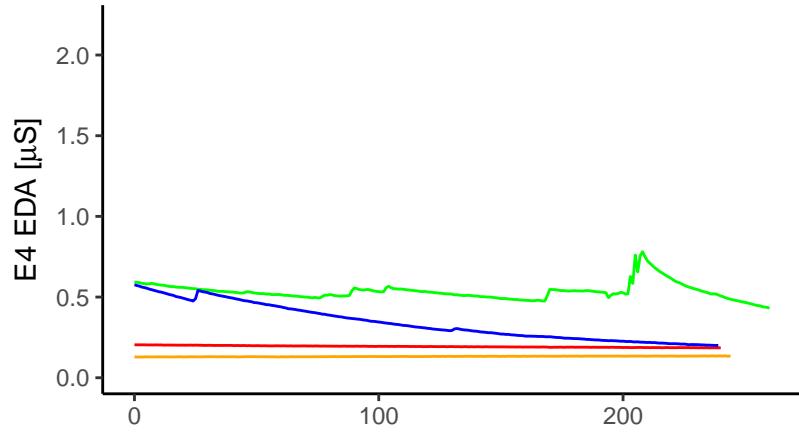
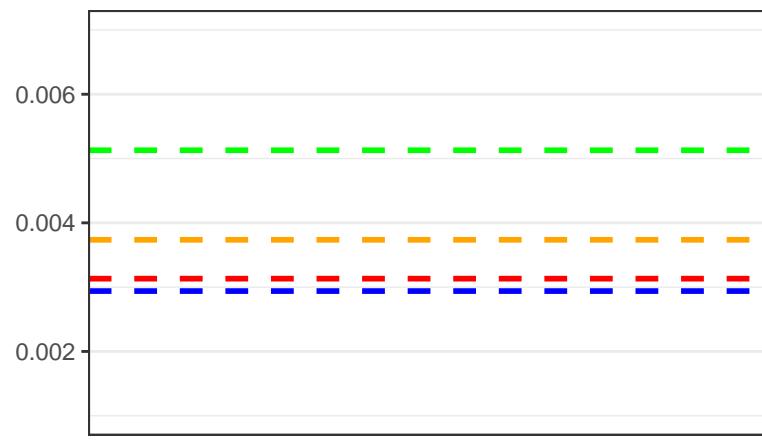
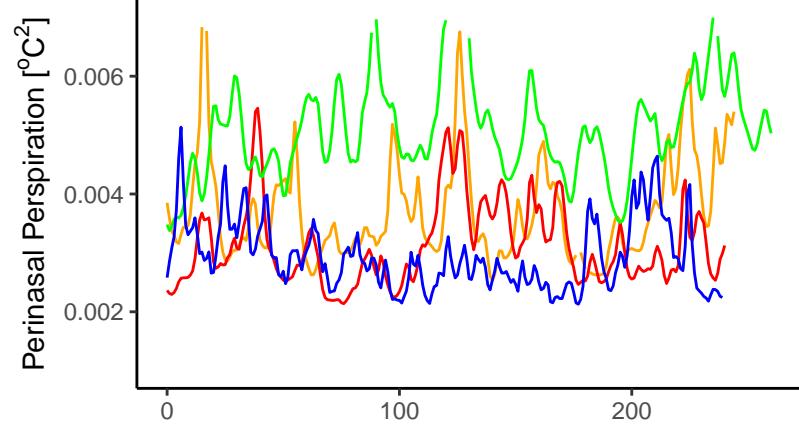
— Day1 — Day2 — Day3 — Day4

T015 Working Session



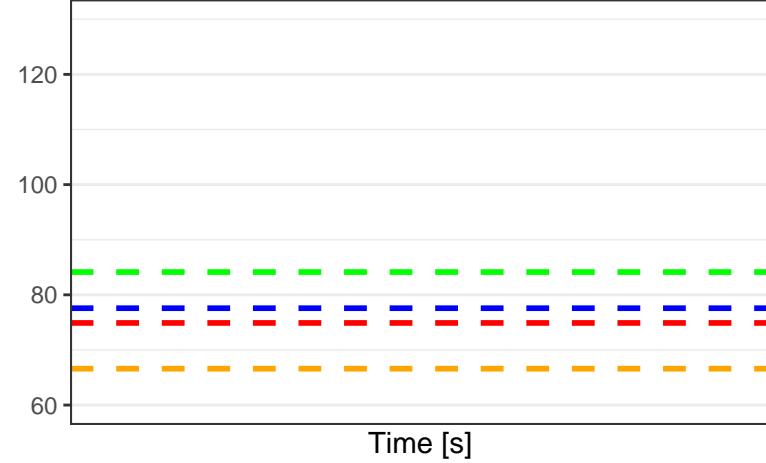
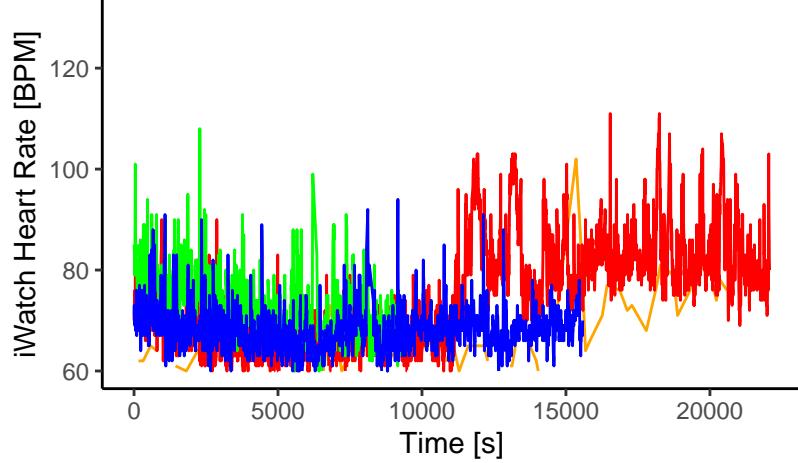
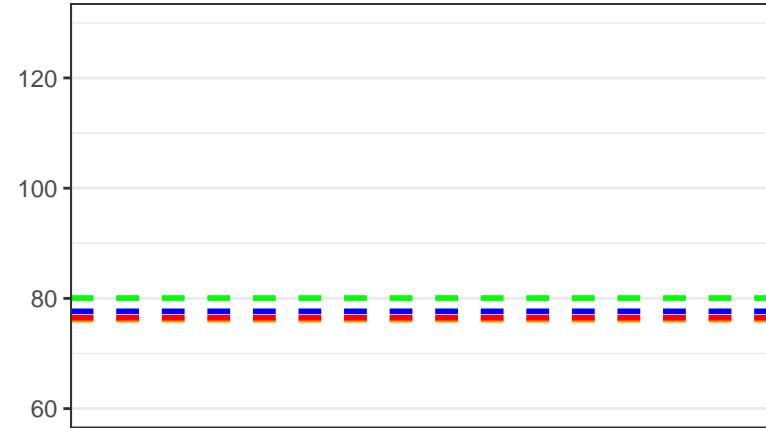
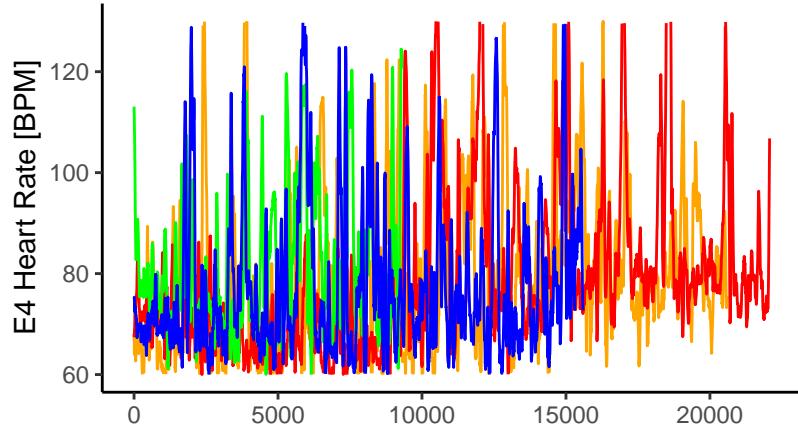
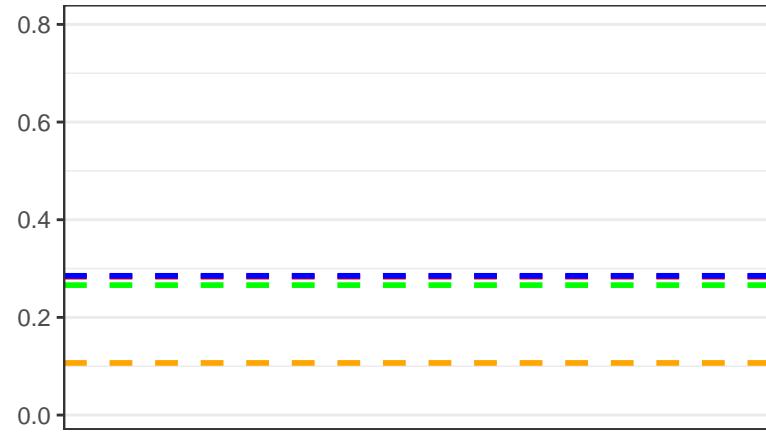
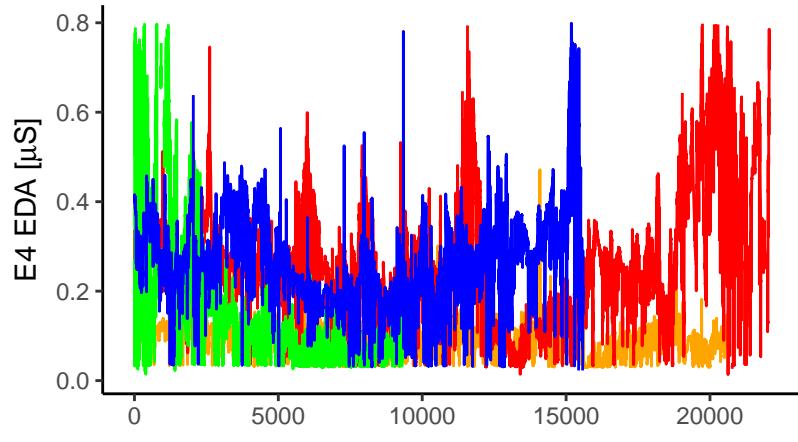
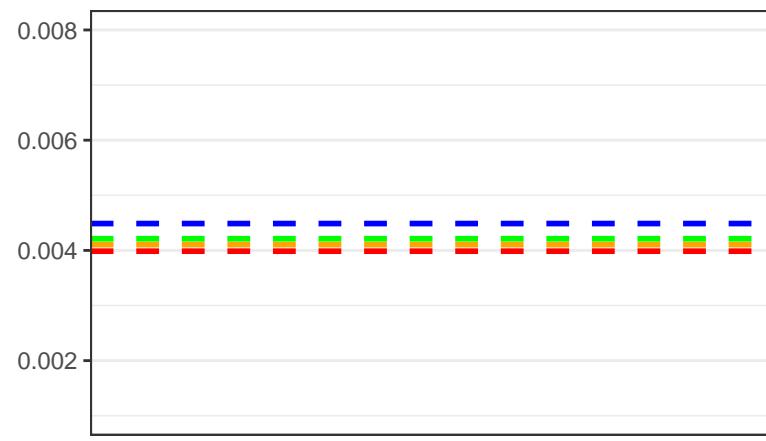
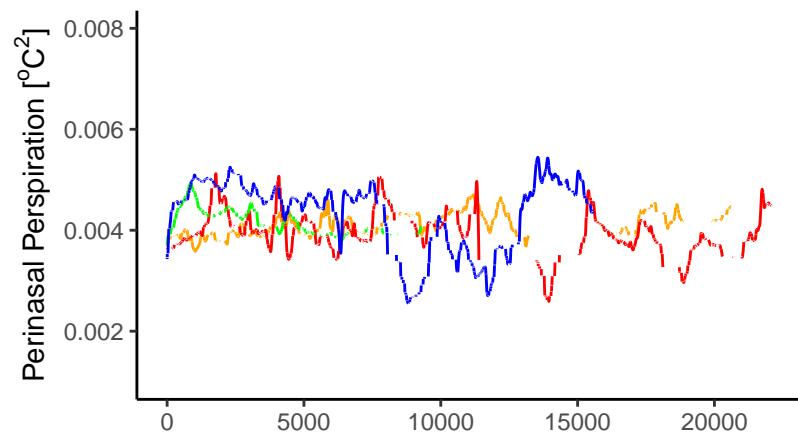
Day1 Day2 Day3 Day4

T017 Baseline



— Day1 — Day2 — Day3 — Day4

T017 Working Session



— Day1 — Day2 — Day3 — Day4

2 Chapter 2

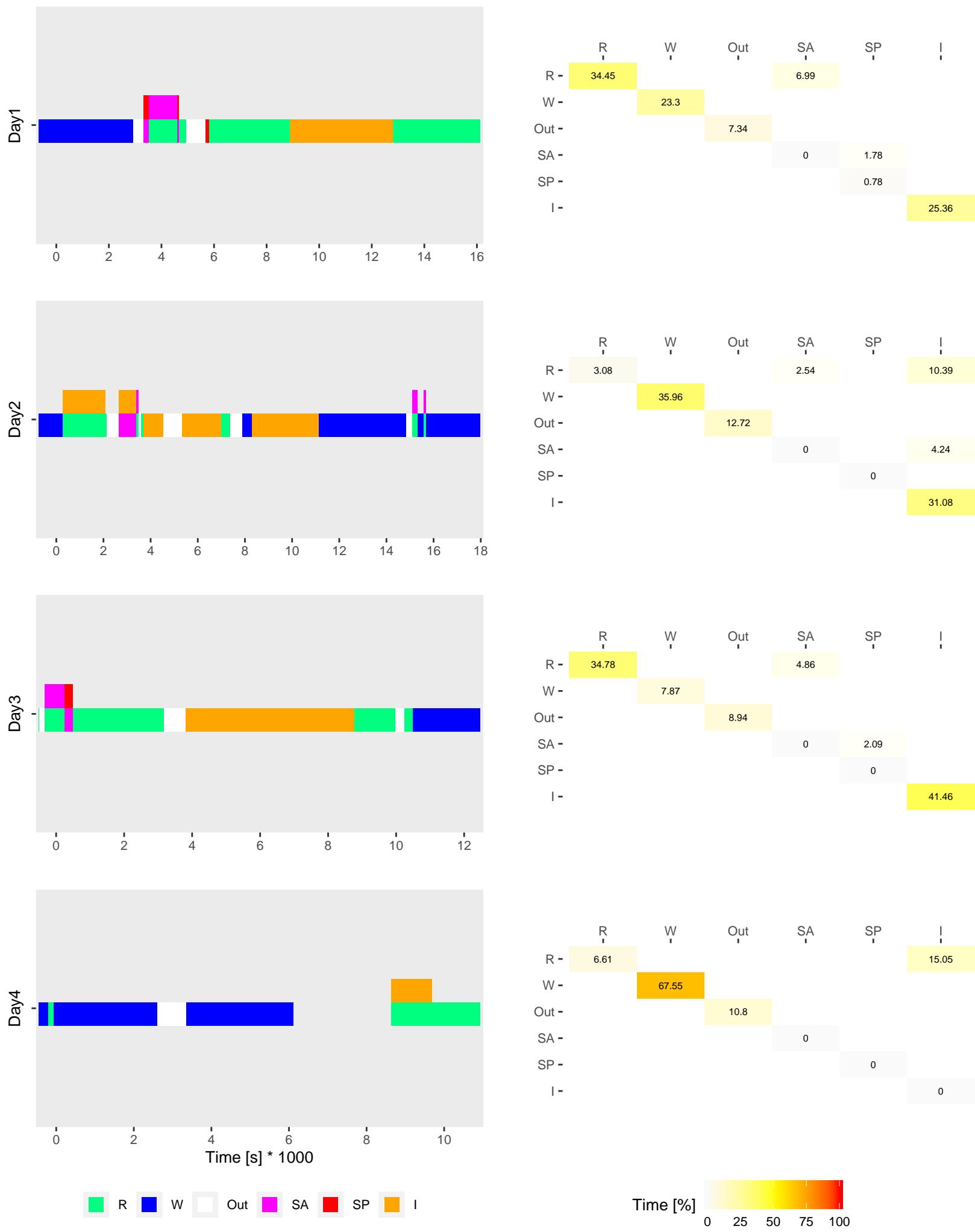
2.1 Behavioral Data

Behavioral data represents the participants working patterns as well as the applications used by the participants during the experiment.

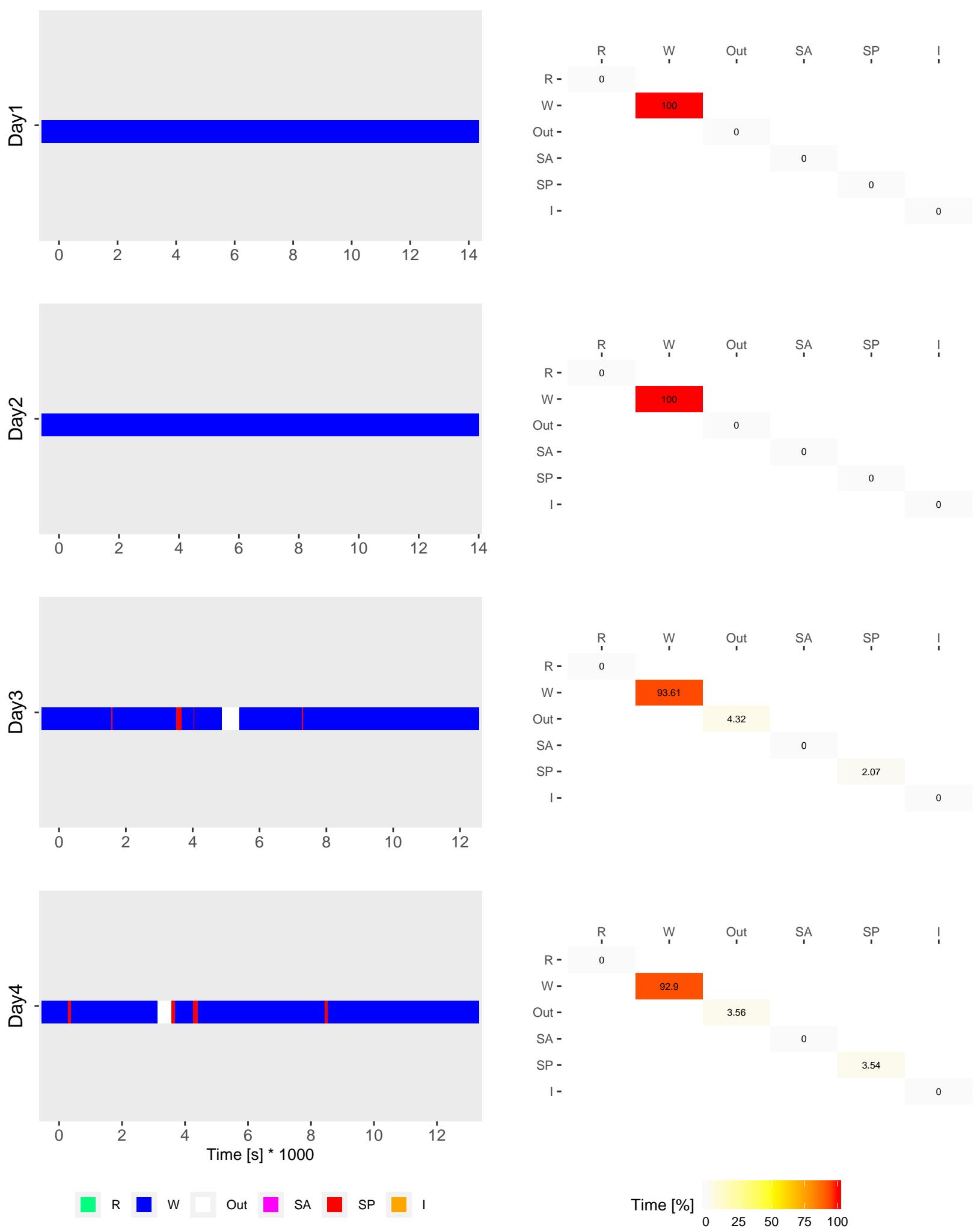
2.1.1 Work Activity Profile

Work Activity Profile depicts the different activities that the participant performed during the experiment. We have categorized activities as Reading (R), Writing(W), Out, Secondary activity(SA), SmartPhone(SP) and Interaction (I).The activities are plotted as a timeline as well as an occurrence matrix.

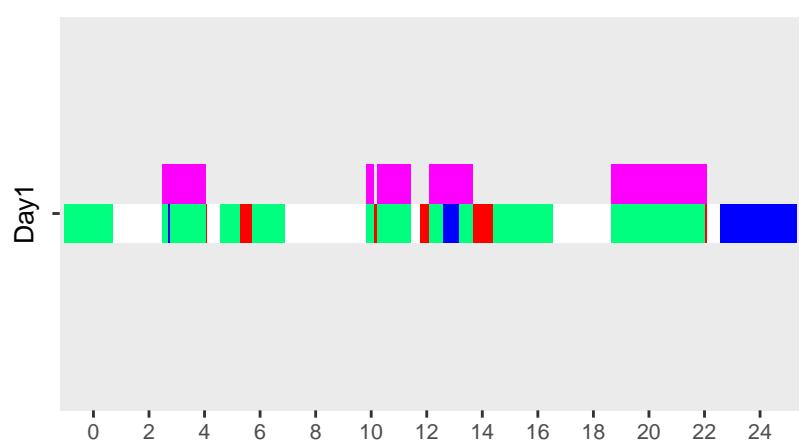
T001



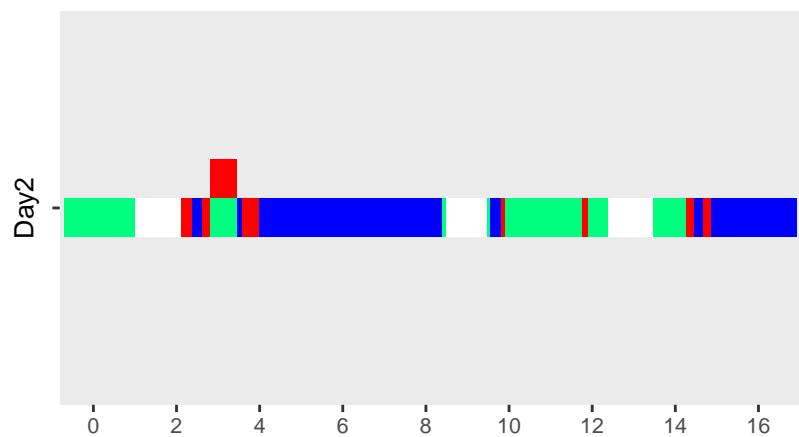
T003



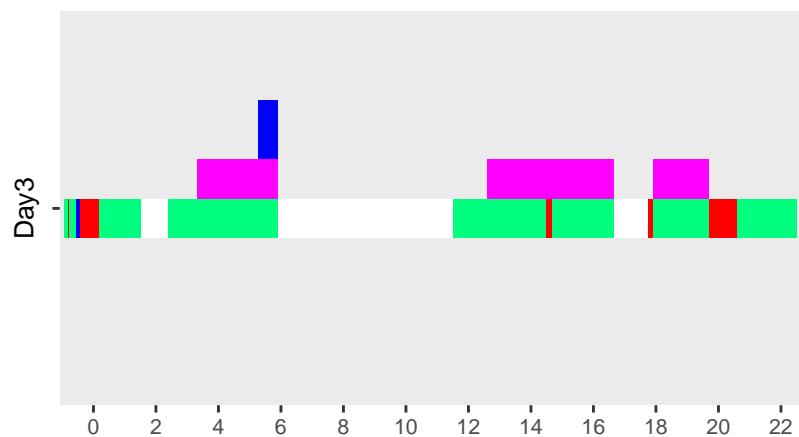
T005



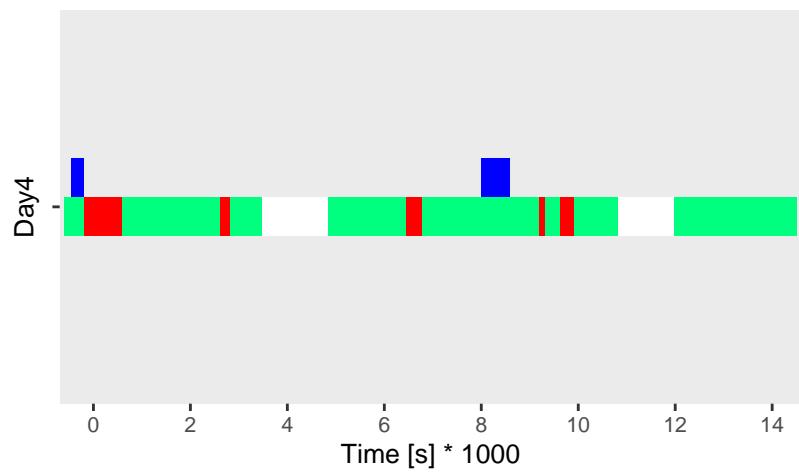
	R	W	Out	SA	SP	I
R -	24.28				30.95	
W -		2.69			1.43	
Out -				33.64		
SA -				0	0.31	
SP -					6.69	
I -						0



	R	W	Out	SA	SP	I
R -	30.85				4.08	
W -		36.06				
Out -				19.67		
SA -				0		
SP -					9.34	
I -						0



	R	W	Out	SA	SP	I
R -	17.41			38.38		
W -		0.57				
Out -				34.85		
SA -				0	0.88	
SP -					7.91	
I -						0

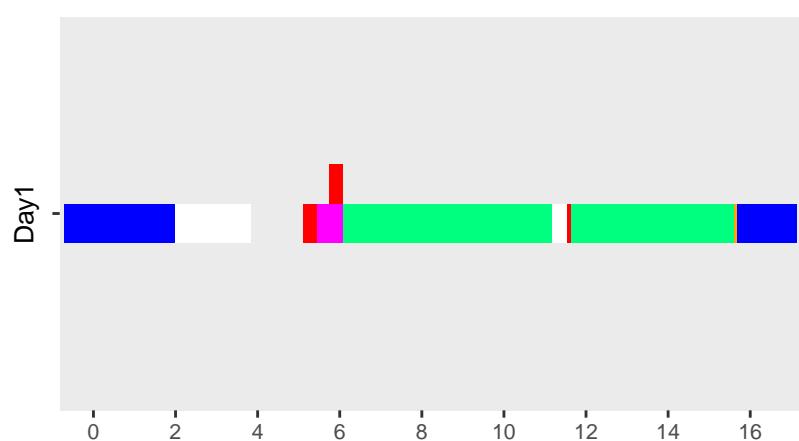


	R	W	Out	SA	SP	I
R -	63.03	6.3				
W -		0				
Out -				18.2		
SA -				0		
SP -					12.47	
I -						0

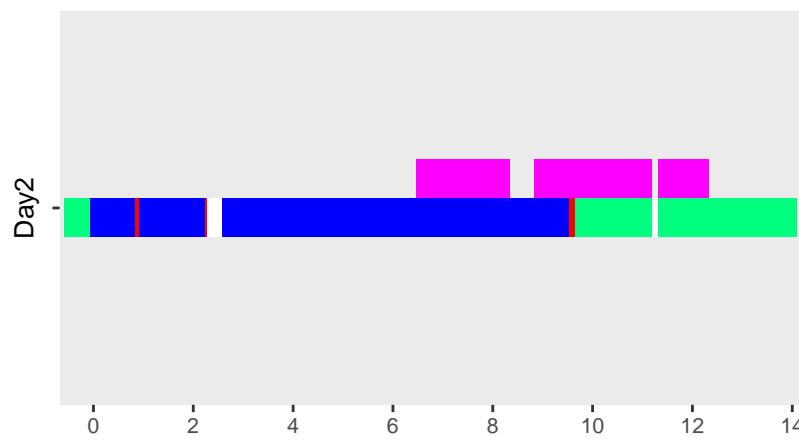
Legend: R (Green), W (Blue), Out (White), SA (Magenta), SP (Red), I (Orange)

Time [%]

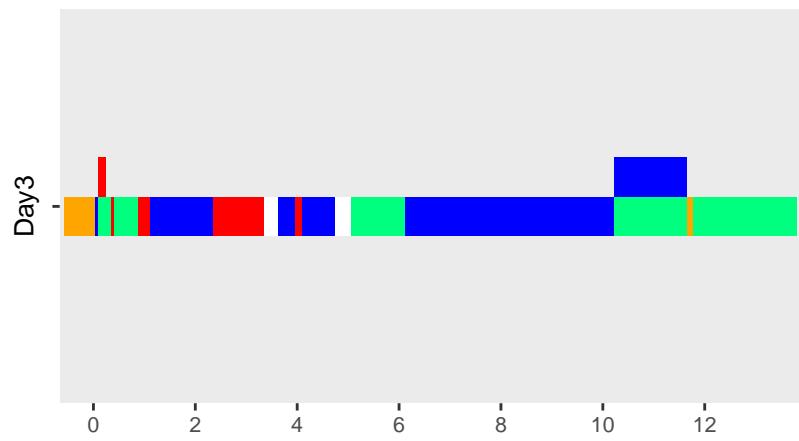
T007



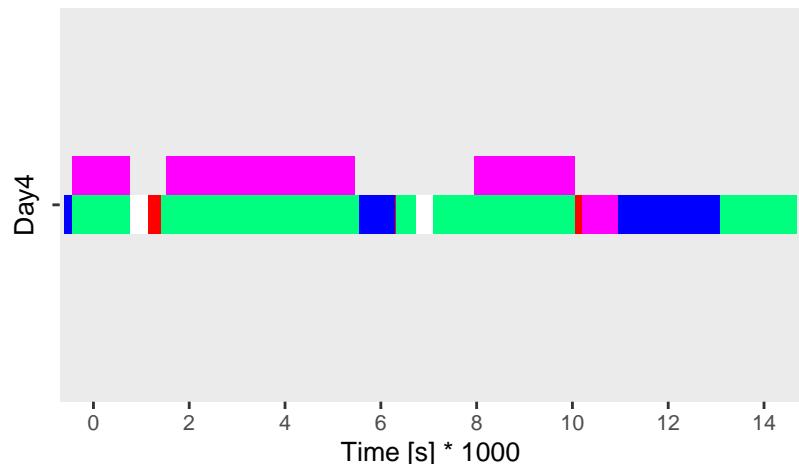
	R	W	Out	SA	SP	I
R -	65.96					
W -		19.86				
Out -			5.8			
SA -				2.15	2.51	
SP -					3.18	
I -						0.55



	R	W	Out	SA	SP	I
R -	8.24			19.18		
W -		49.2		18.44		
Out -			3.16			
SA -				0	0.89	
SP -					0.89	
I -						0



	R	W	Out	SA	SP	I
R -	18.98		10.74			1.25
W -		48.2				
Out -			4.58			
SA -				0		
SP -					10.75	
I -						5.5

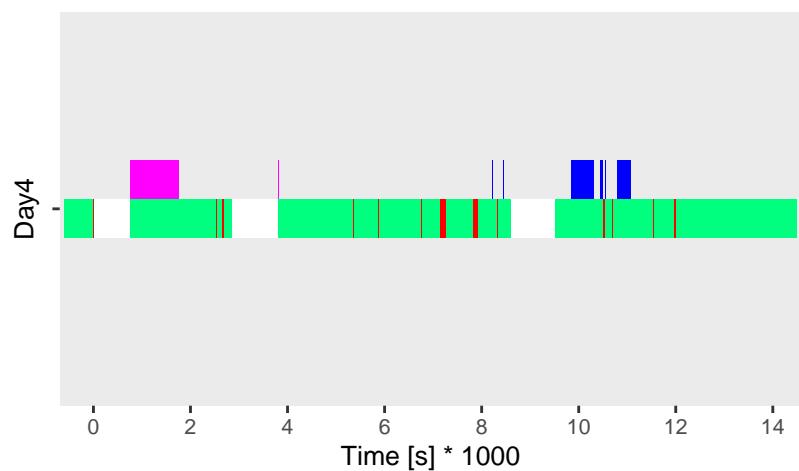
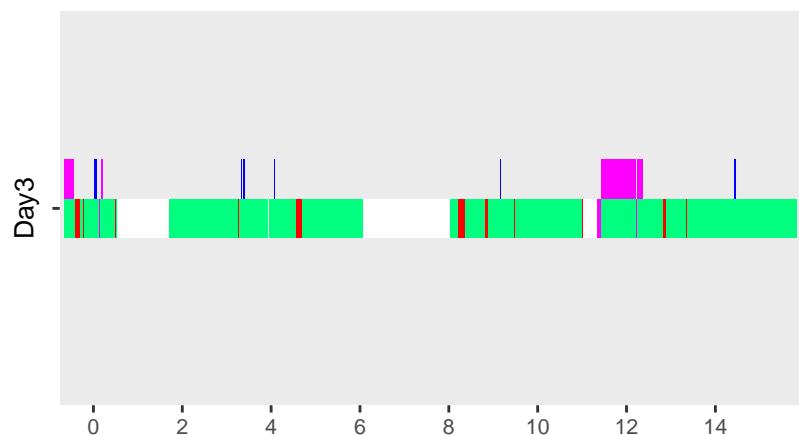
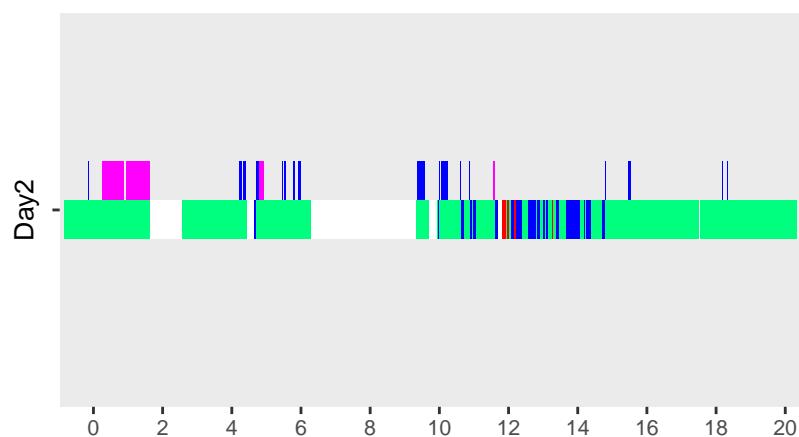
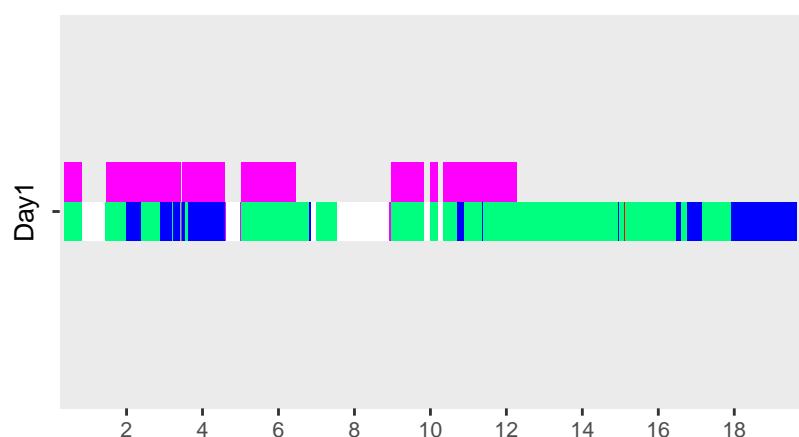


	R	W	Out	SA	SP	I
R -	13.31			51.5		
W -		21.67				
Out -			5.12			
SA -				5.33		
SP -					3.08	
I -						0

Legend: R (Green), W (Blue), Out (Grey), SA (Magenta), SP (Red), I (Orange)

Time [%]

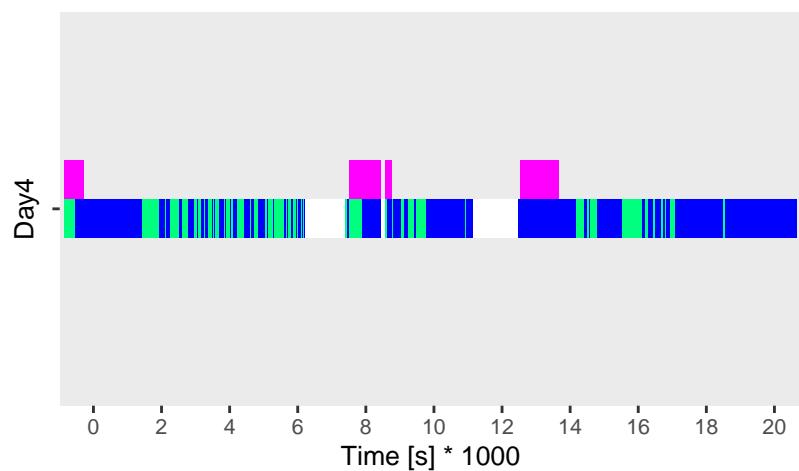
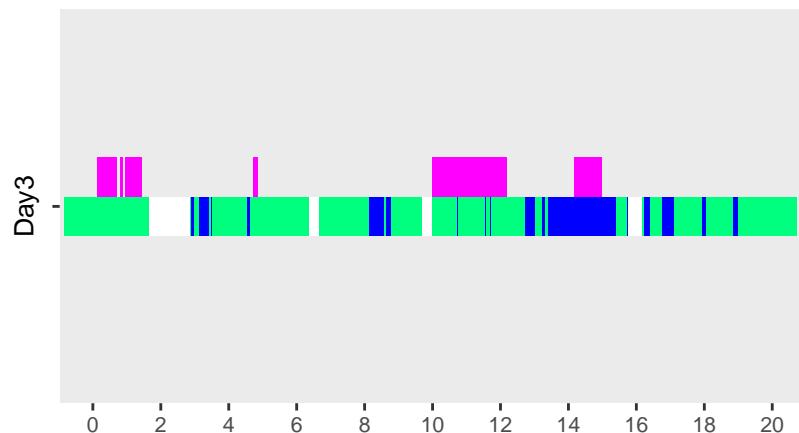
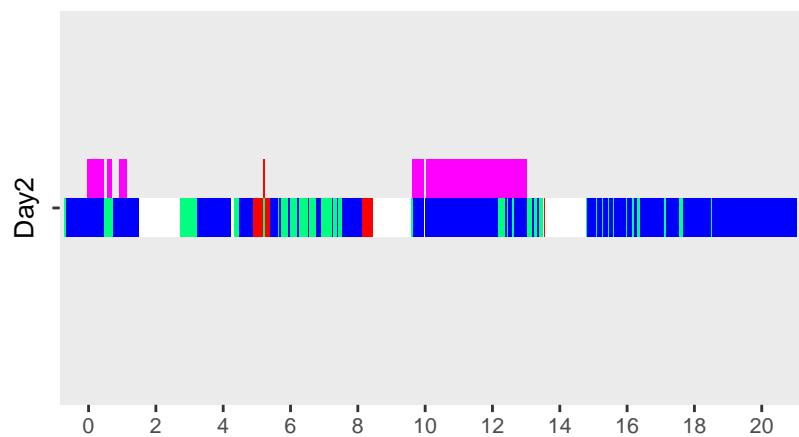
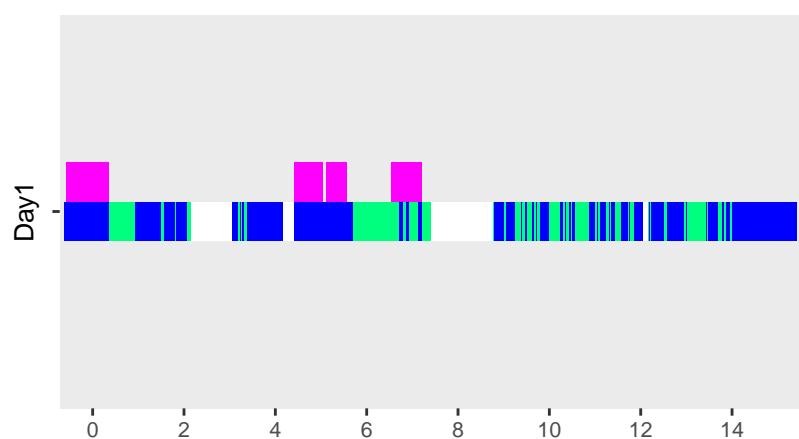
T009



■ R ■ W ■ Out ■ SA ■ SP ■ I

Time [%]

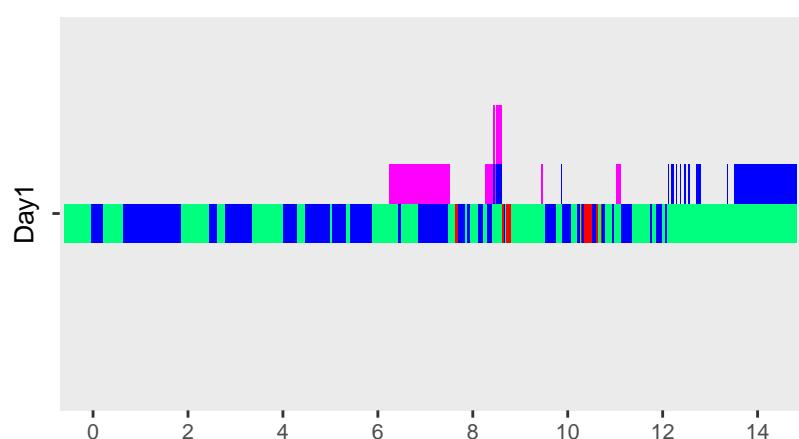
T011



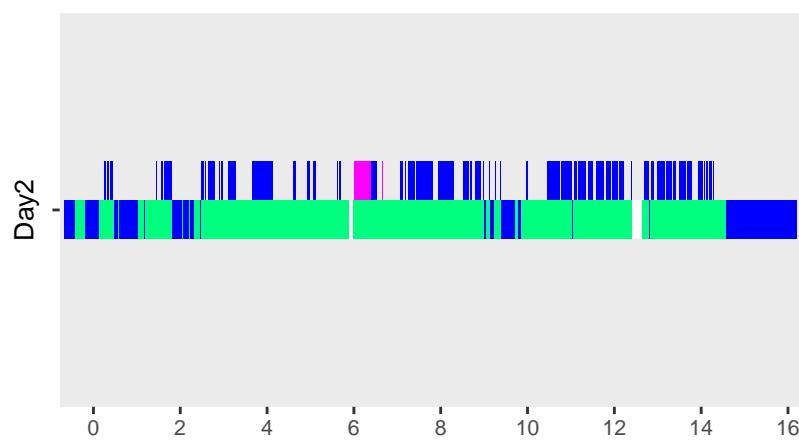
[■] R [■] W [■] Out [■] SA [■] SP [■] I

Time [%]

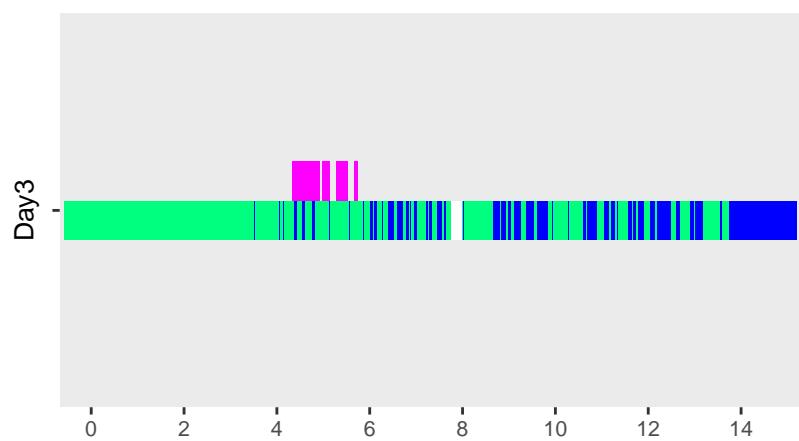
T013



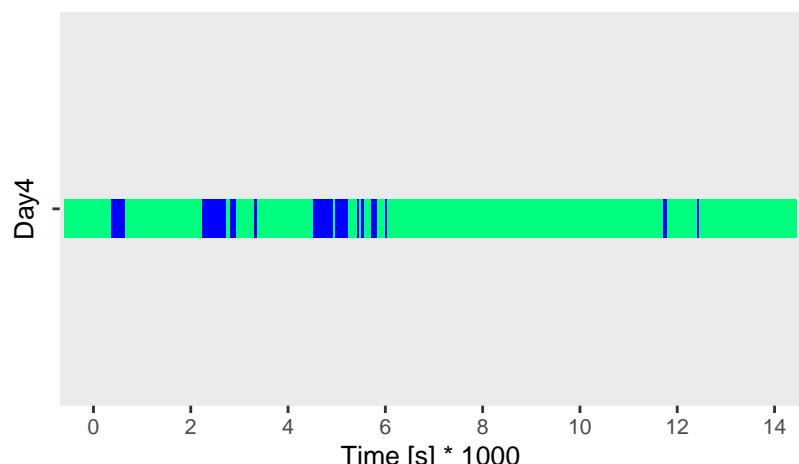
	R	W	Out	SA	SP	I
R -	44.04	4.44		5.94		
W -		37		5.65		
Out -			0			
SA -				0		
SP -					2.92	
I -						0



	R	W	Out	SA	SP	I
R -	40.9	38.18		2.46		
W -		16.52				
Out -			1.94			
SA -				0		
SP -					0	
I -						0



	R	W	Out	SA	SP	I
R -	66.46			6.38		
W -		23.96		1.48		
Out -			1.72			
SA -				0		
SP -					0	
I -						0

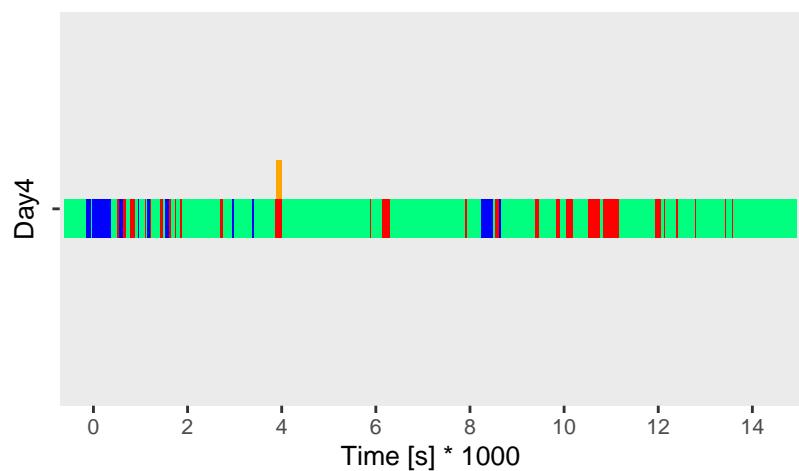
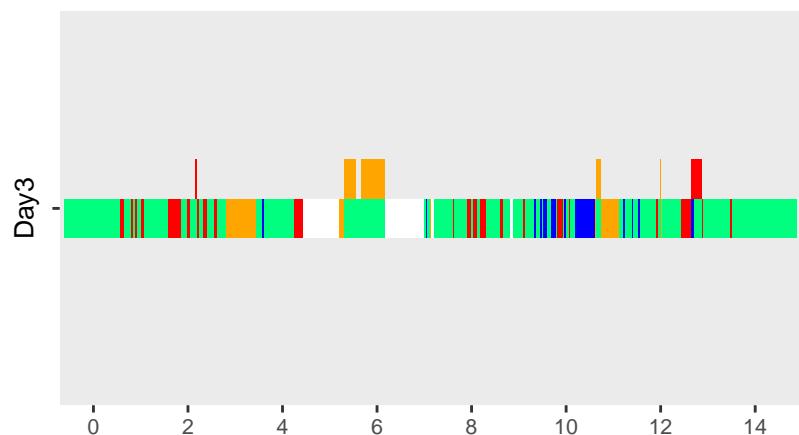
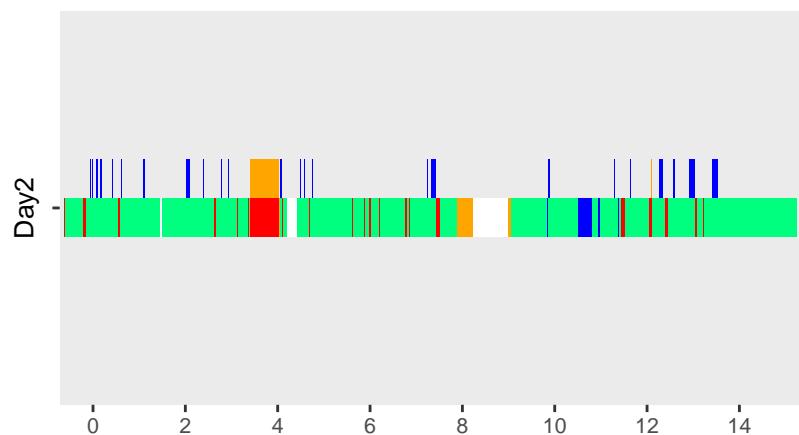
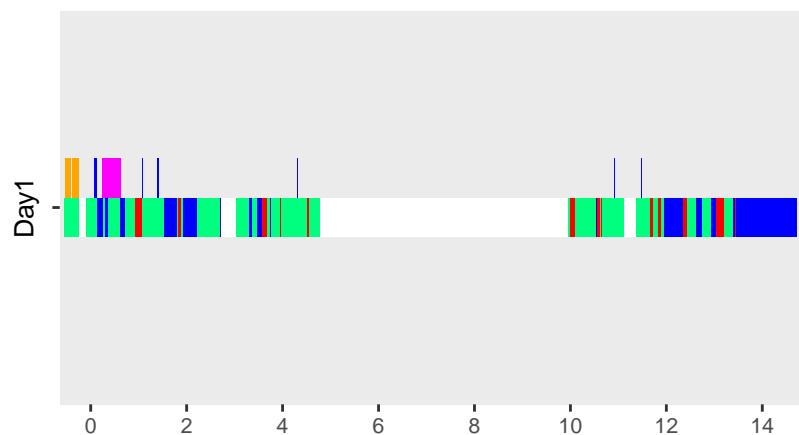


	R	W	Out	SA	SP	I
R -	86.49					
W -		13.51				
Out -			0			
SA -				0		
SP -					0	
I -						0

Legend: R (Green), W (Blue), Out (Grey), SA (Magenta), SP (Red), I (Orange)

Time [%]

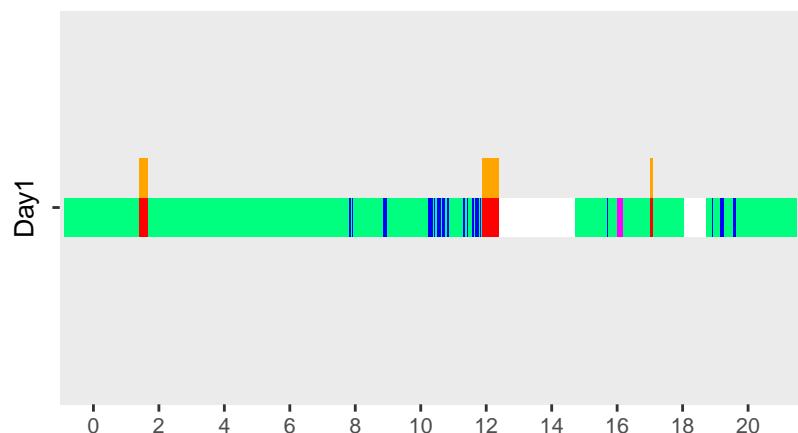
T015



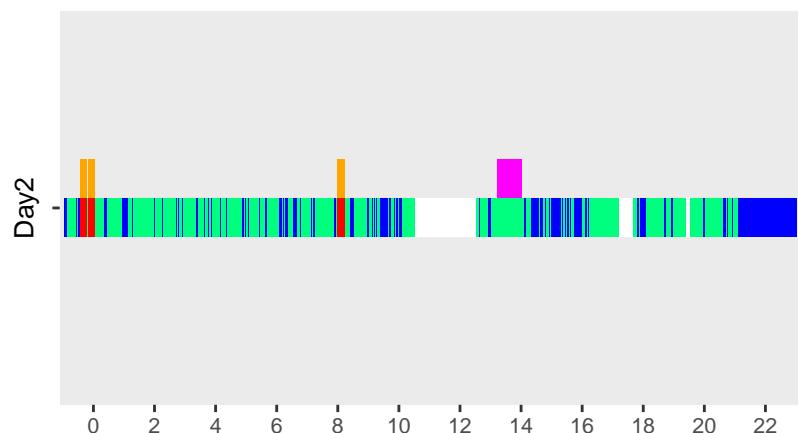
[■ R ■ W ■ Out ■ SA ■ SP ■ I]

Time [%]

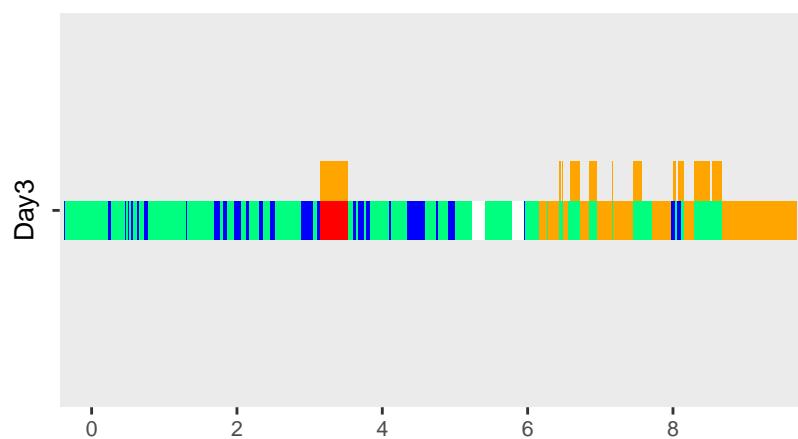
T017



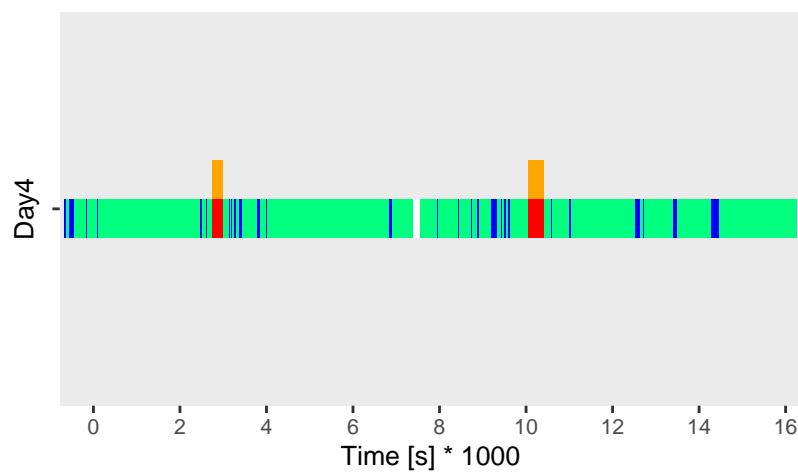
	R	W	Out	SA	SP	I
R -	74.83					
W -		5.09				
Out -			15.07			
SA -				0.92		
SP -					0	4.09
I -						0



	R	W	Out	SA	SP	I
R -	60.31			3.9		
W -		20.95				
Out -			11.71			
SA -				0		
SP -					0	3.13
I -						0



	R	W	Out	SA	SP	I
R -	52.18					9.69
W -		16.95				0.78
Out -			3.56			
SA -				0		
SP -					0	4.61
I -						12.24



	R	W	Out	SA	SP	I
R -	85.9					
W -		9.26				
Out -			1.03			
SA -				0		
SP -					0	3.81
I -						0

[■ R ■ W ■ Out ■ SA ■ SP ■ I]

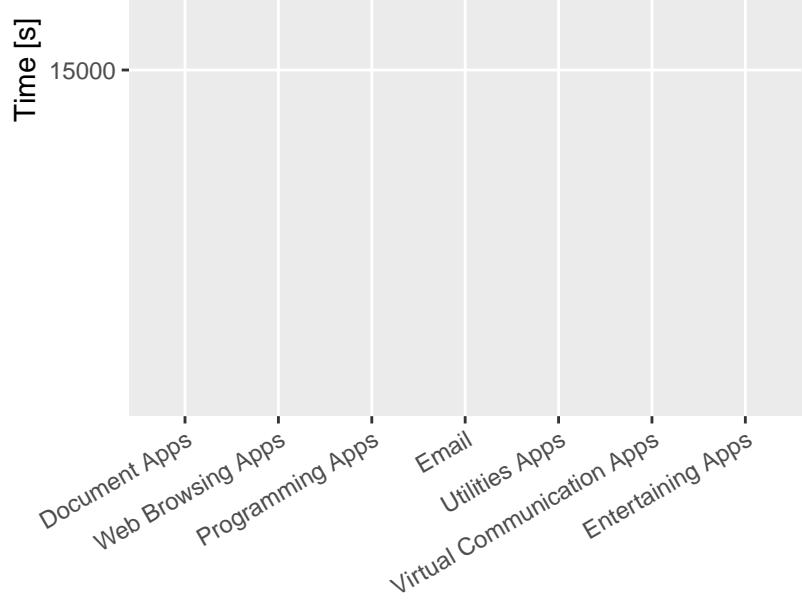
Time [%]

2.1.2 Application Usage Profile

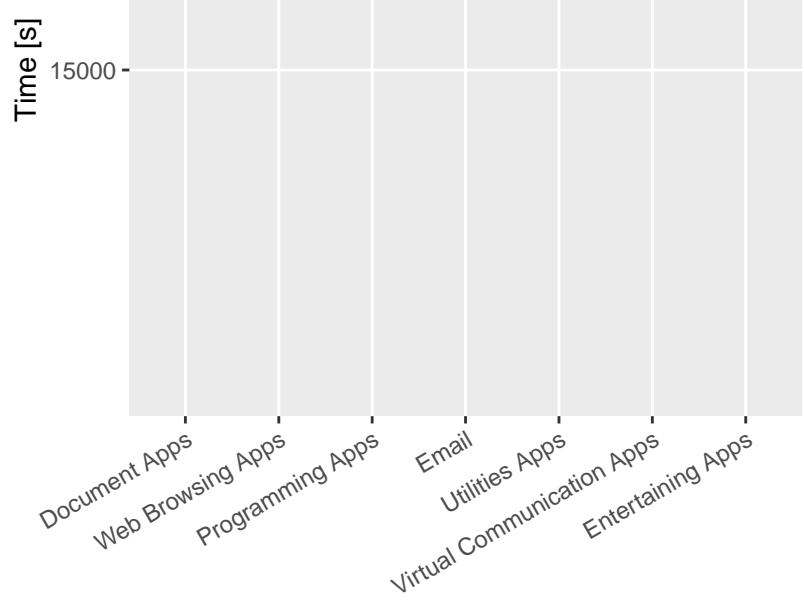
Application Usage Profile imprints the applications used by the participants during the experiment. We have classified the applications as Document Apps, Web Browsing Apps, Programming Apps, Email, Utilities Apps, Virtual Communication Apps, and Entertaining Apps. The application usage data are plotted as a combination of reading and writing.

T001

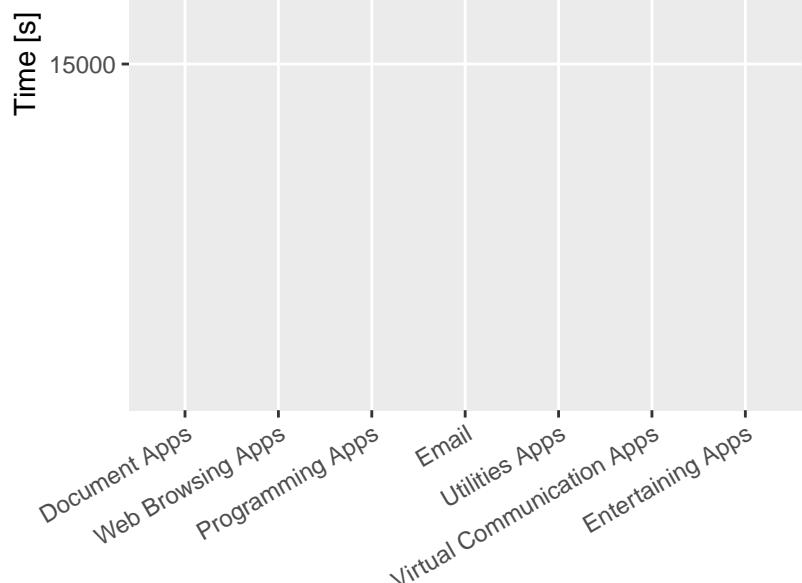
Day1



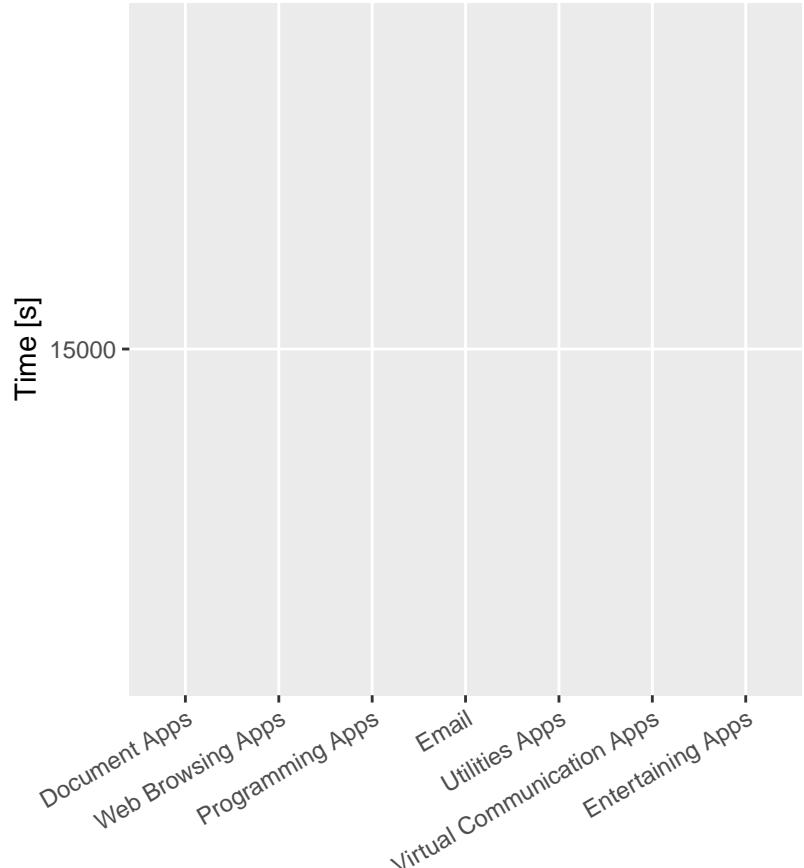
Day2



Day3

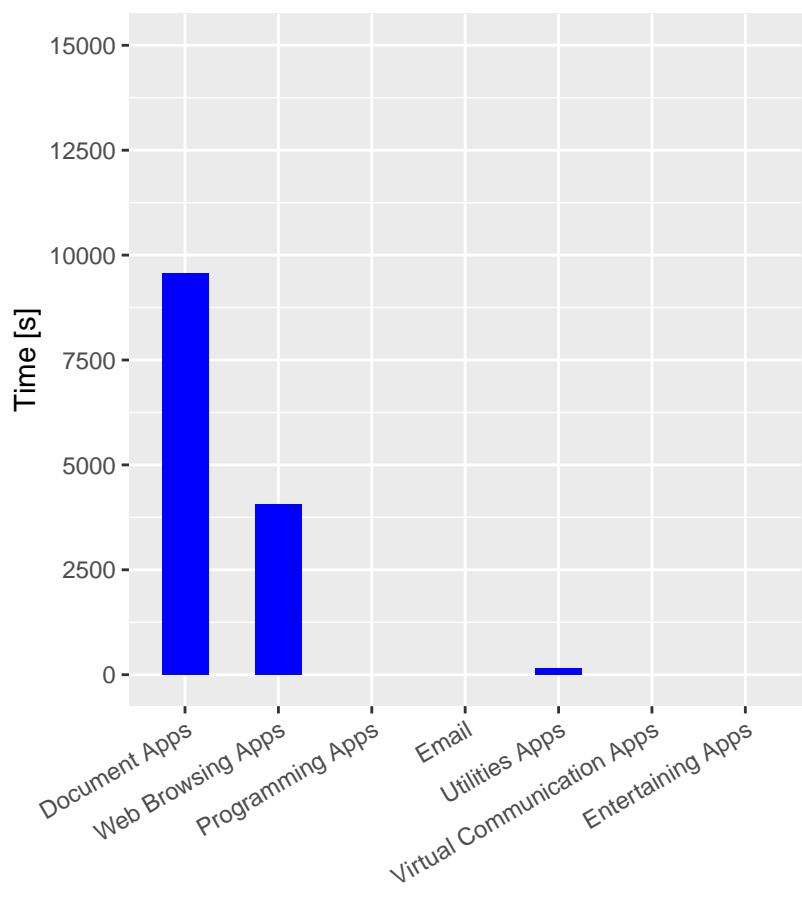


Day4

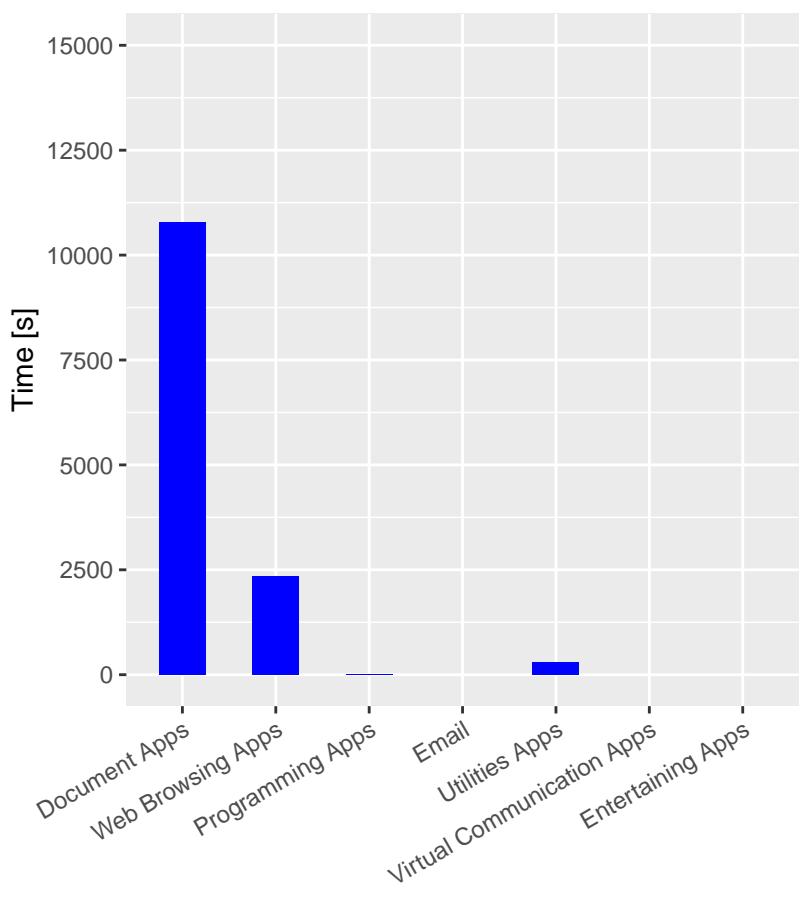


T003

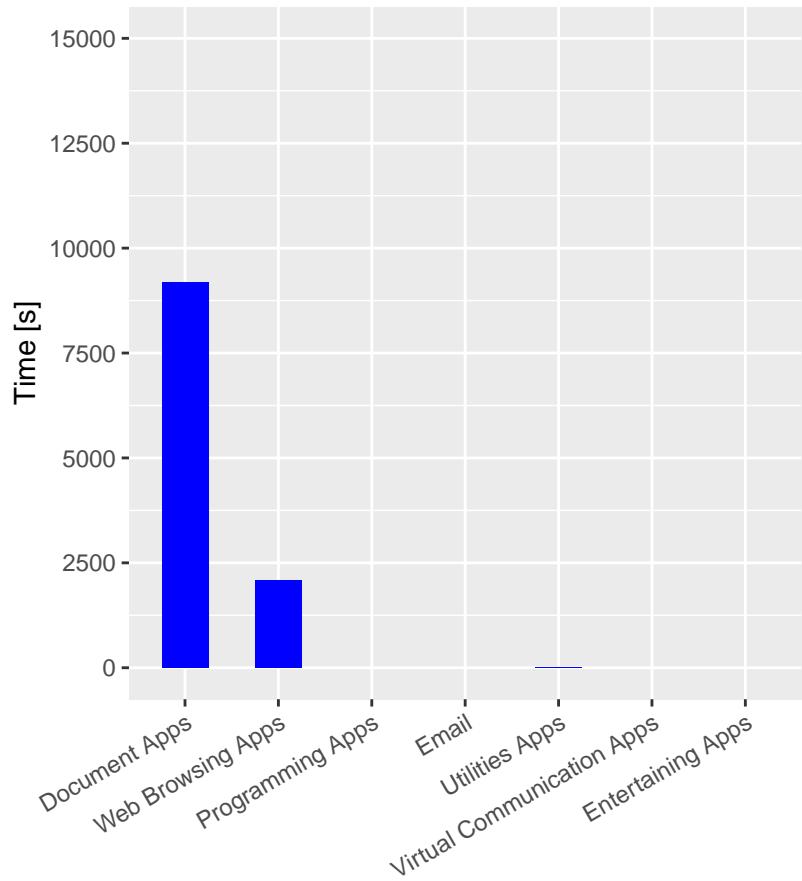
Day1



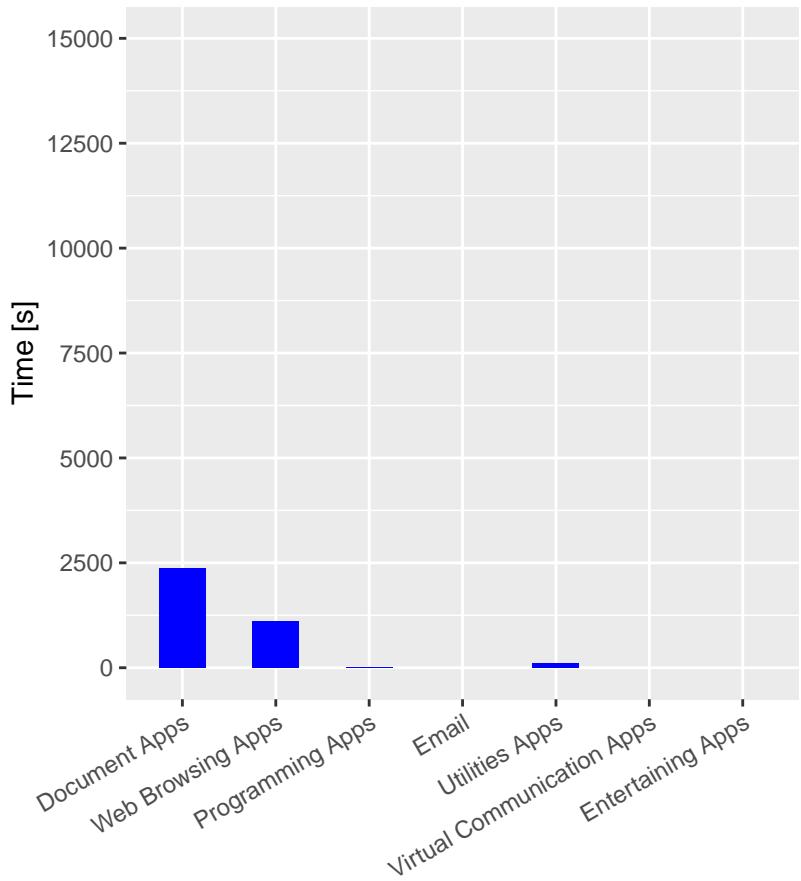
Day2



Day3

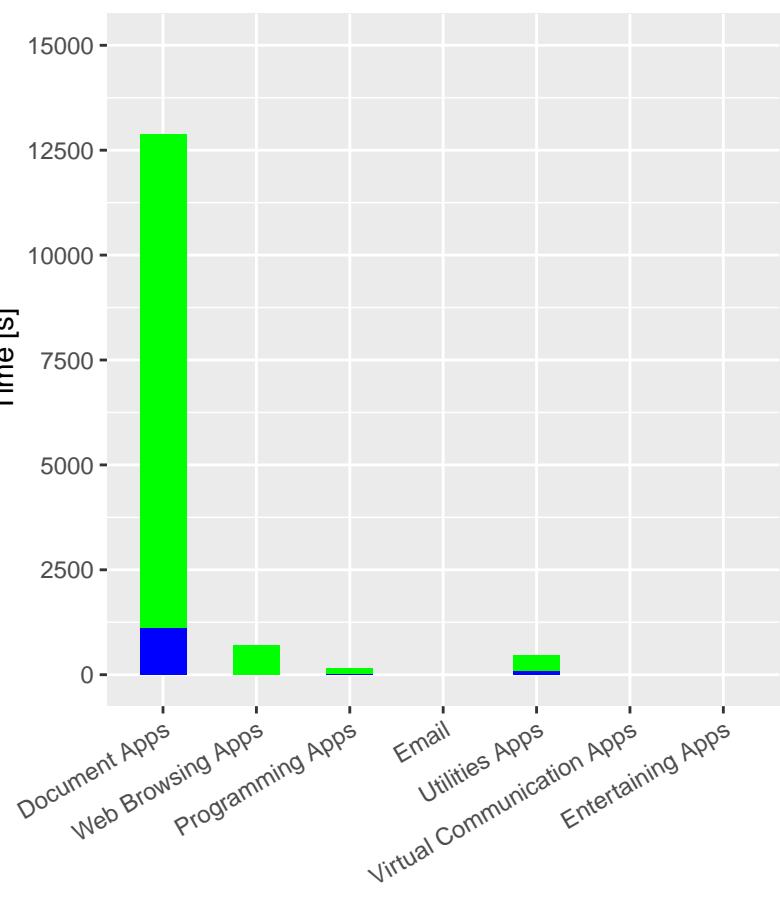


Day4

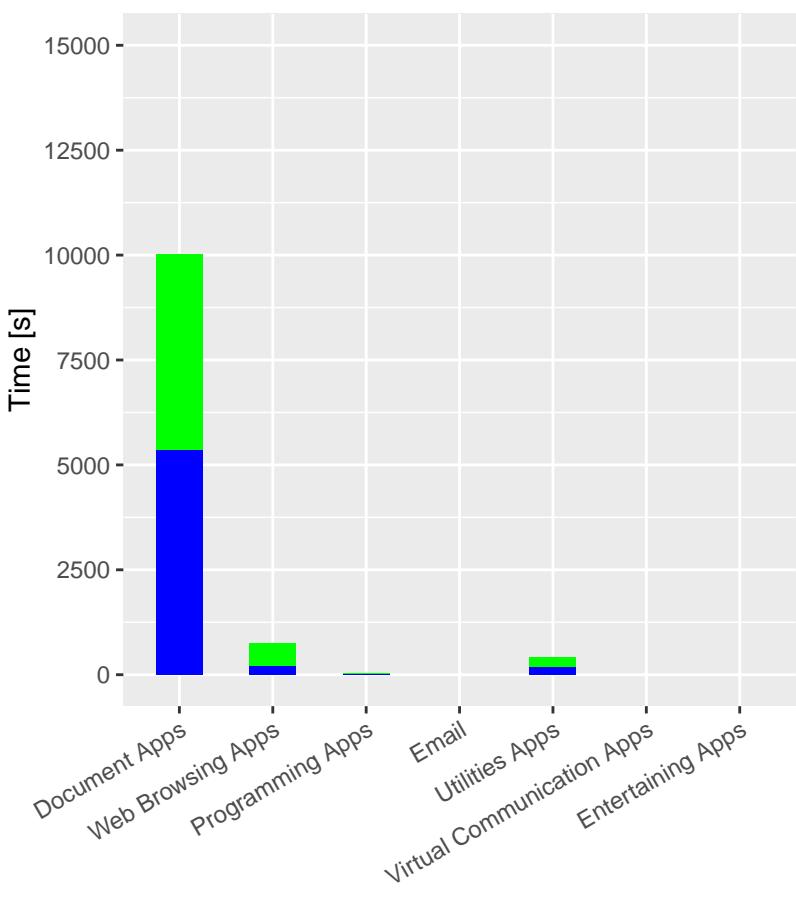


T005

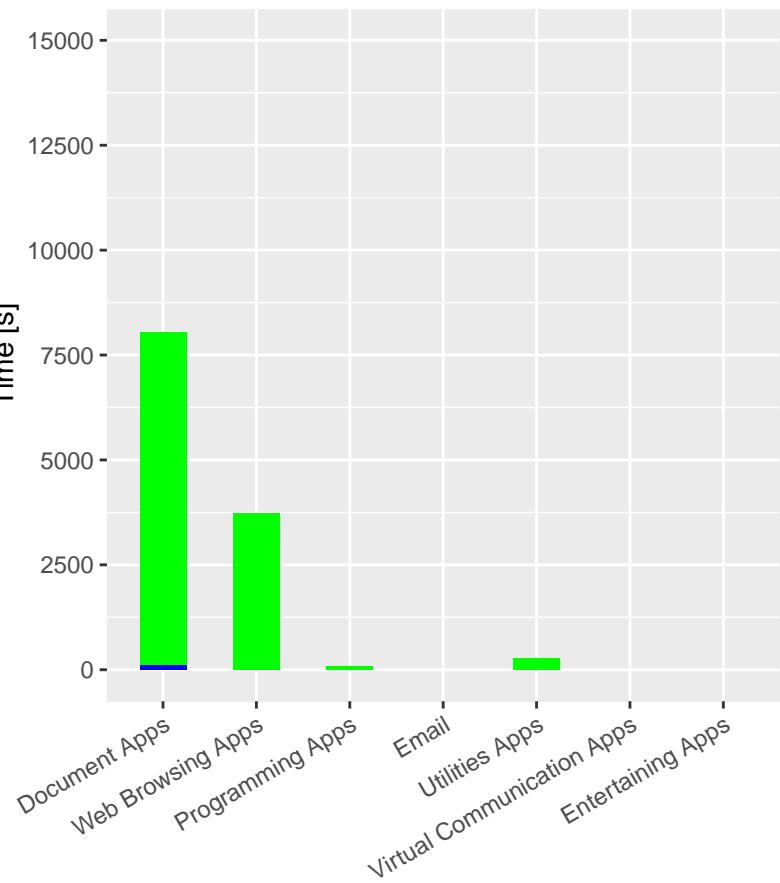
Day1



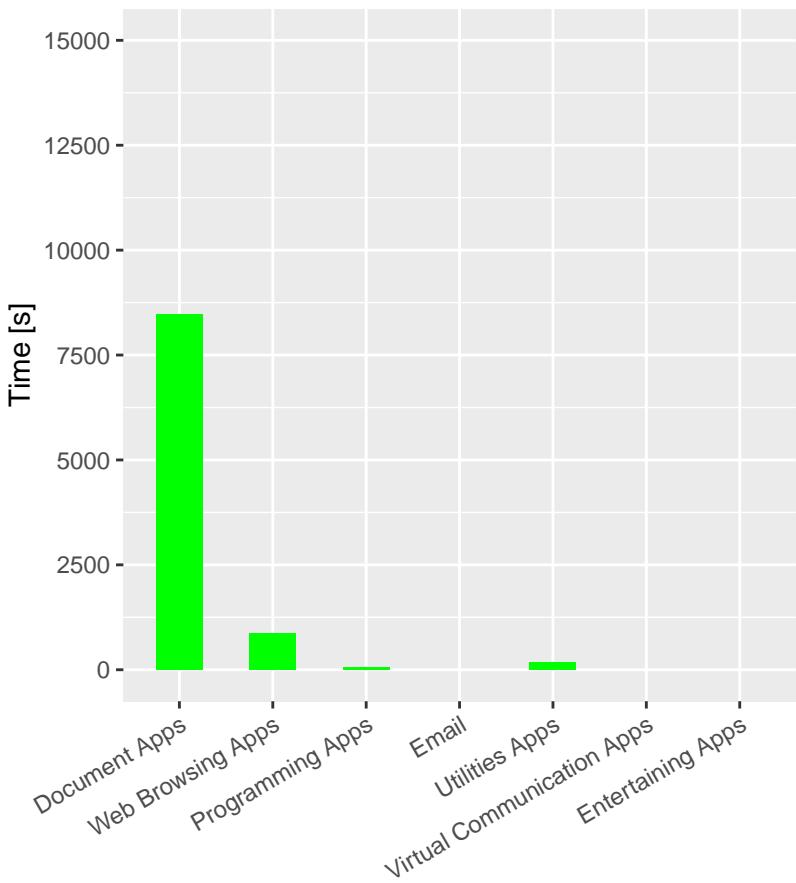
Day2



Day3



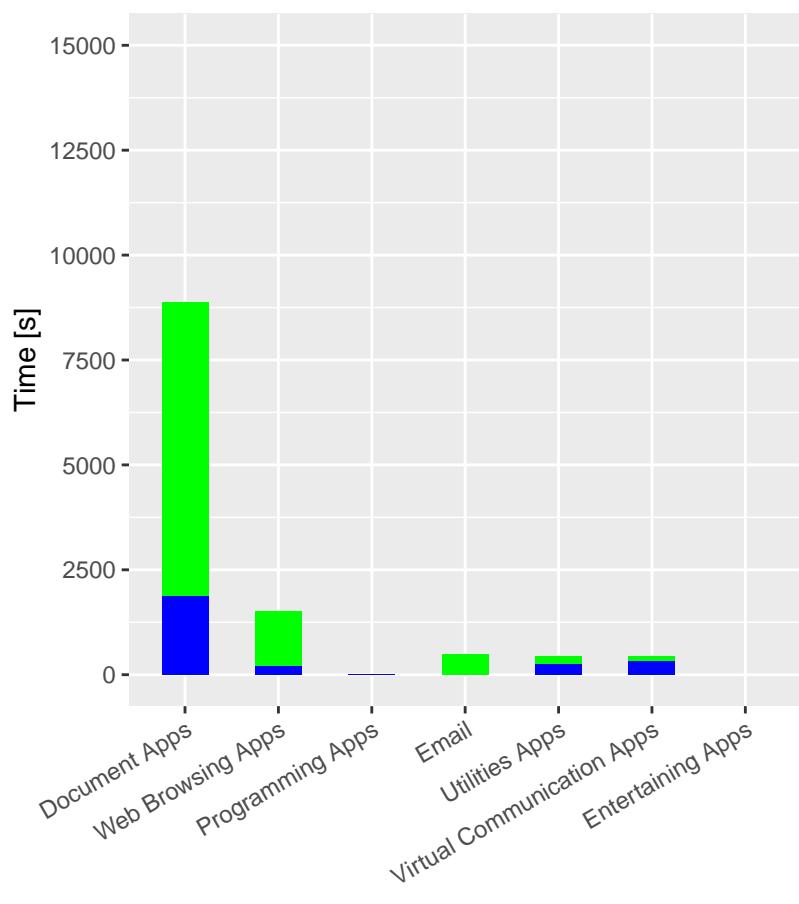
Day4



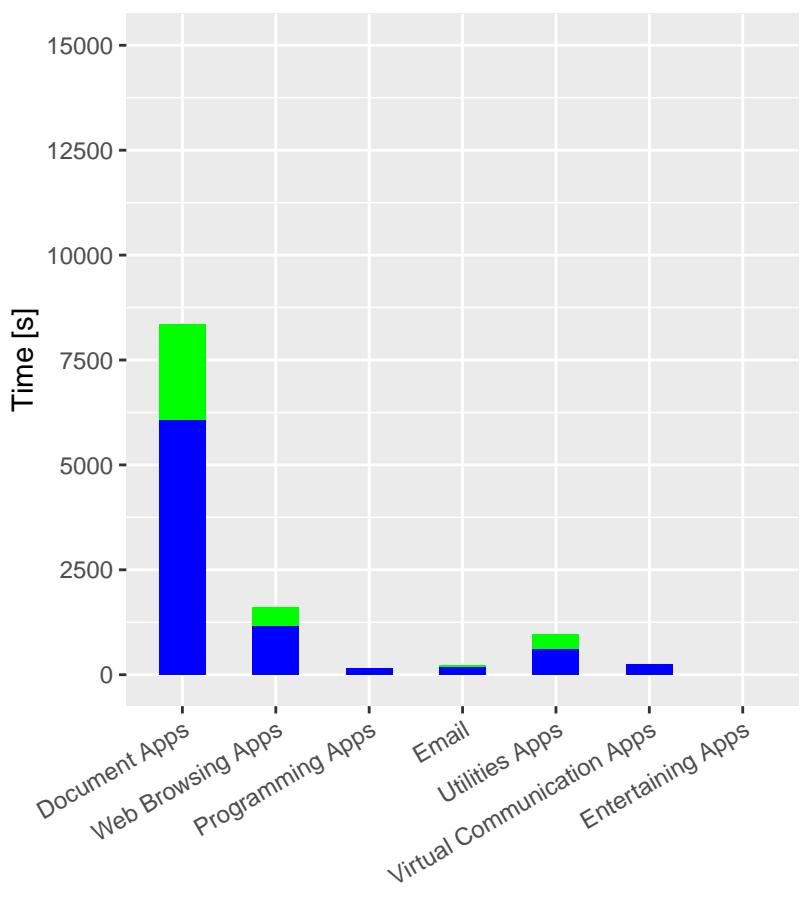
R W

T007

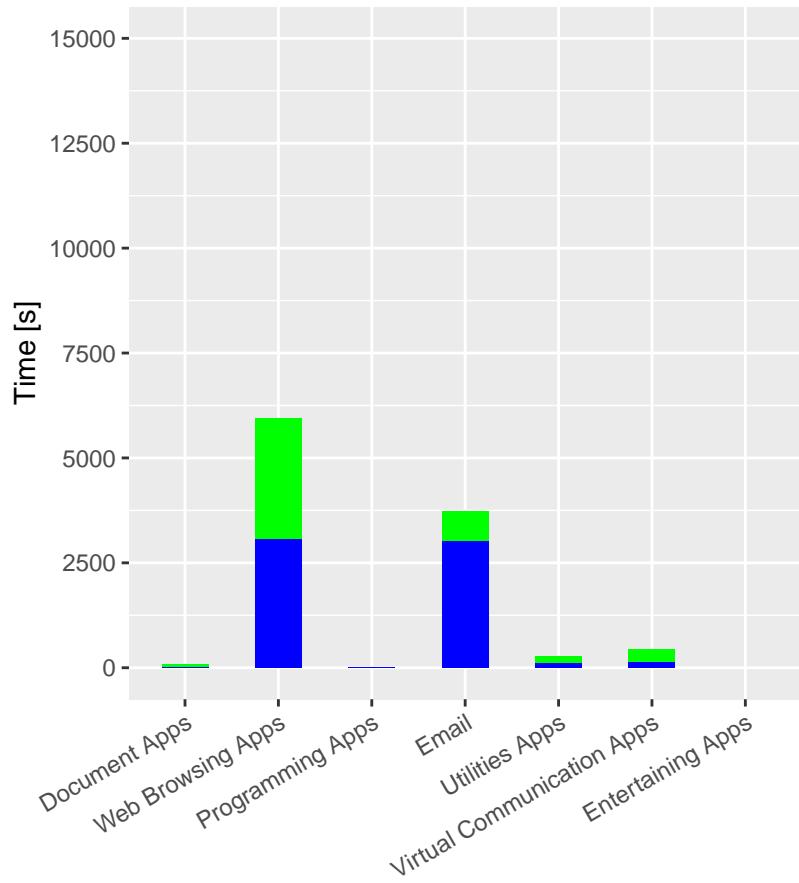
Day1



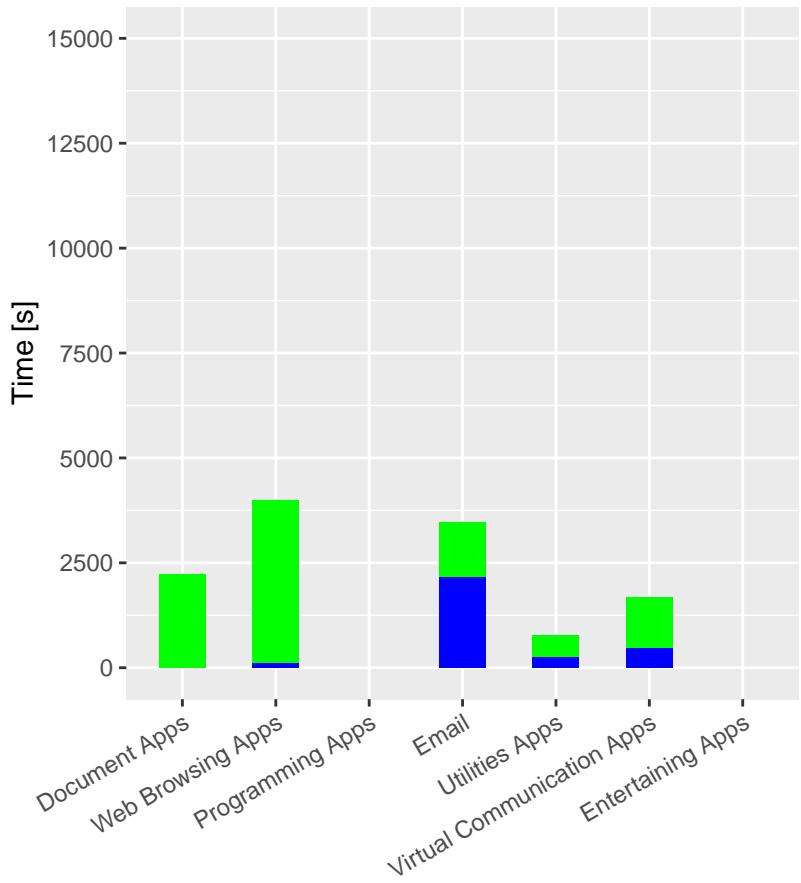
Day2



Day3



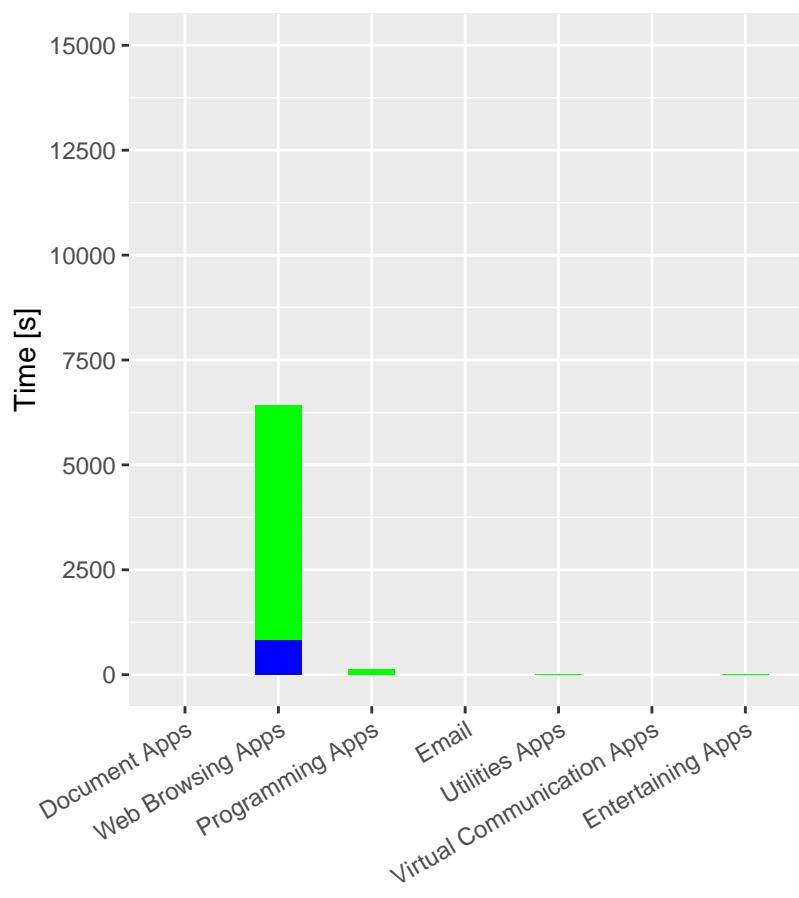
Day4



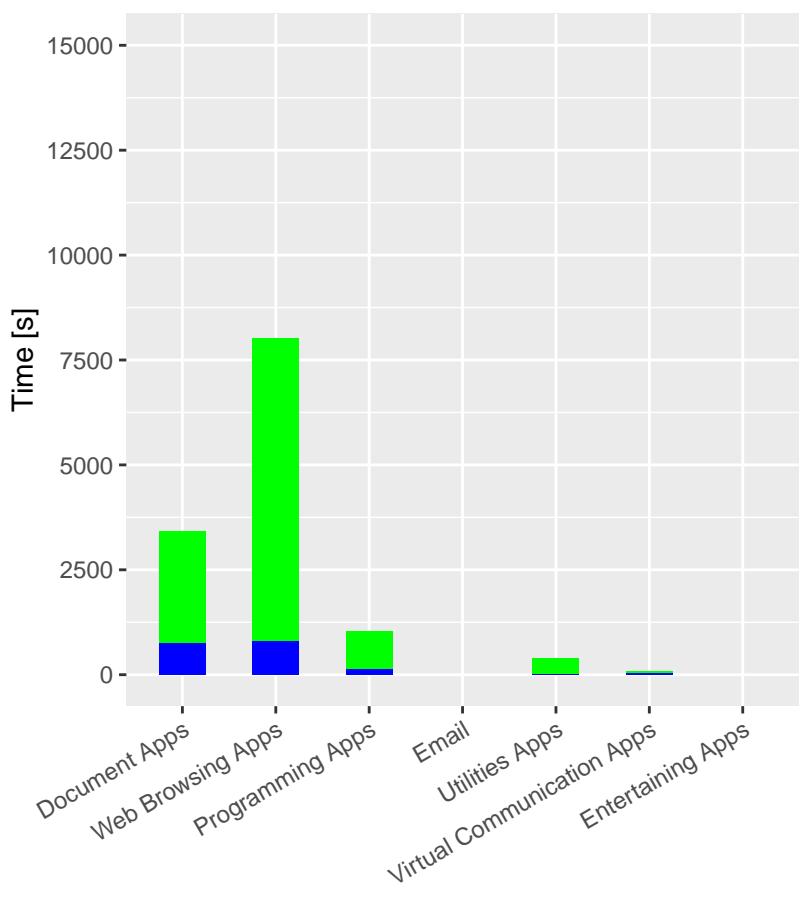
R W

T009

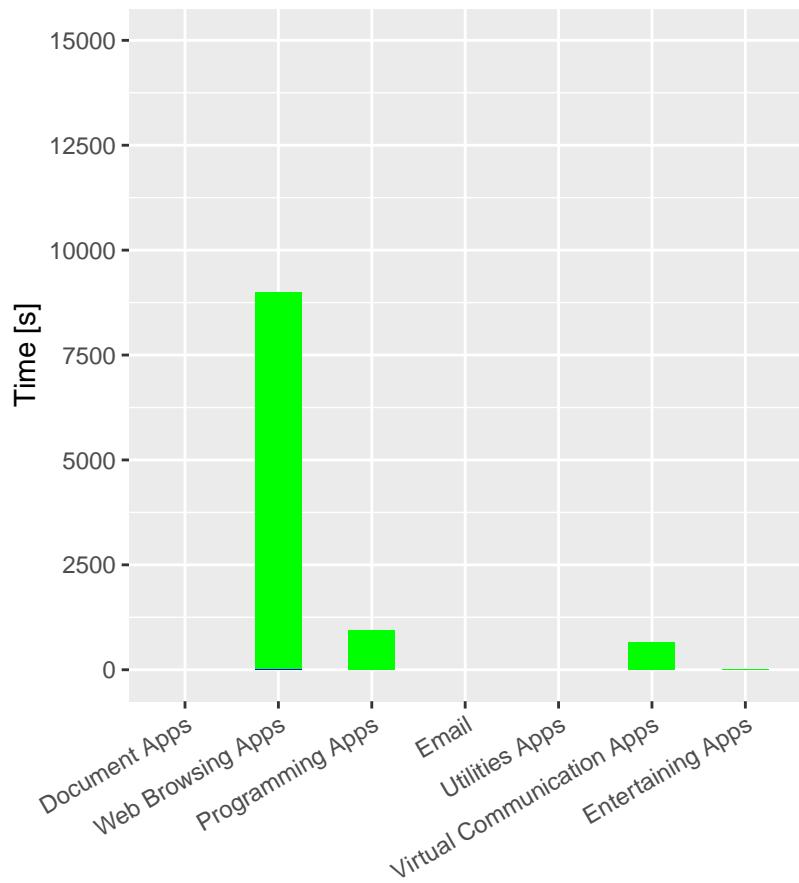
Day1



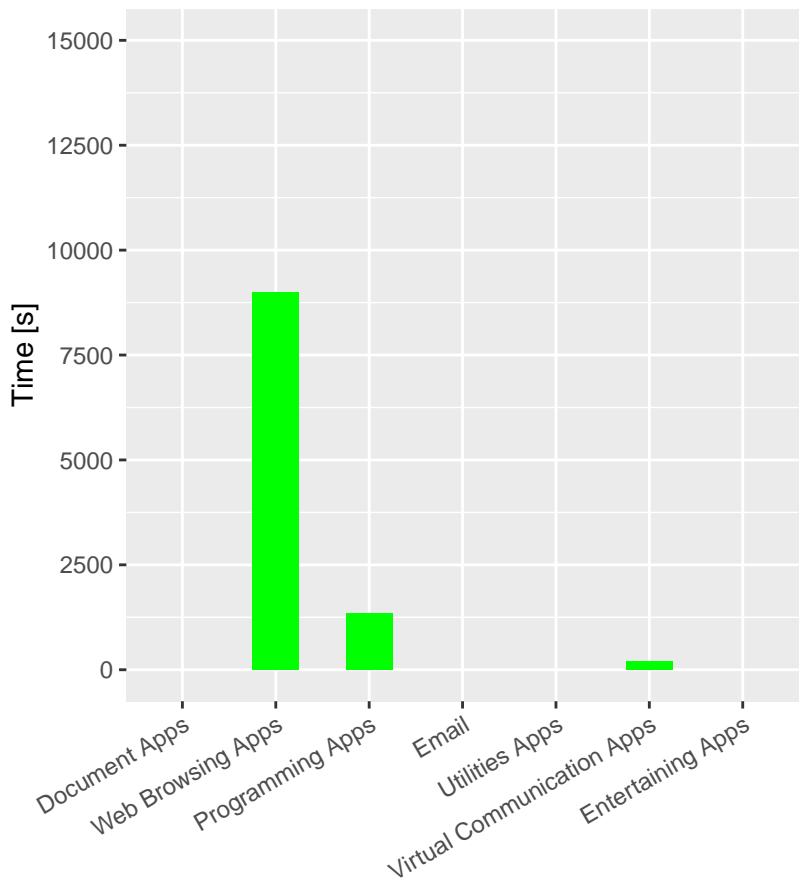
Day2



Day3



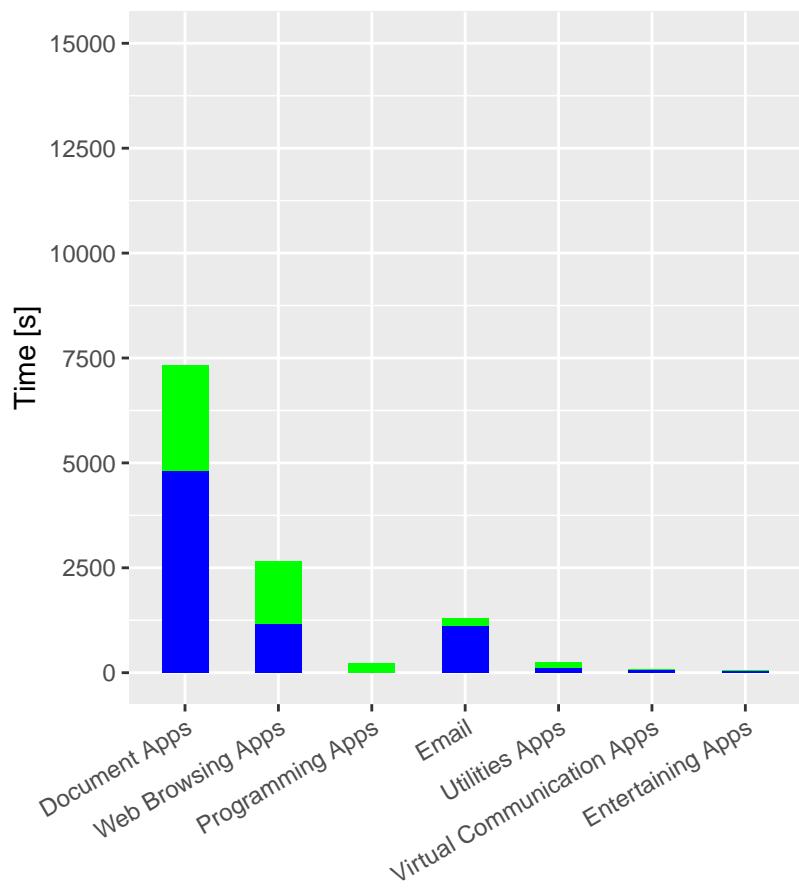
Day4



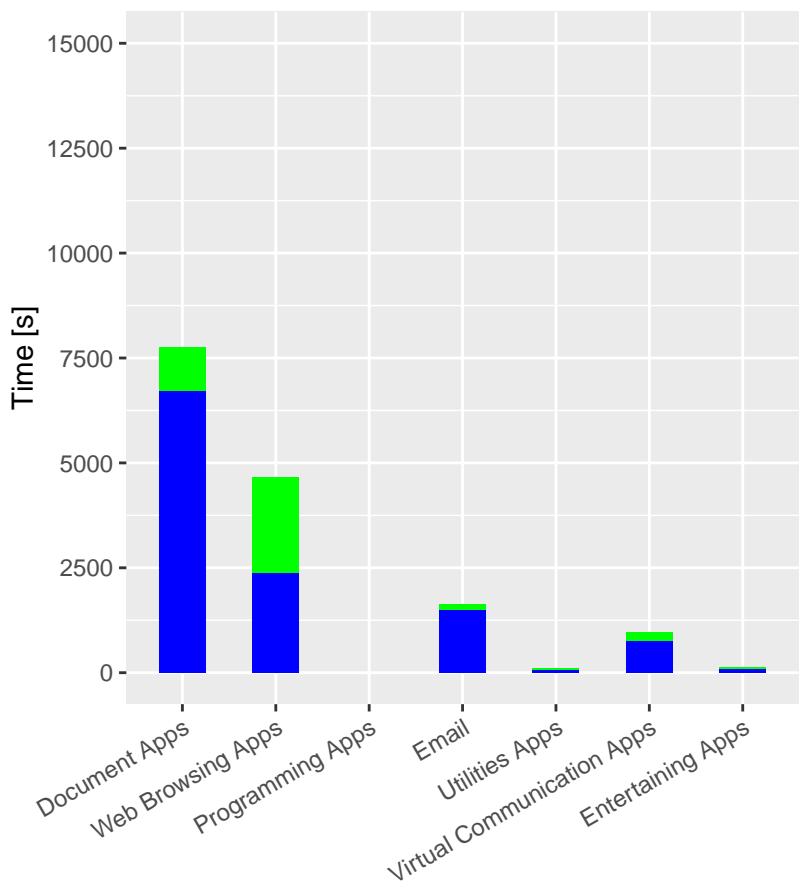
R W

T011

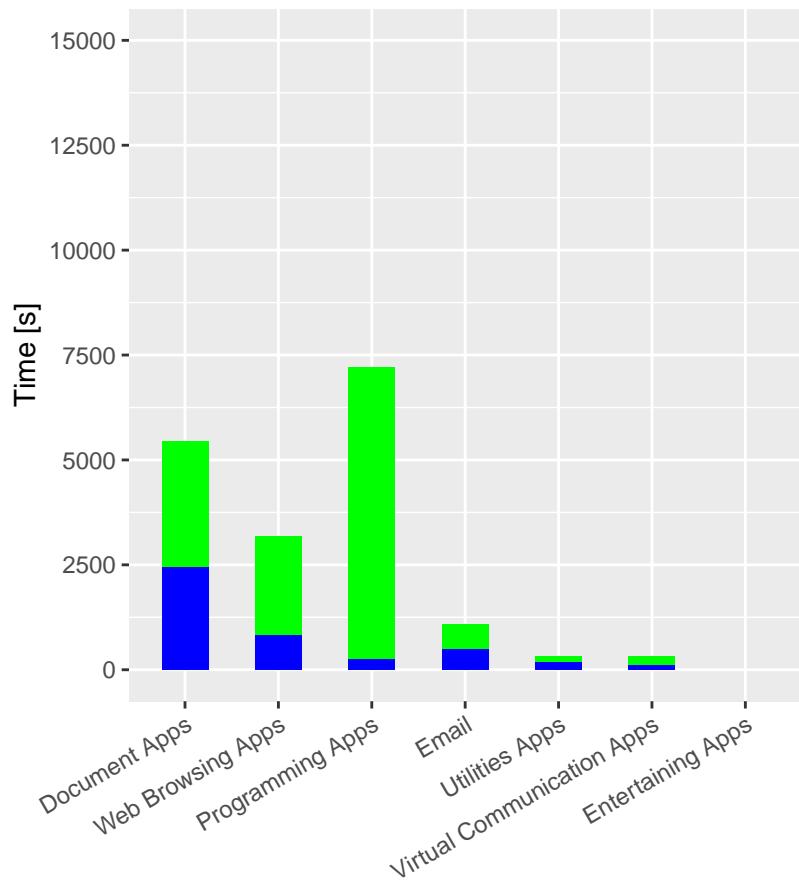
Day1



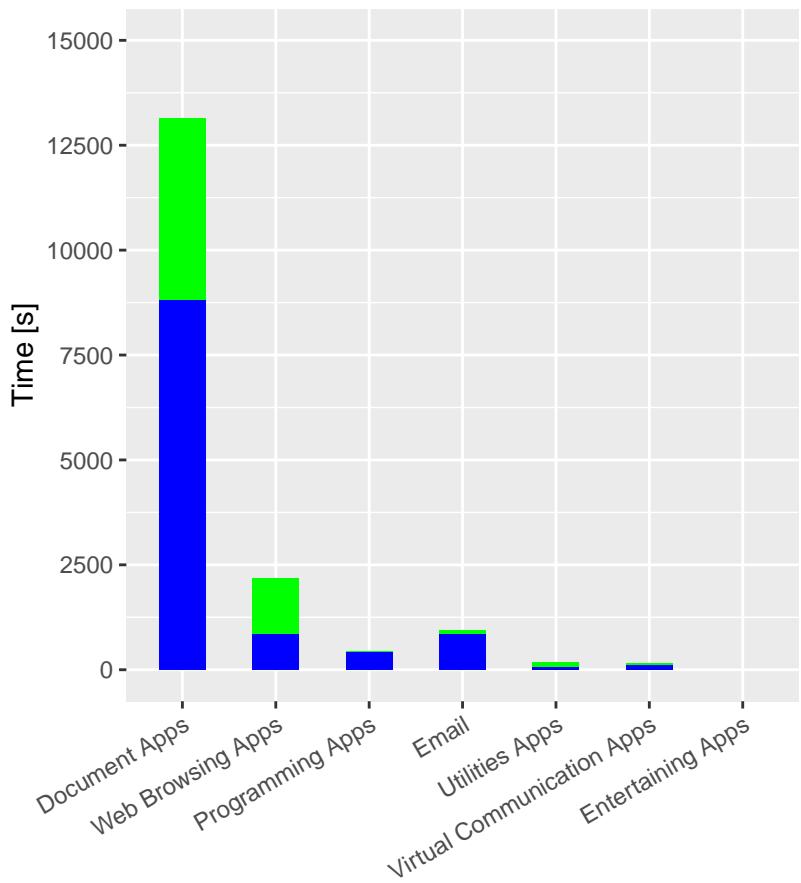
Day2



Day3



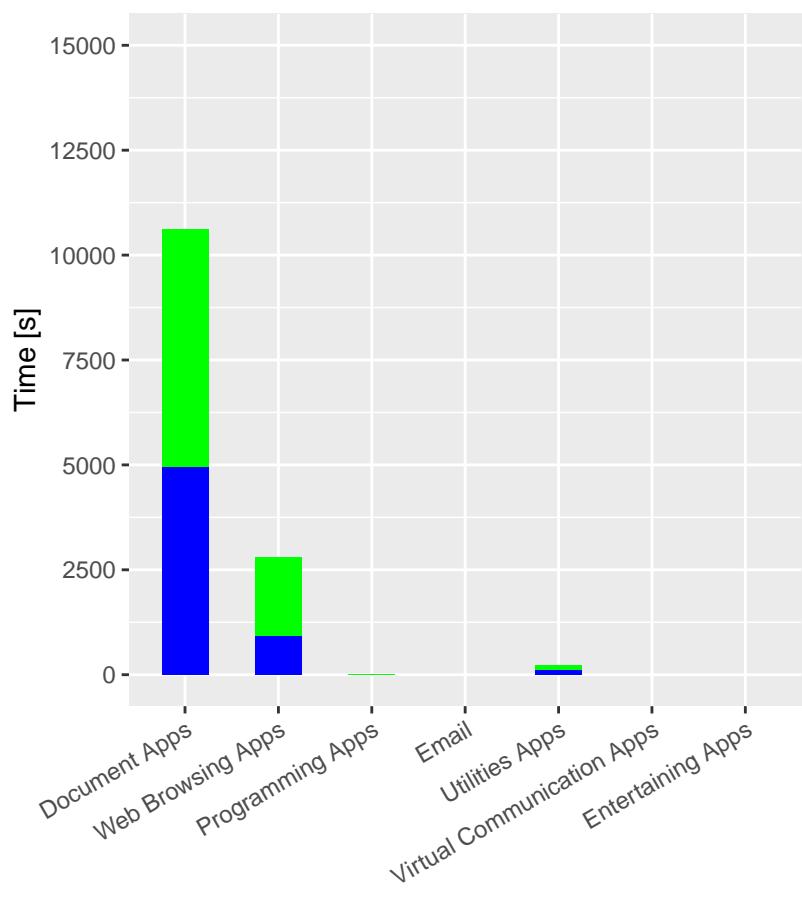
Day4



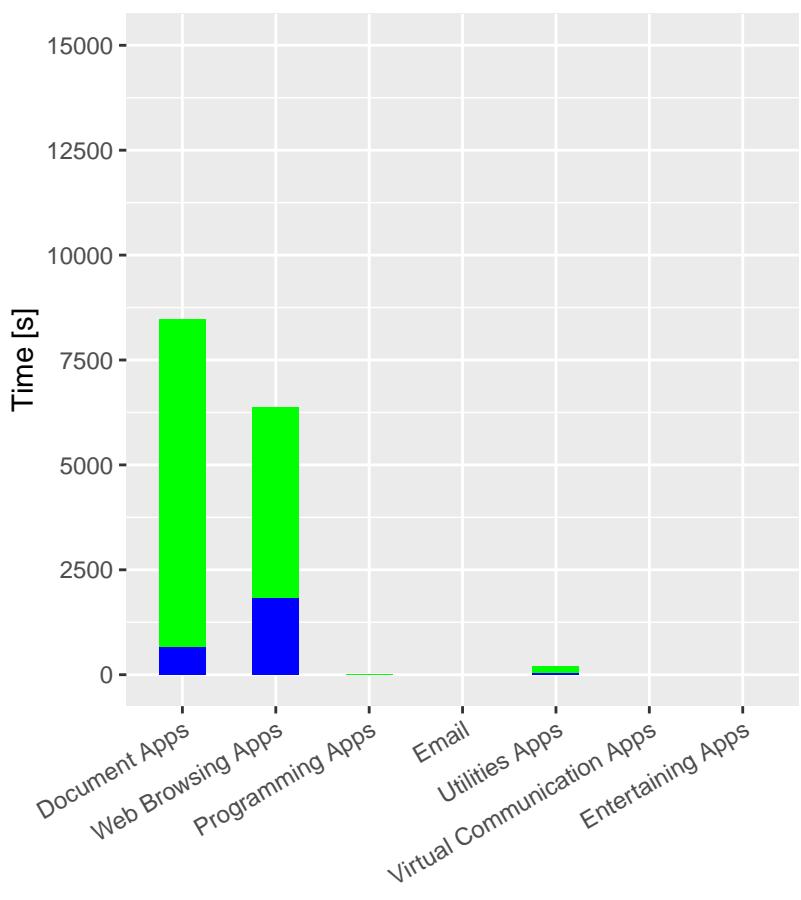
R W

T013

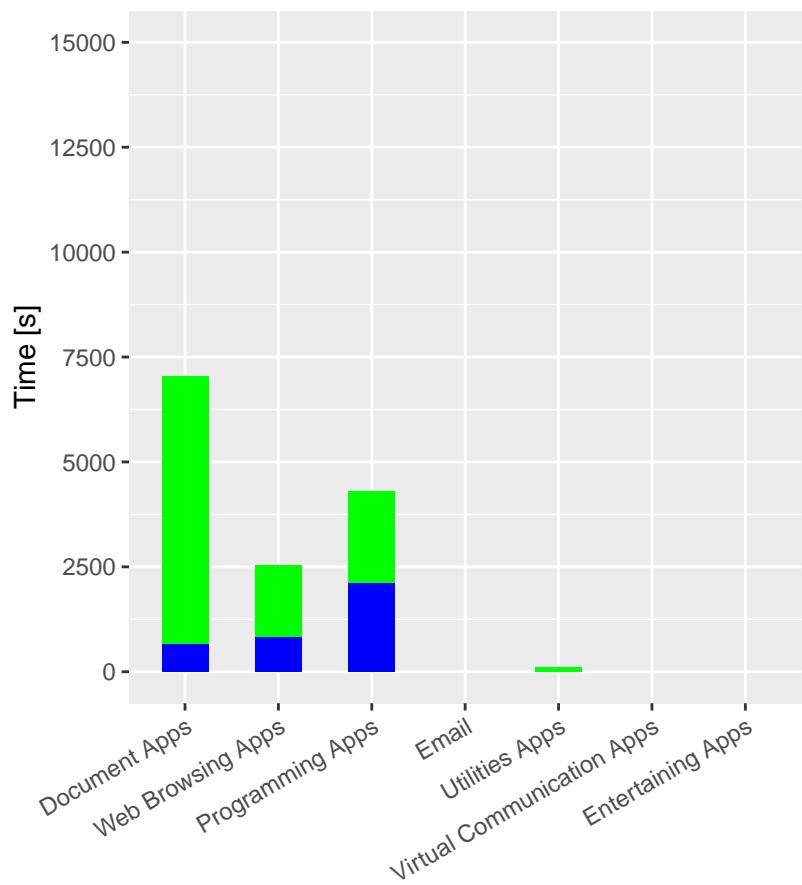
Day1



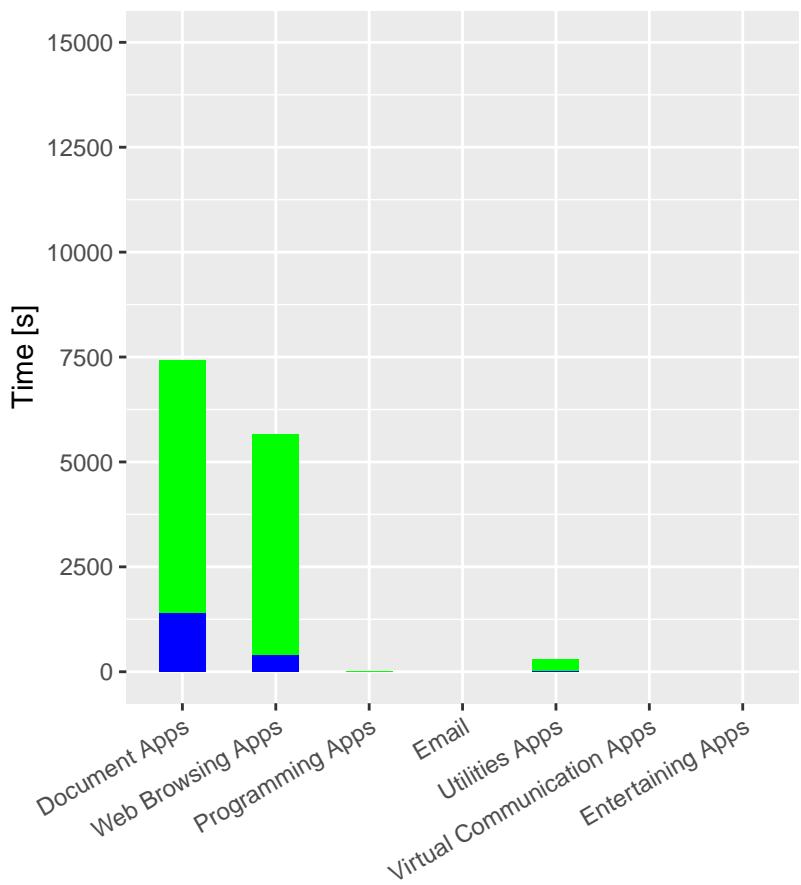
Day2



Day3



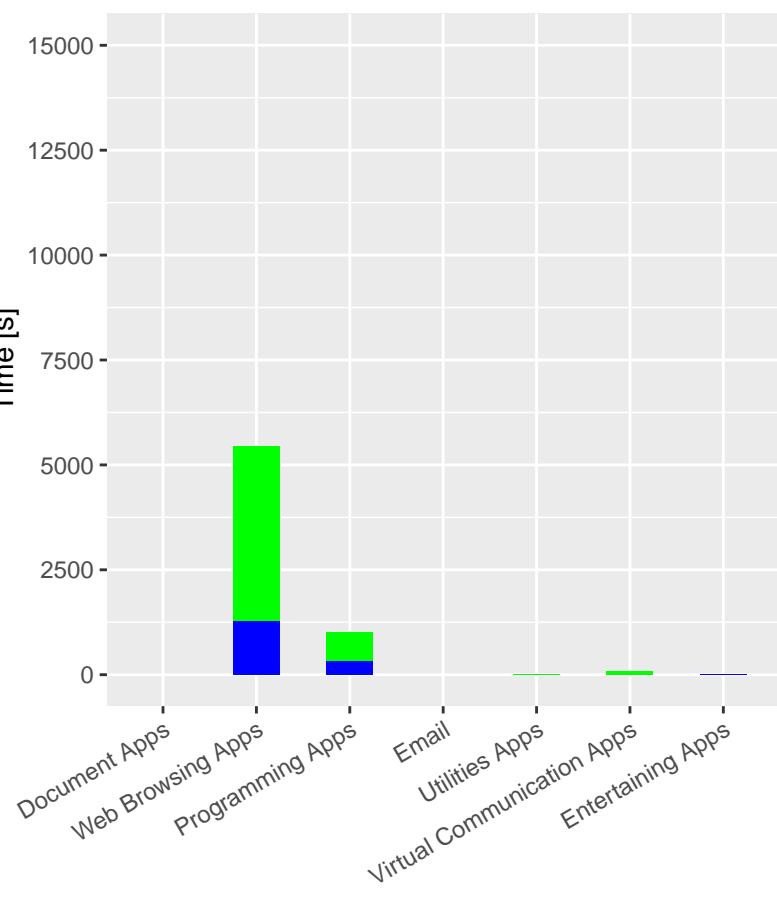
Day4



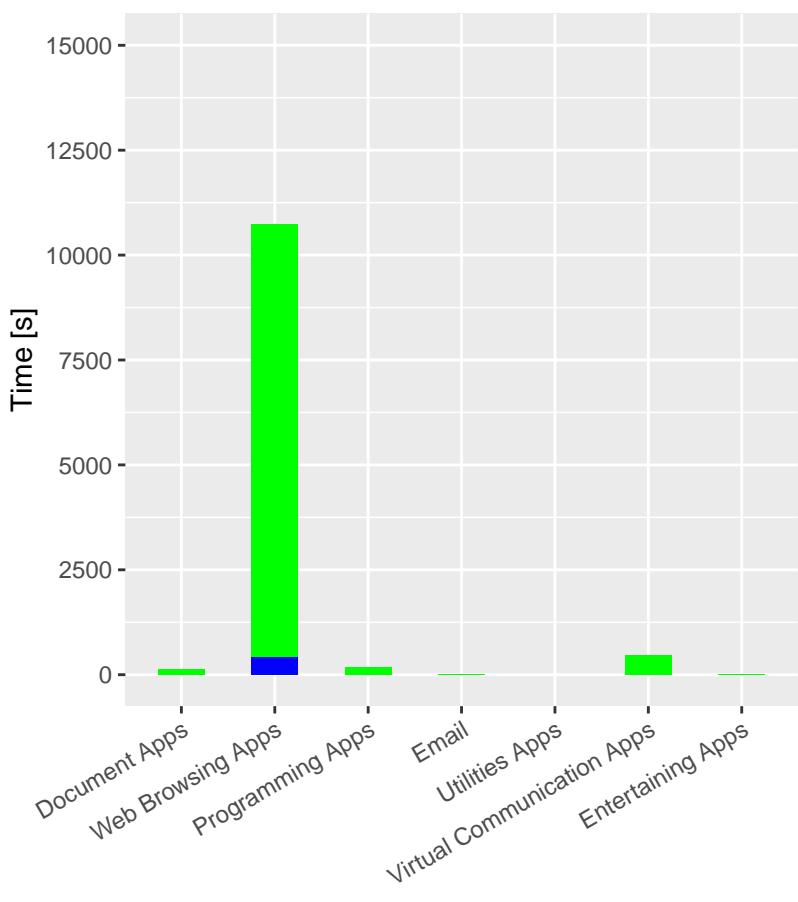
R W

T015

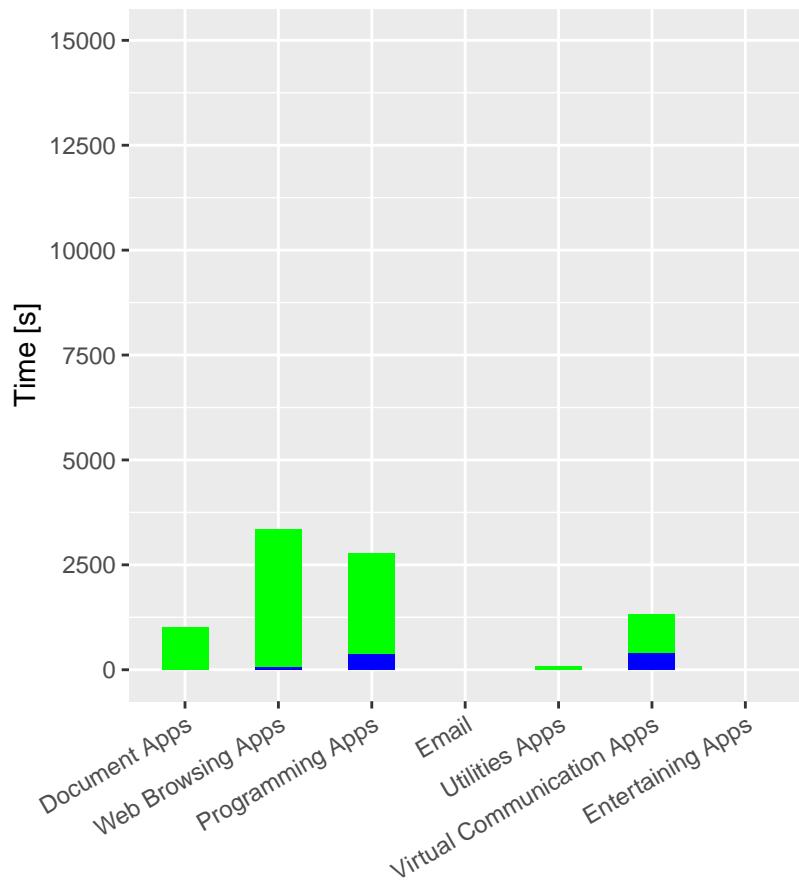
Day1



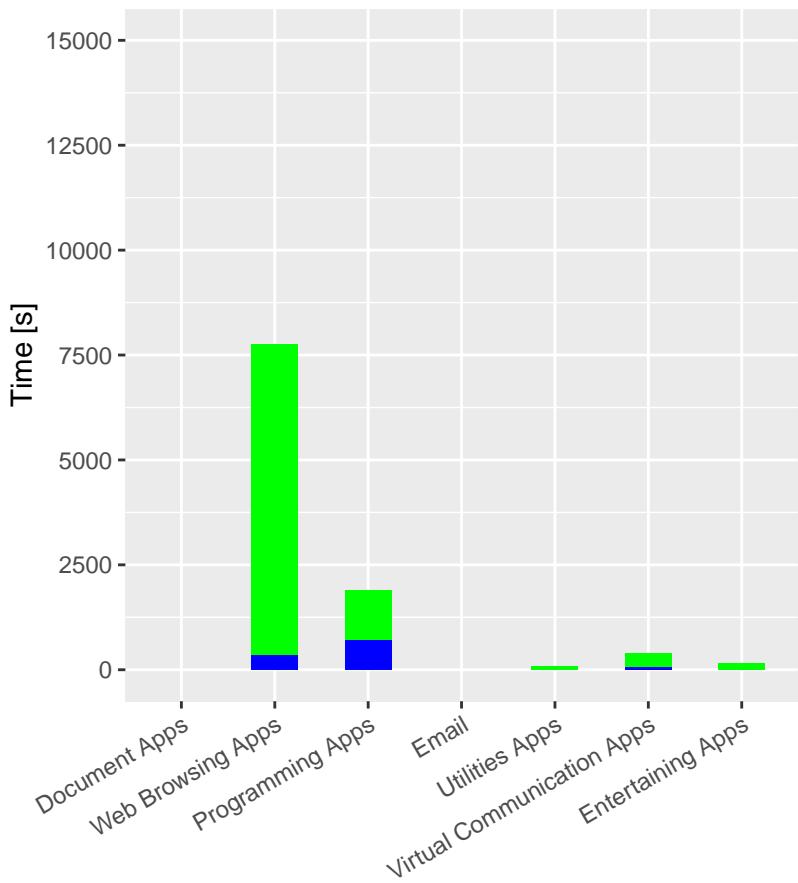
Day2



Day3



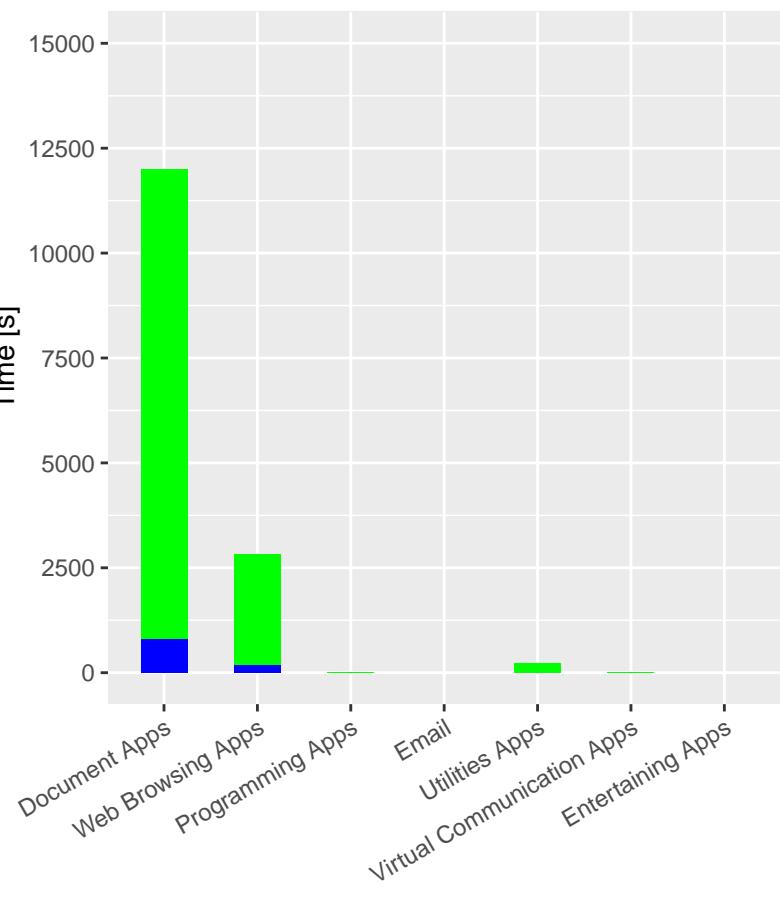
Day4



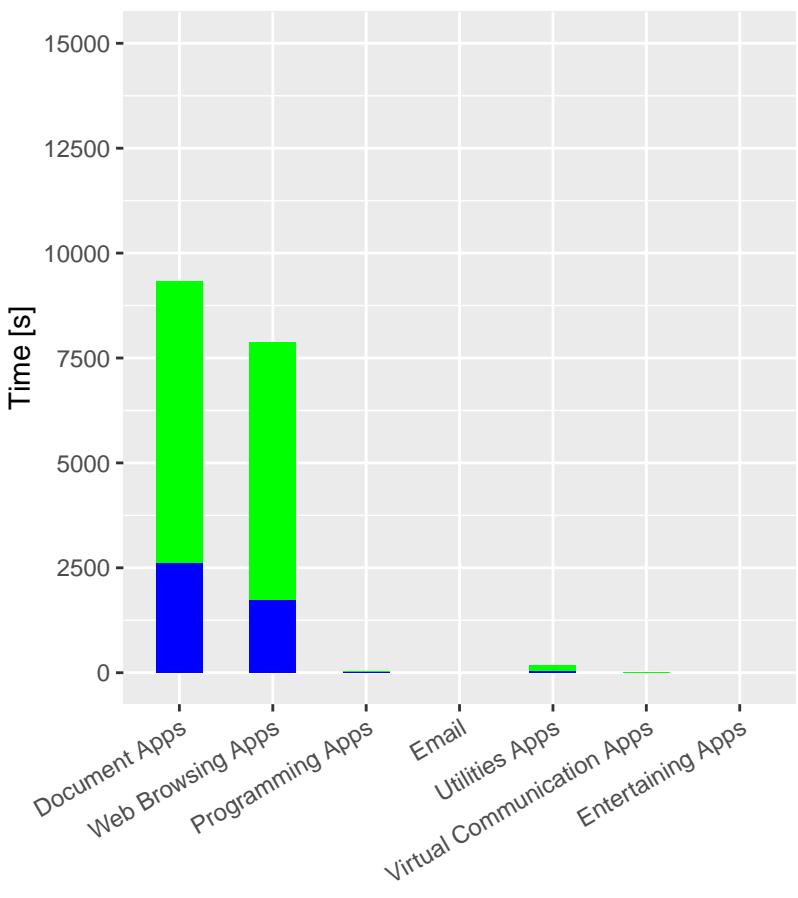
R W

T017

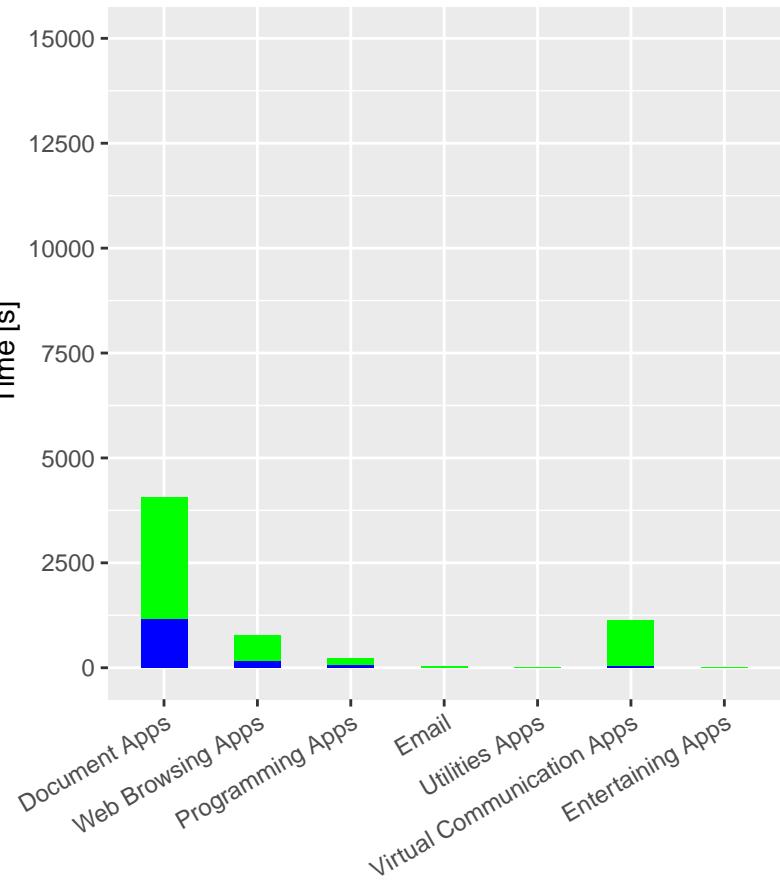
Day1



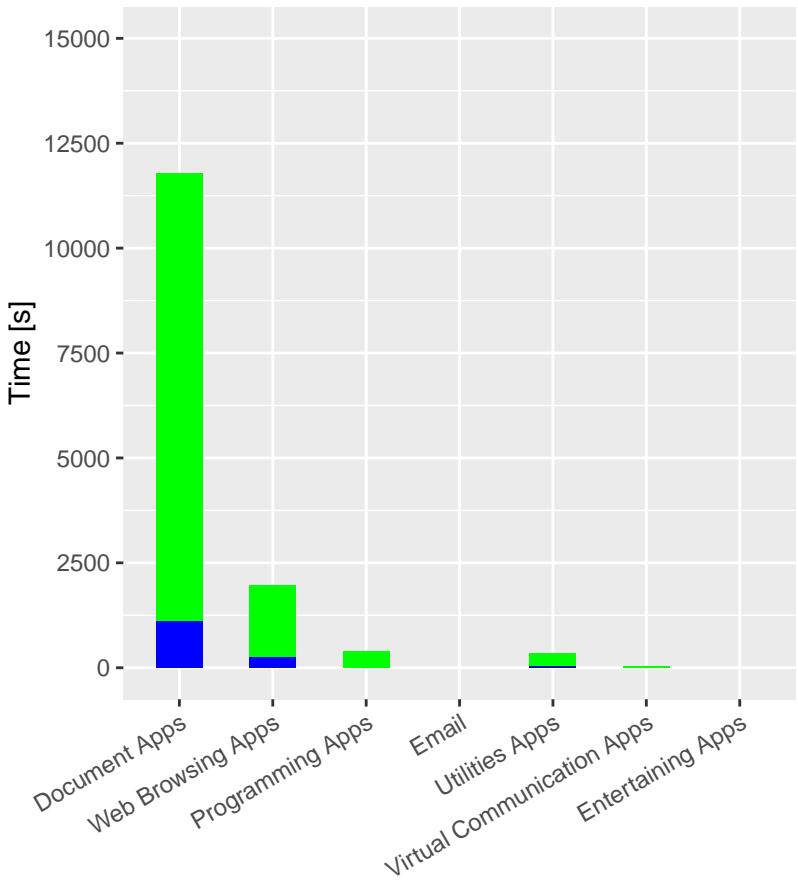
Day2



Day3



Day4



R W

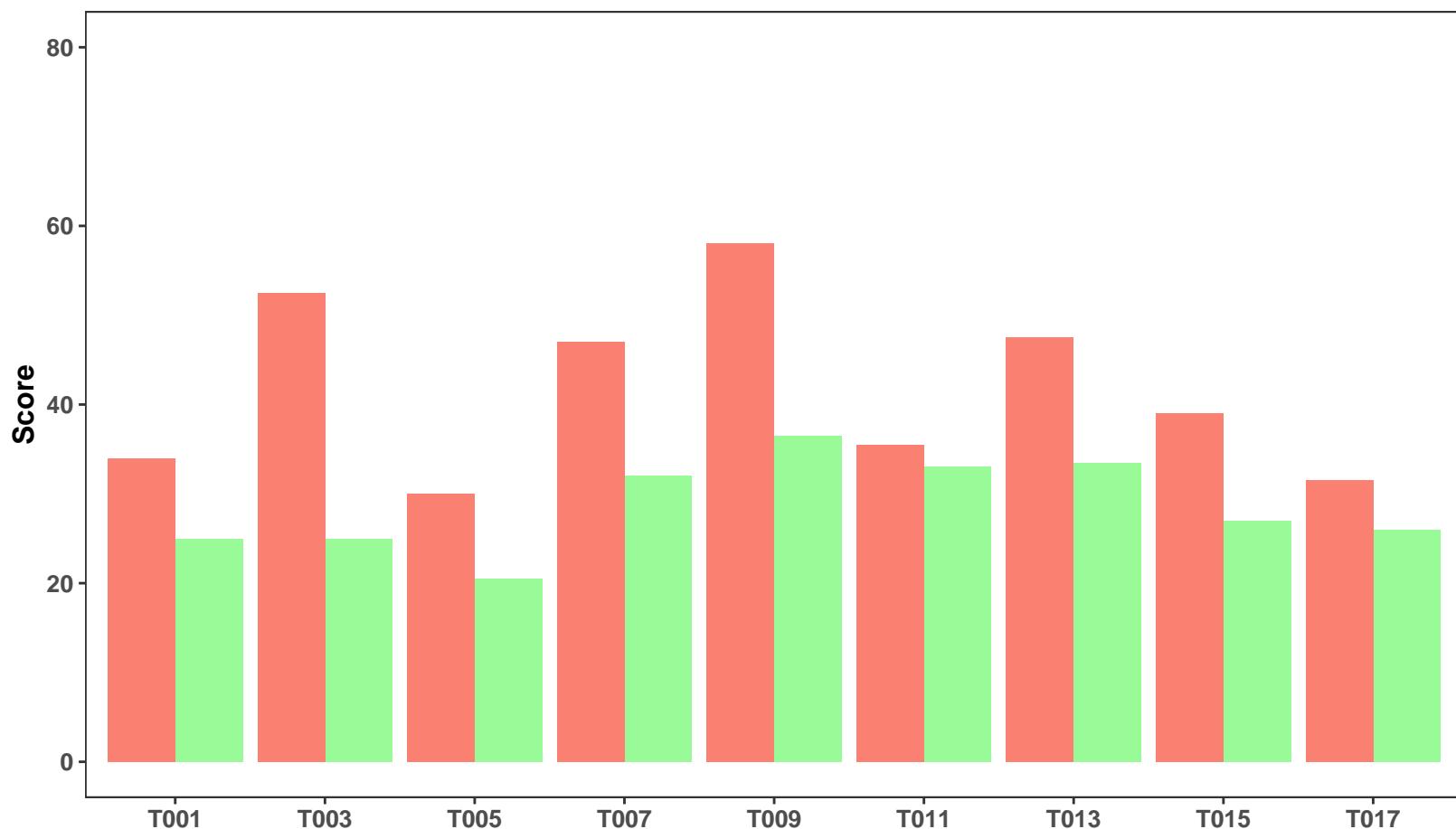
3 Chapter 3

3.1 Psychometric Data

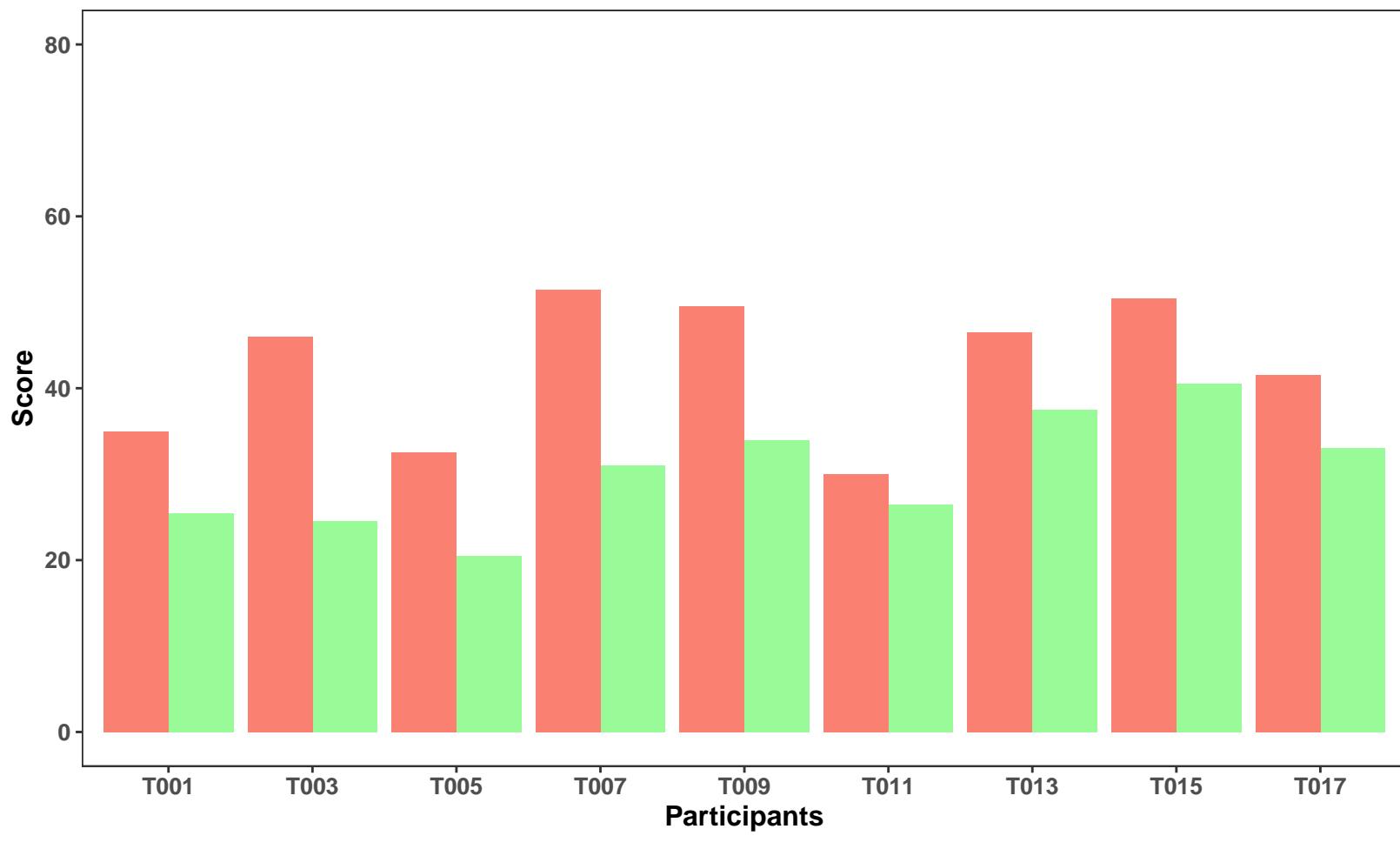
3.1.1 State

3.1.1.0.1 State Anxiety

State Anxiety: Start of the Day



State Anxiety: End of the Day

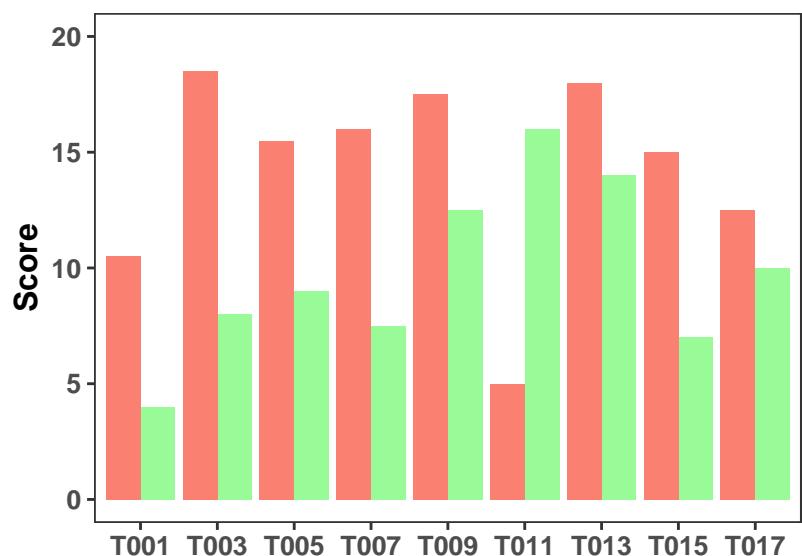


Before Deadline After Deadline

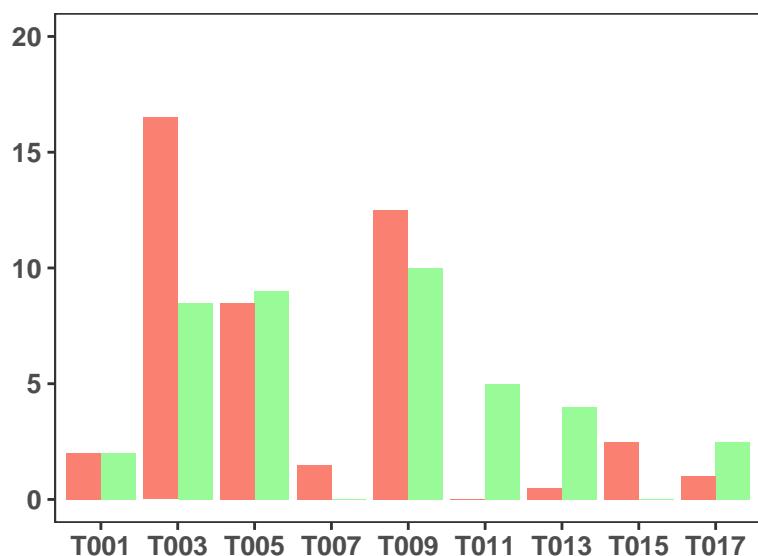
3.1.1.0.2 NASA TLX

NASA TLX

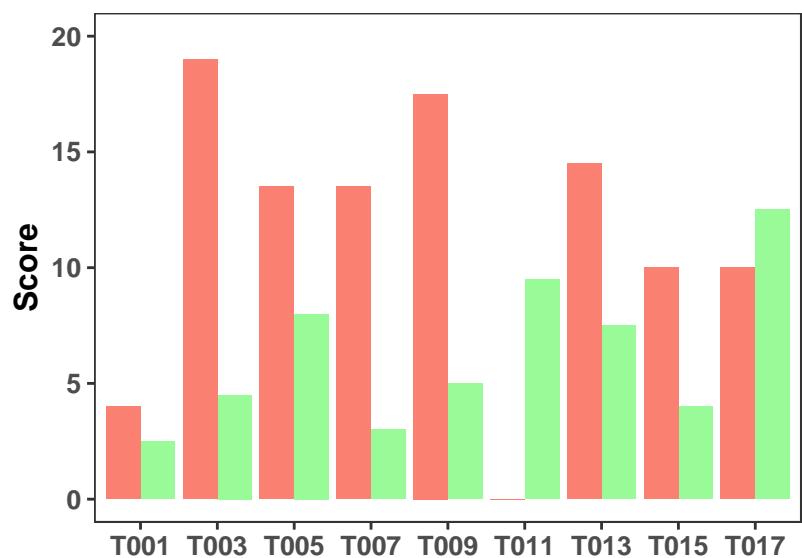
Mental Demand



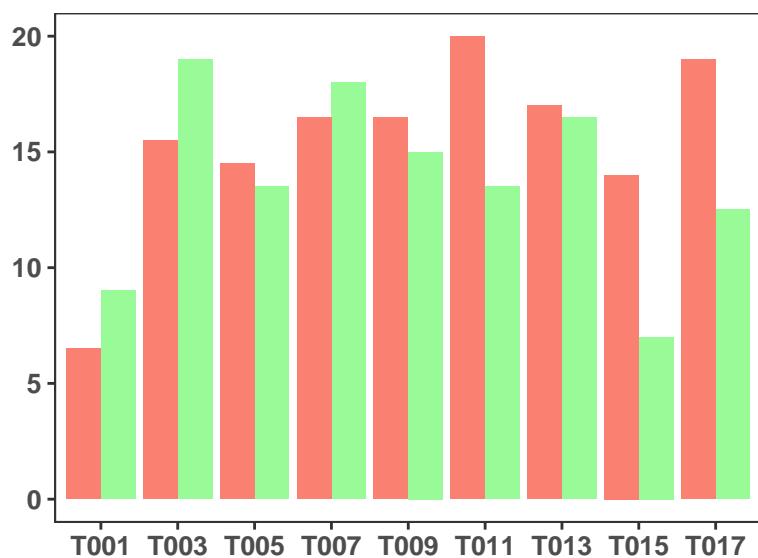
Physical Demand



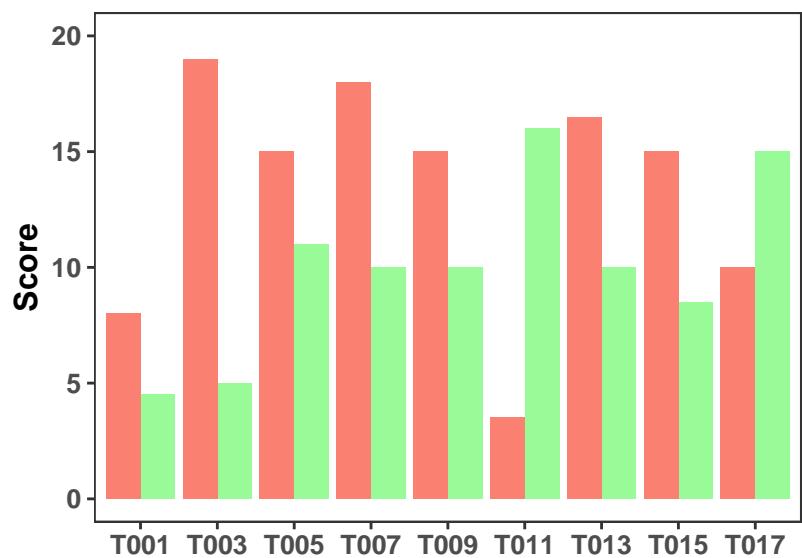
Temporal Demand



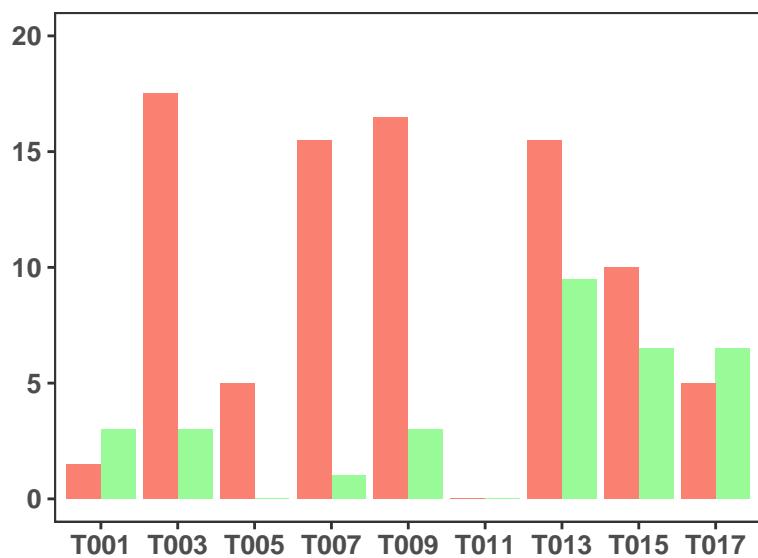
Performance



Effort



Frustration



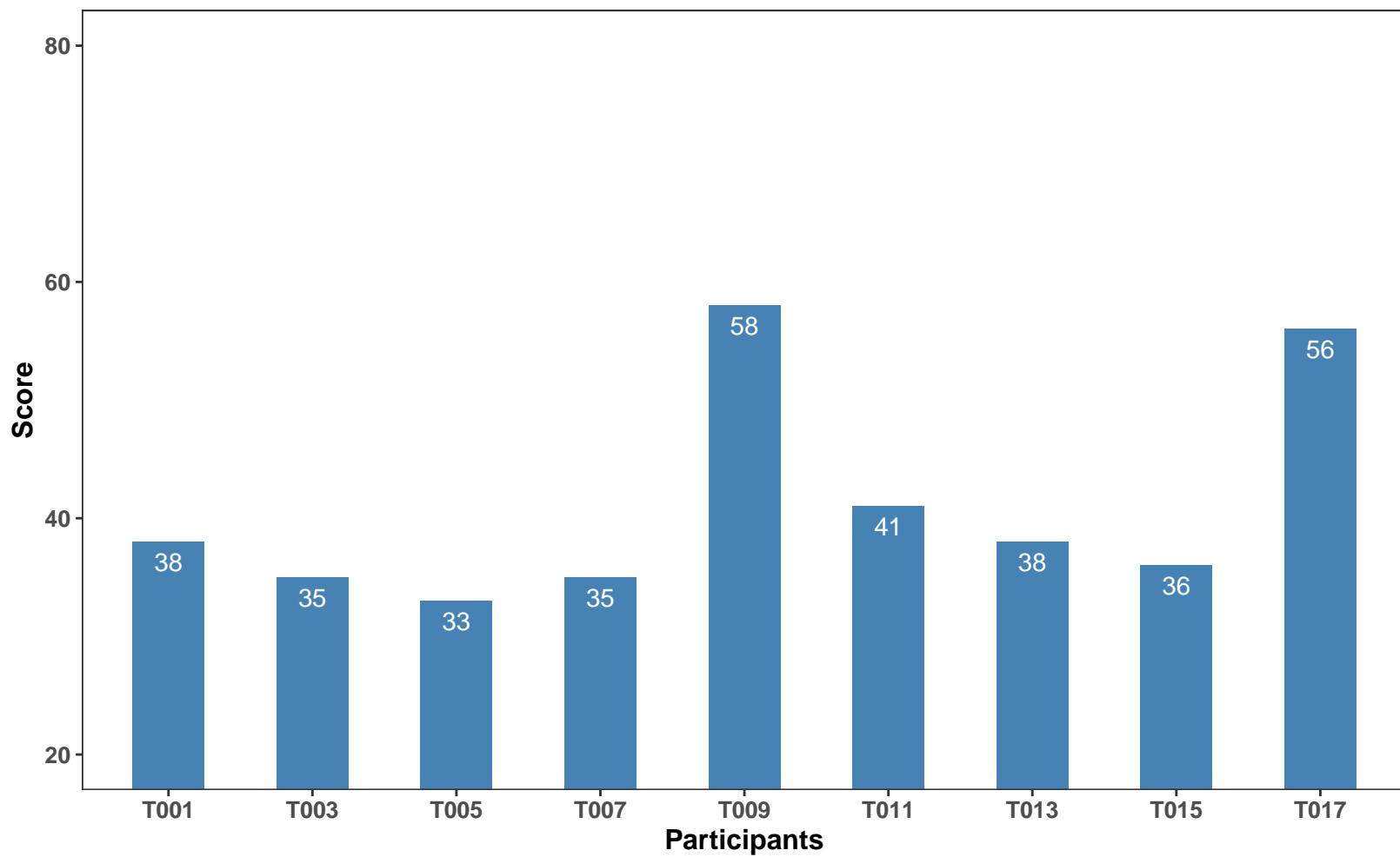
■ Before Deadline ■ After Deadline

3.1.2 Trait

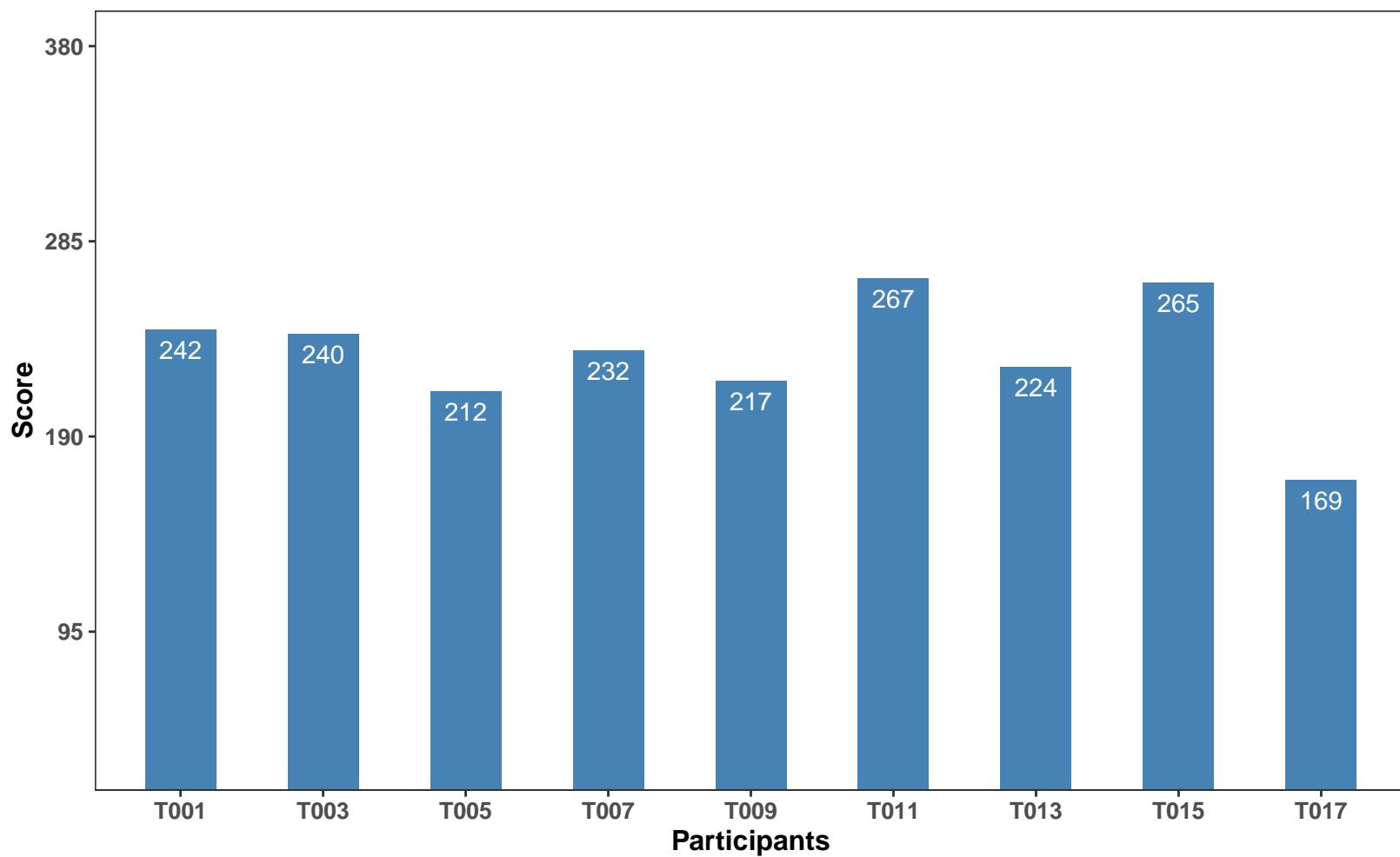
3.1.2.0.1 Trait Anxiety

3.1.2.0.2 Personality A/B

Trait Anxiety



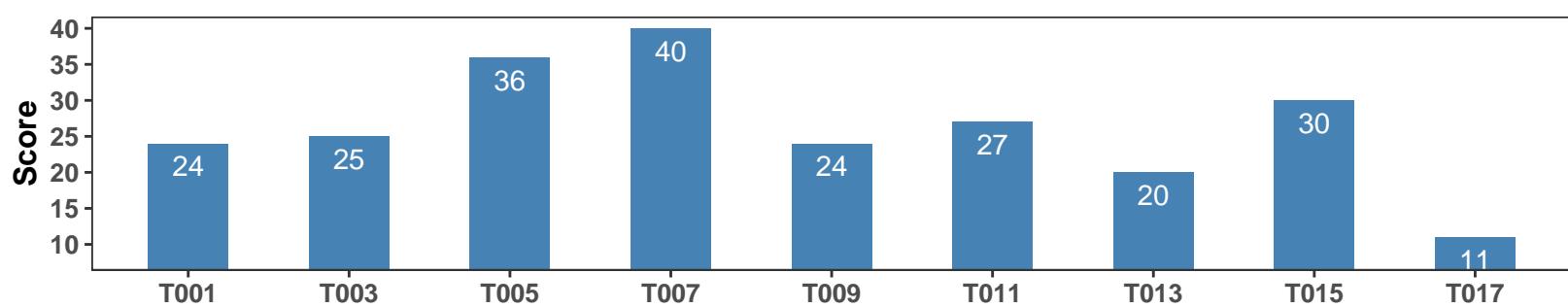
Personality Type A/B



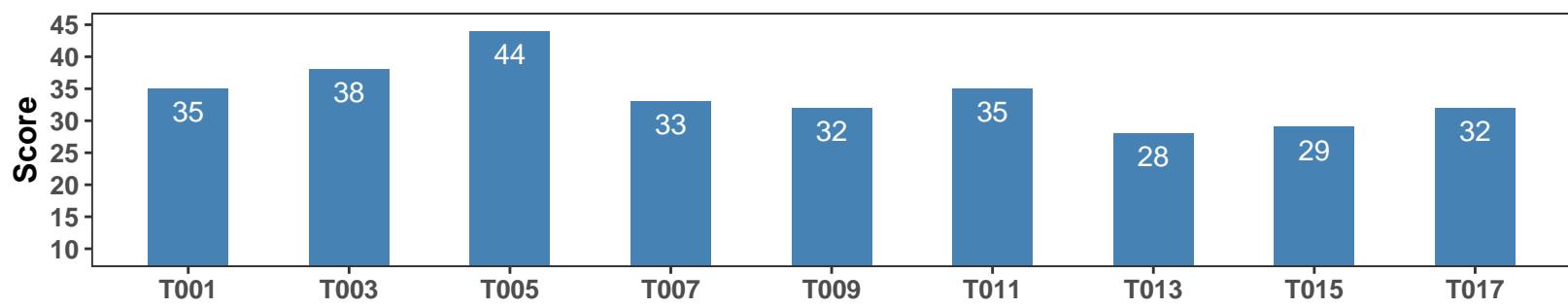
3.1.2.0.3 Big Five Inventory

Big Five Inventory

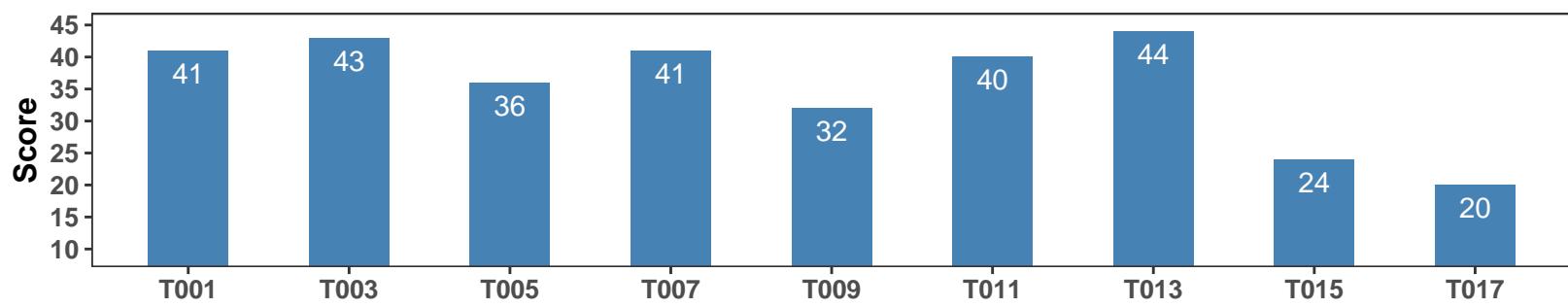
Extraversion



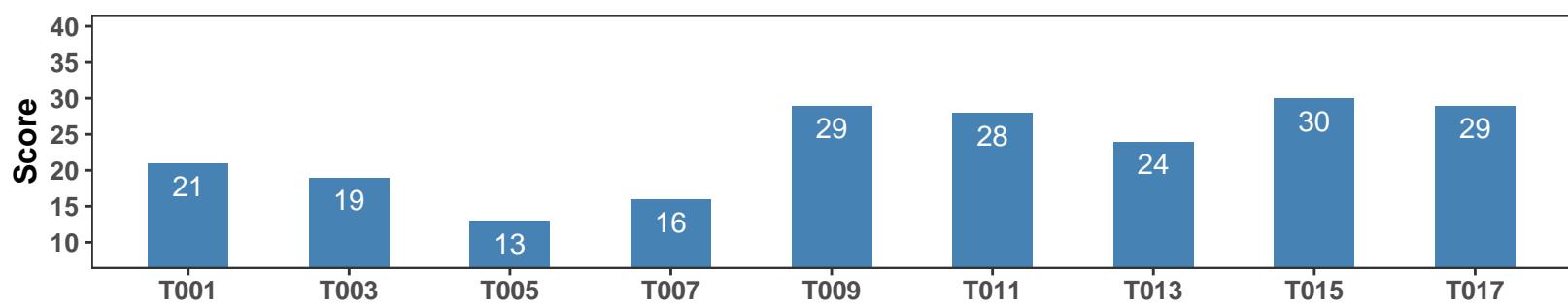
Agreeableness



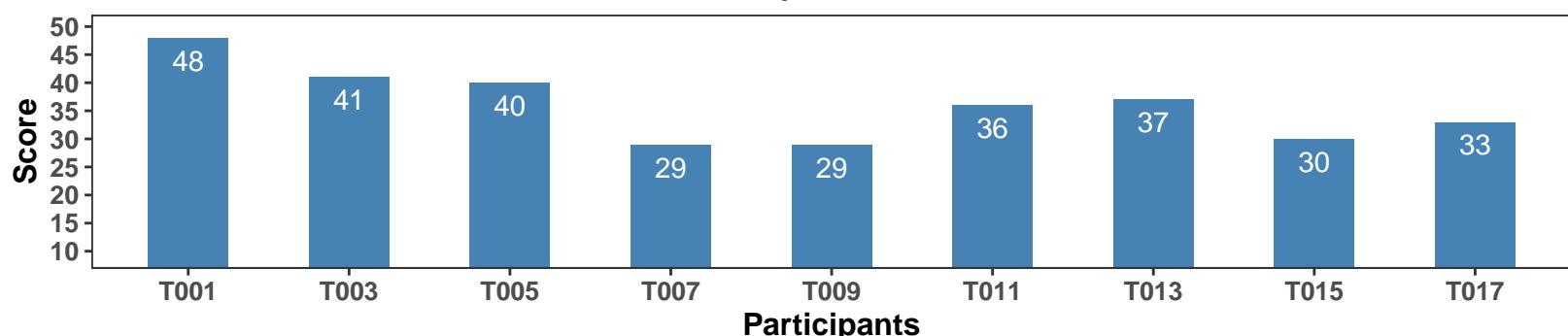
Conscientiousness



Neuroticism



Openness



Participants

4 Chapter 4

4.1 Ad Hoc Data

4.1.1 Science of science data

Participant_ID	Position	h_index	Submitting	Authorship	Submission_Venue	Acceptance_Rate
T001	Professor	30	Paper	Senior Author	ACM Symposium on Principles of Distributed Computing (PODC), 2019	Highly Competitive
T003	Post Doc	3	Paper	First Author	Food research International	Highly Competitive
T005	Post Doc	4	Paper	Senior Author	ACS catalysis	Highly Competitive
T007	PhD Student	2	Paper	First Author	British Journal of Developmental Psychology	Moderately Competitive
T009	PhD Student	1	Paper	First Author	Winter Conference on Applications of Computer Vision	Moderately Competitive
T011	Assistant Professor	9	Paper	Other Author	ASEE	Slightly Competitive
T013	PhD Student	0	Proposal	PI	National Science Foundation	Highly Competitive
T015	PhD Student	0	Paper	First Author	AAAI AICS 2020	Moderately Competitive
T017	Assistant Professor	16	Proposal	PI	Department of Energy	Highly Competitive

4.1.2 Work Patterns

Participant_ID	Actual_Time(Month)	Ideal_Time(Month)	Works_At_Office	TypicalWorkday(Hours)	BeforeDeadline(Hours)	Break_Frequency(Hour)	Break_Activities
T001	12	12	Yes	08:00	10:00	01:00	Coffee, walks.
T003	3	15	Yes	05:00	08:00	02:00	Taking coffee, eating, resting.
T005	11	15	Yes	08:00	14:00	01:30	Hear to music, drink tea, walk.
T007	6	12	Yes	08:00	11:00	02:00	Have snacks, check social media.
T009	3	6	Yes	10:00	10:00	01:00	Go around and stretch; my back is hurt.
T011	3	6	Yes	08:00	08:00	00:45	Walk.
T013	2	12	Yes	06:00	10:00	02:00	Read something other than science, get some tea, or talk to someone.
T015	8	5	Yes	06:00	08:00	01:30	Coffee, Food, Socializing.
T017	1	6	Yes	08:00	10:00	03:00	Eat, answer emails, non-academic work.

5 Chapter 5

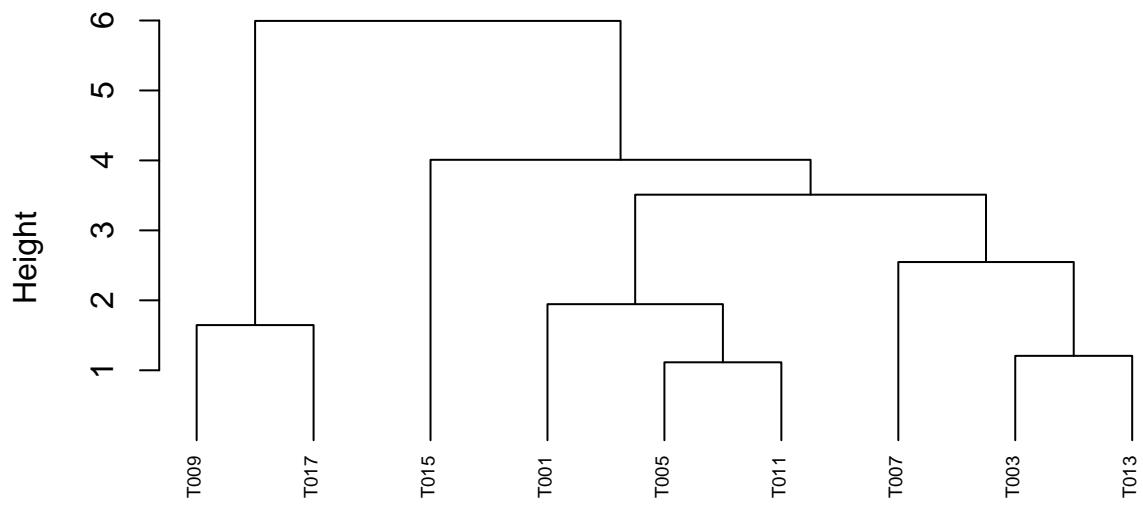
5.1 Machine Learning Analytics

5.1.1 Unsupervised Clustering

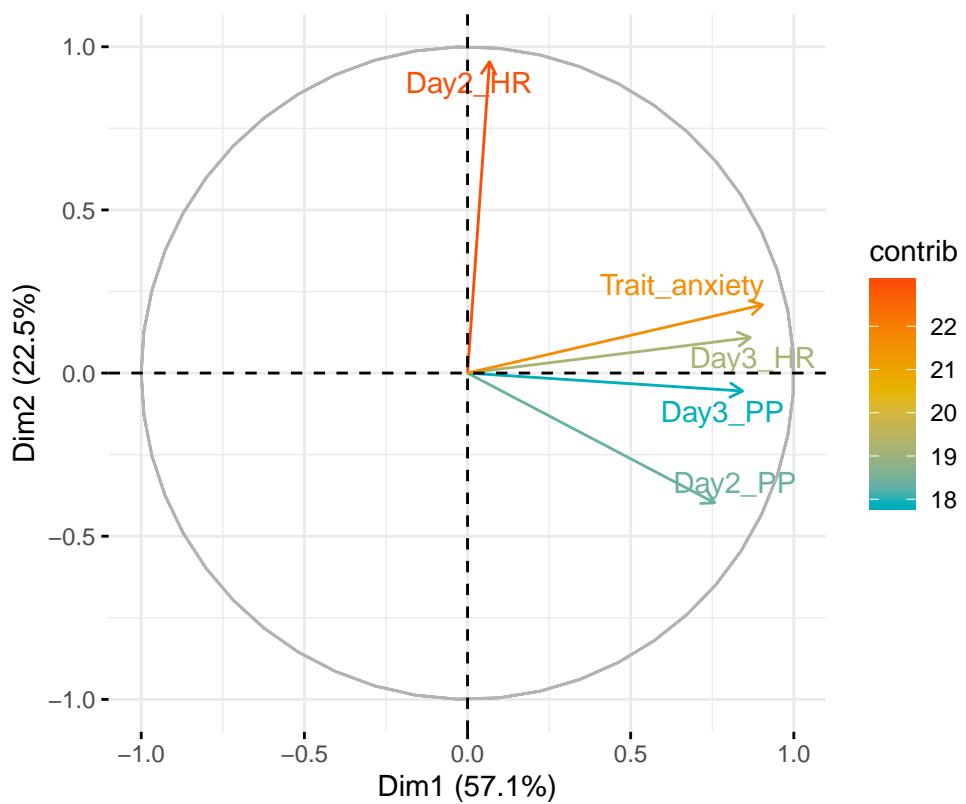
Unsupervised Clustering with Principal Component Analysis (PCA)

Clustering with PP-HR-Trait Anxiety

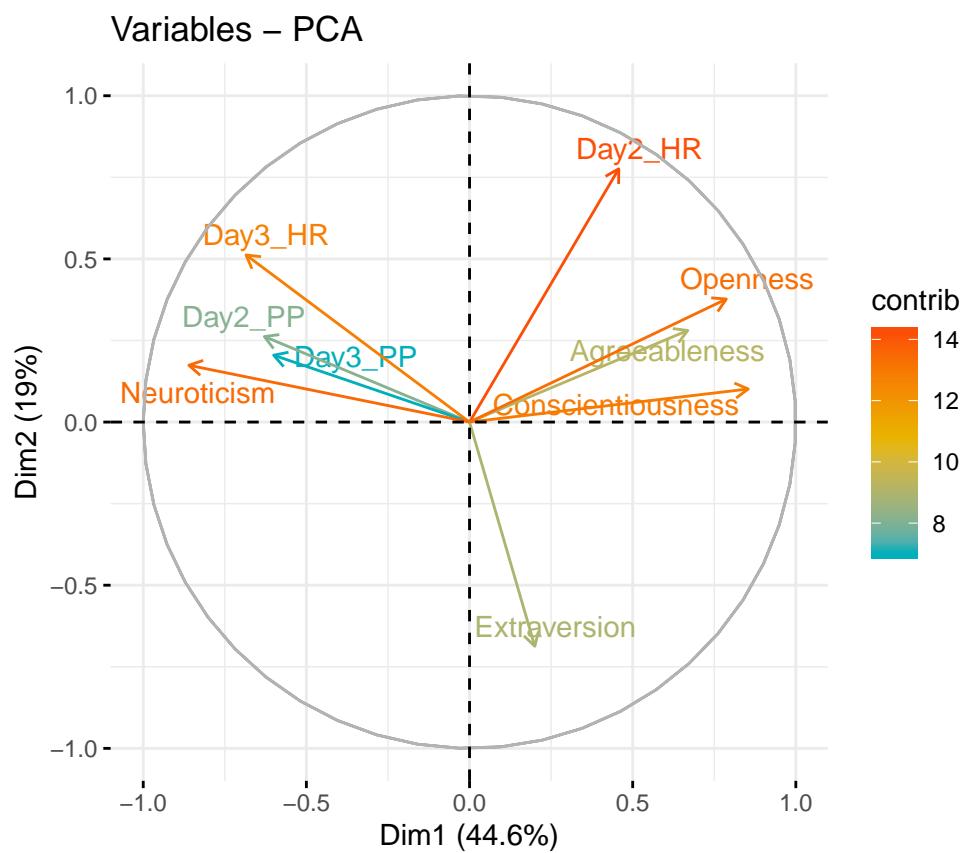
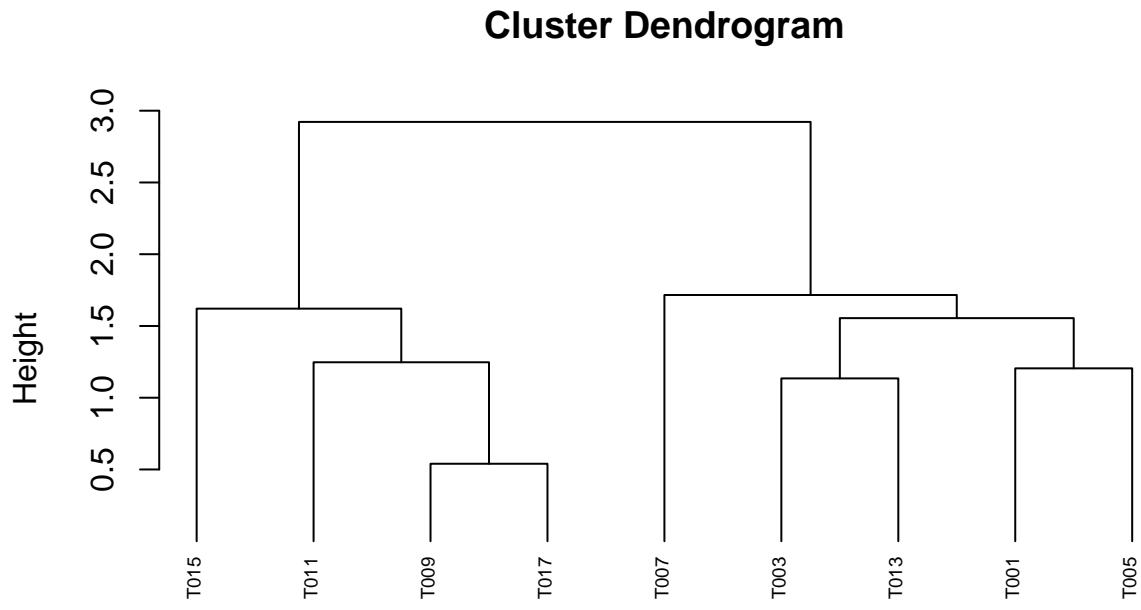
Cluster Dendrogram



Variables – PCA

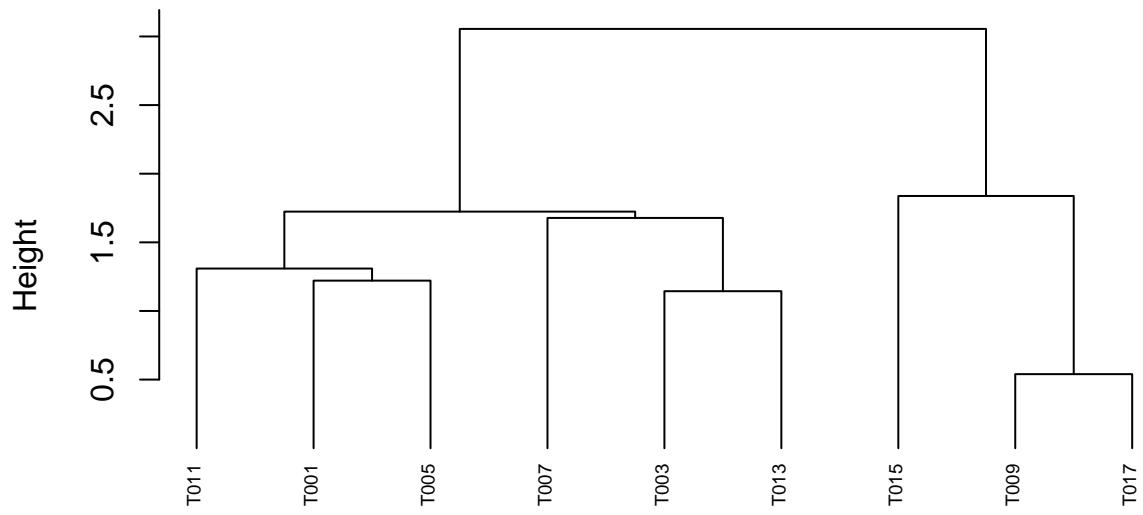


Clustering with PP HR and BFI

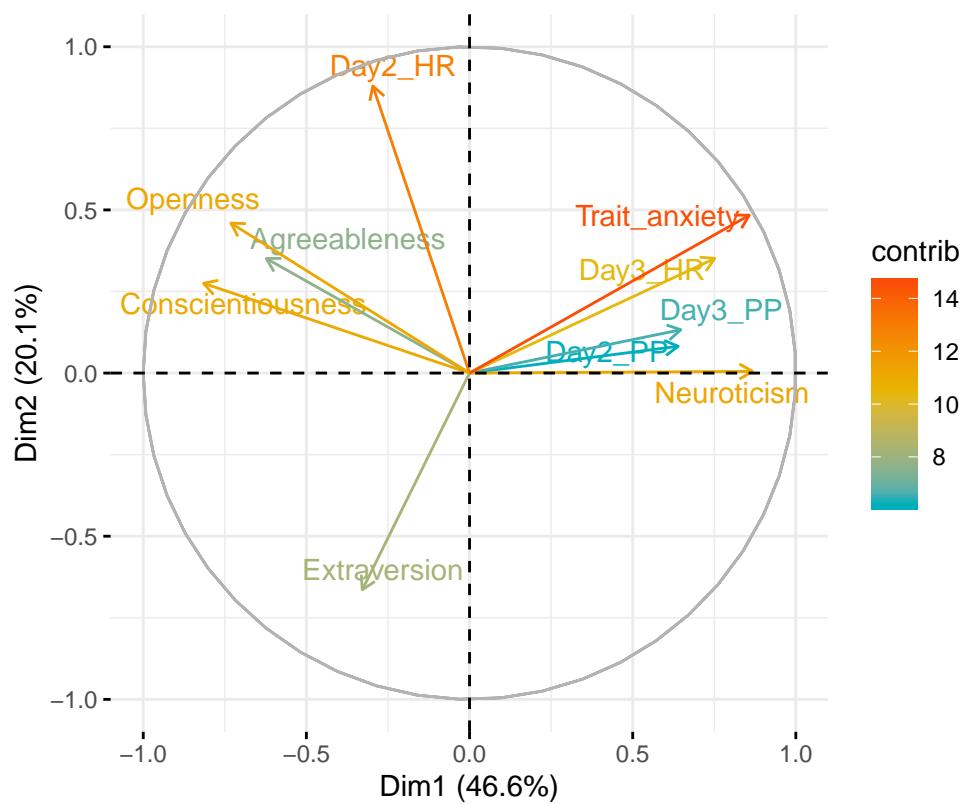


Clustering with PP HR Trait Anxiety and BFI

Cluster Dendrogram

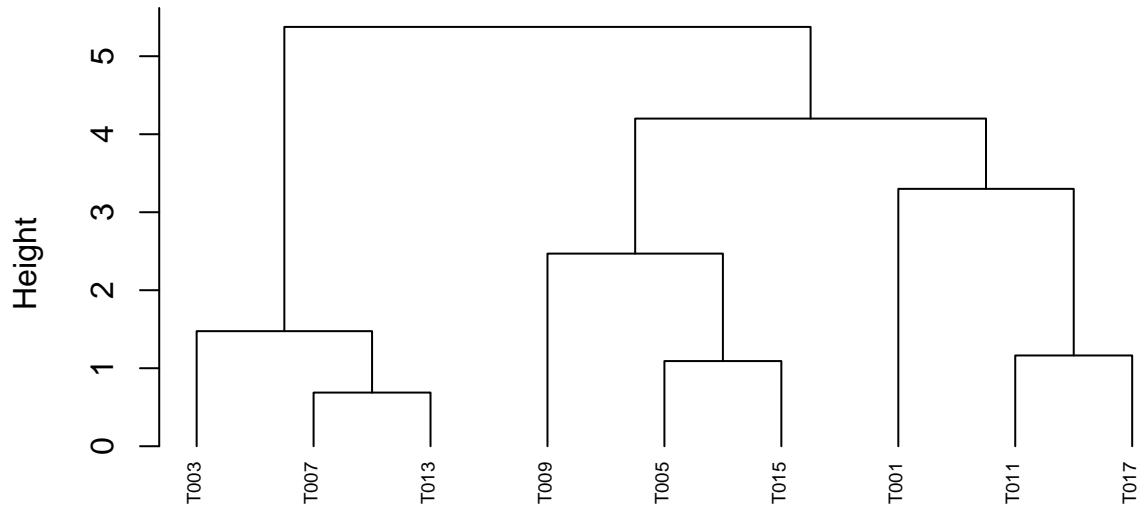


Variables – PCA

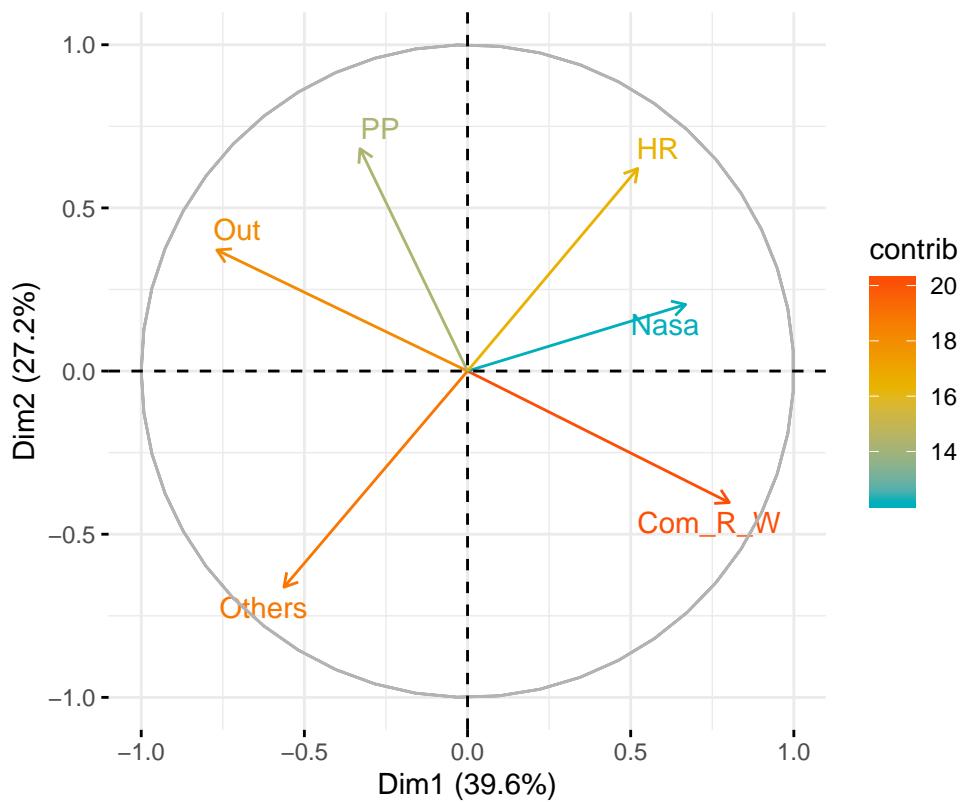


Clustering Day1 on PP HR Activity Data and NASA

Cluster Dendrogram

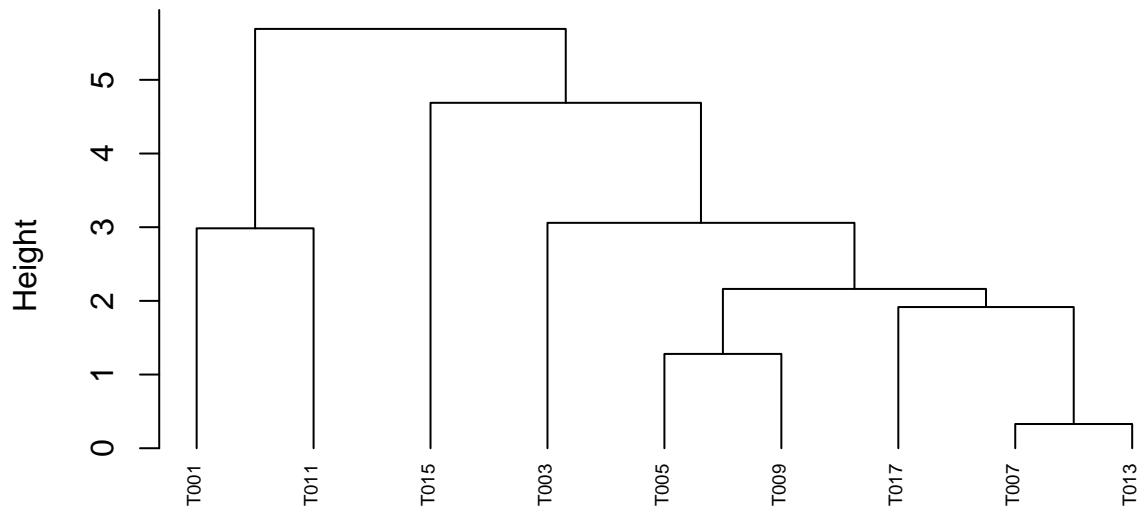


Variables – PCA

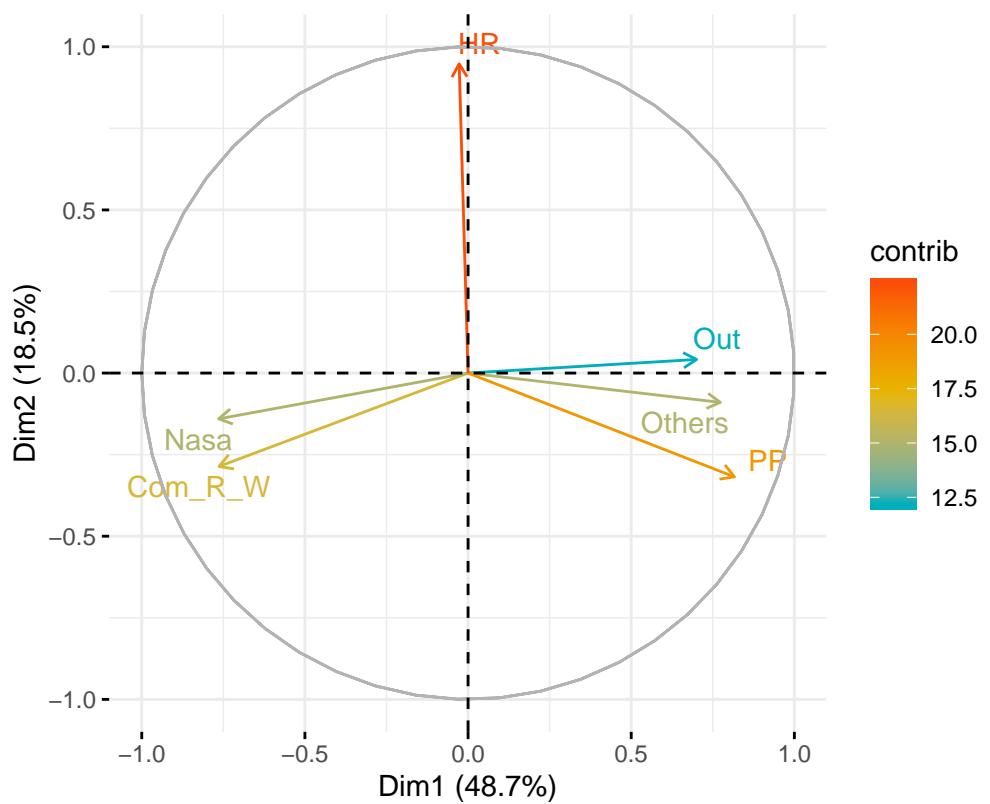


Clustering Day2 on PP HR Activity Data and NASA

Cluster Dendrogram

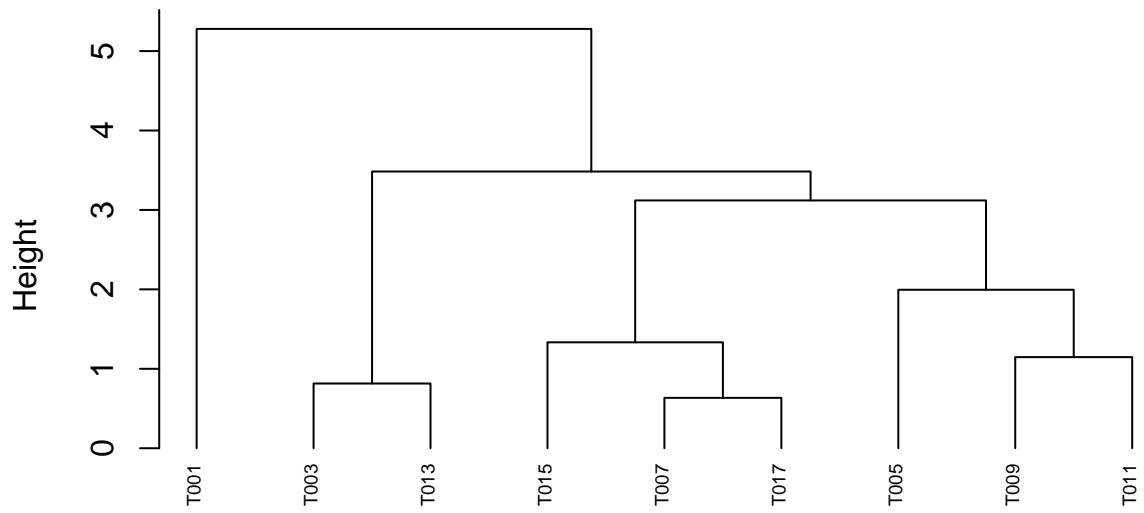


Variables – PCA

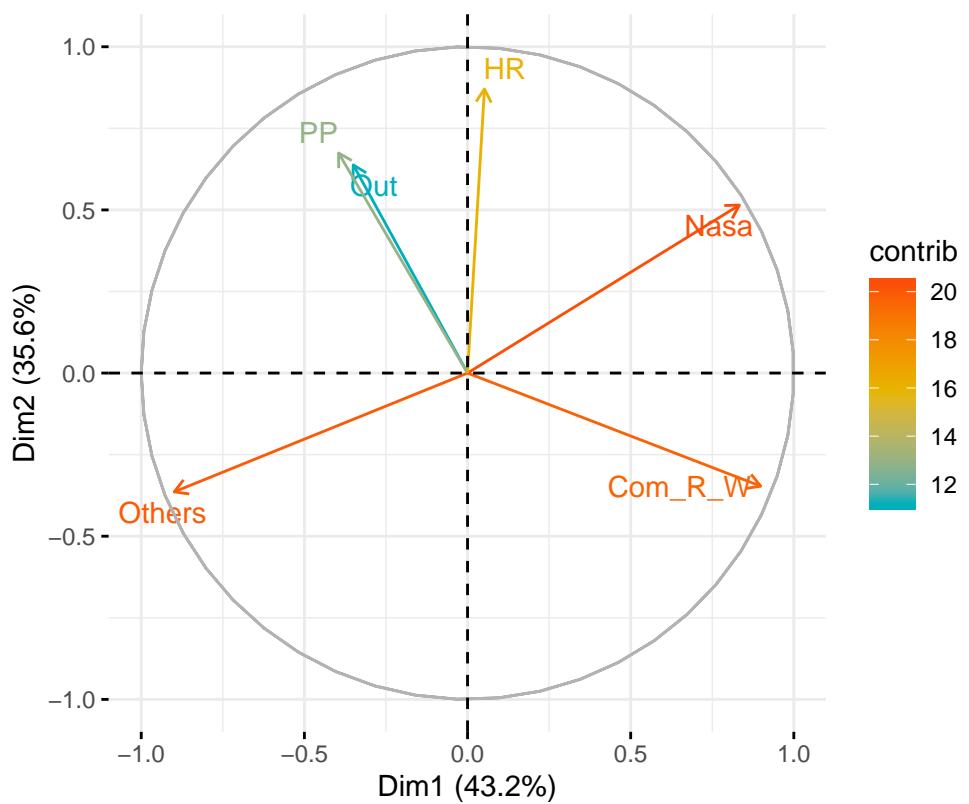


Clustering Day3 on PP HR Activity Data and NASA

Cluster Dendrogram

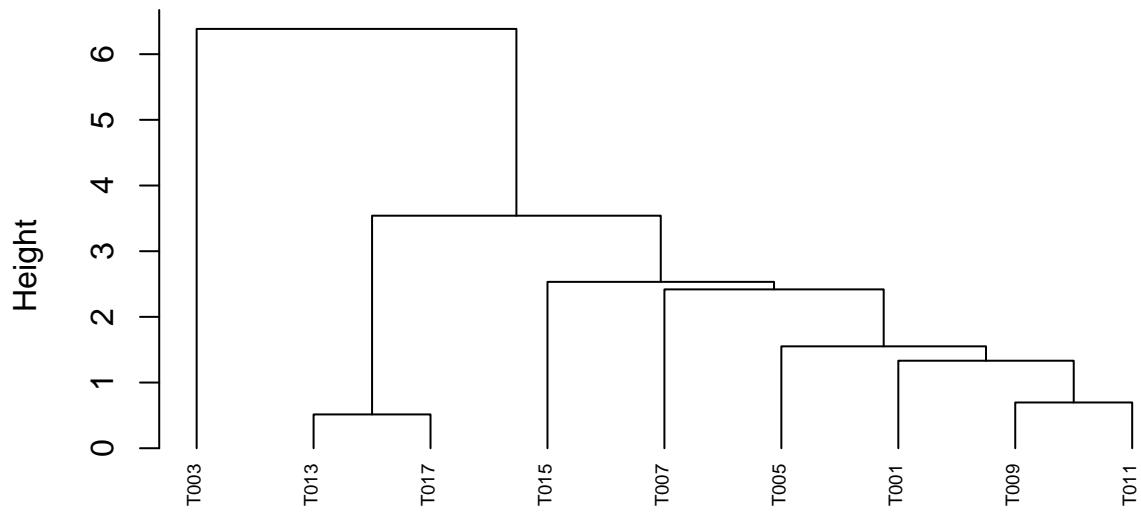


Variables – PCA

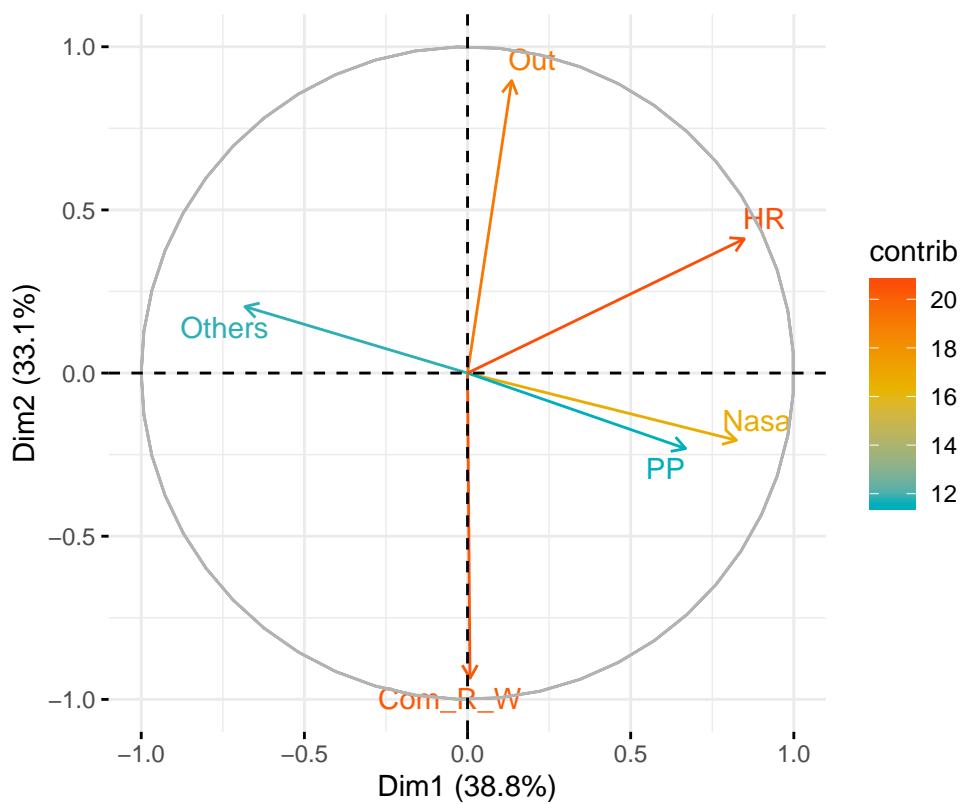


Clustering Day4 on PP HR Activity Data and NASA

Cluster Dendrogram

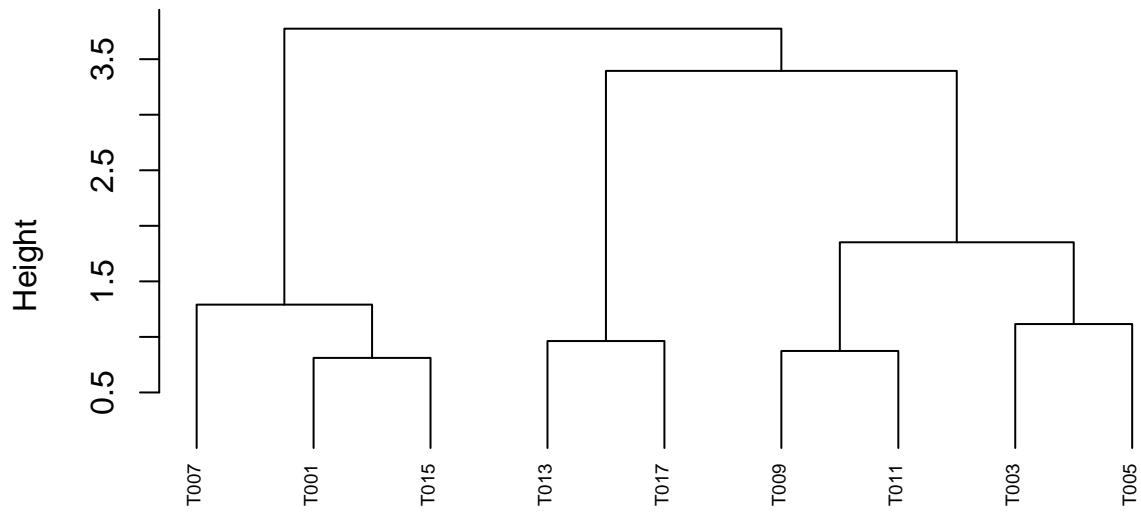


Variables – PCA



Clustering Days(Day3+Day4) on PP HR Activity Data and NASA

Clustering Dendrogram



Variables – PCA

