Screen time data analysis

1. Problem and main questions

Too much screen time may be impacting my quality of life:

- eye health;
- sleep quality;
- family or study time management;
- anxiety.

The aim of the analysis is to research my screen time on the mobile phone in order to manage my screen time and increase the quality of life.

Questions to answer:

- Does less screen time before bed improve sleep quality?

- Does increasing screen time is the cause of eye health getting worse?

- What type of screen time might be reduced in order to have more time for studies and family?

2. Data preparation

Data sources:

- Screen Time App data;
- iWatch&Health App data.

Observation time: 10 days.

Observation objects:

- Screen time duration by App categories;
- Count of sleep intervals during the night;
- Screen time duration before sleep.

Note: data collected only from mobile phone considering that TV and other screens are not used or used very shortly during those days.

Collected data:

Sreen time by categories

		Social	Creativity	Education	Other	Shopping	Productivity&Finance	Entertainment	Information&Reading	Utilities	Travel
2022.12.01	Thursday	3:10	0:04	2:32	0:09	0:04	0:14	0:05	0:07	0:01	
2022.12.02	Friday	2:36	0:13	1:22	0:23	0:04	0:07	0:53	0:03	0:01	
2022.12.03	Saturday	2:43	0:03		0:05	0:33	0:09	0:03	0:01	0:01	
2022.12.04	Sunday	1:49	0:01		0:12	1:23	0:27	0:14	0:22	0:01	0:11
2022.12.05	Monday	2:30	0:01		0:13	0:02	0:16		0:02	0:01	
2022.12.06	Tuesday	1:39	0:01	1:32	0:11	0:14	0:02	0:31	0:02		
2022.12.07	Wednesday	1:44		2:05	0:08	0:01	0:06	0:02	0:08		
2022.12.08	Thursday	2:31		2:06	0:02	0:01	0:08	0:05	0:02		
2022.12.09	Friday	3:18	0:05		0:03			0:03		0:03	
2022.12.10	Saturday	1:29	0:02		0:14		0:04	0:03	0:01		

Count of sleep intervals during the night

		Count of intervals
2022.12.01	Thursday	3
2022.12.02	Friday	1
2022.12.03	Saturday	2
2022.12.04	Sunday	3
2022.12.05	Monday	1
2022.12.06	Tuesday	3
2022.12.07	Wednesday	2
2022.12.08	Thursday	2
2022.12.09	Friday	1
2022.12.10	Saturday	1

Screen time duration before sleep

		Duration
2022.12.01	Thursday	1:00
2022.12.02	Friday	0:35
2022.12.03	Saturday	0:10
2022.12.04	Sunday	0:27
2022.12.05	Monday	0:17
2022.12.06	Tuesday	0:28
2022.12.07	Wednesday	0:05
2022.12.08	Thursday	0:30
2022.12.09	Friday	0:14
2022.12.10	Saturday	0:12

3. Processing the data

- Added average, total and % of total values;

- Marked extreme values, which may have impact to total results;

- Calculated correlation coefficient between sleep intervals and screen time before sleep.

Sreen time by categories

		Social	Creativity	Education	Other	Shopping	Productivity&Finance	Entertainment	Information&Reading	Utilities	Travel	TOTAL
2022.12.01	Thursday	3:10	0:04	2:32	0:09	0:04	0:14	0:05	0:07	0:01		**6:26**
2022.12.02	Friday	2:36	0:13	1:22	0:23	0:04	0:07	0:53	0:03	0:01		**5:42**
2022.12.03	Saturday	2:43	0:03		0:05	0:33	0:09	0:03	0:01	0:01		**3:38**
2022.12.04	Sunday	1:49	0:01		0:12	1:23	0:27	0:14	0:22	0:01	0:11	**4:40**
2022.12.05	Monday	2:30	0:01		0:13	0:02	0:16		0:02	0:01		**3:05**
2022.12.06	Tuesday	1:39	0:01	1:32	0:11	0:14	0:02	0:31	0:02			**4:12**
2022.12.07	Wednesday	1:44		2:05	0:08	0:01	0:06	0:02	0:08			**4:14**
2022.12.08	Thursday	2:31		2:06	0:02	0:01	0:08	0:05	0:02			**4:55**
2022.12.09	Friday	3:18	0:05		0:03			0:03		0:03		**3:32**
2022.12.10	Saturday	1:29	0:02		0:14		0:04	0:03	0:01			**1:53**
	AVERAGE	**2:20**	**0:03**	**1:55**	**0:10**	**0:17**	**0:10**	**0:13**	**0:05**	**0:01**	**0:11**	**4:13**
	TOTAL	**23:29**	**0:30**	**9:37**	**1:40**	**2:22**	**1:33**	**1:59**	**0:48**	**0:08**	**0:11**	**18:17**
	% of TOTAL	**56%**	**1%**	**23%**	**4%**	**6%**	**4%**	**5%**	**2%**	**0%**	**0%**	

Count of sleep intervals during the night

		Count of intervals
2022.12.01	Thursday	3
2022.12.02	Friday	1
2022.12.03	Saturday	2
2022.12.04	Sunday	3
2022.12.05	Monday	1
2022.12.06	Tuesday	3
2022.12.07	Wednesday	2
2022.12.08	Thursday	2
2022.12.09	Friday	1
2022.12.10	Saturday	1
	Average	**1.9**

Screen time duration before sleep

		Duration
2022.12.01	Thursday	1:00
2022.12.02	Friday	0:35
2022.12.03	Saturday	0:10
2022.12.04	Sunday	0:27
2022.12.05	Monday	0:17
2022.12.06	Tuesday	0:28
2022.12.07	Wednesday	0:05
2022.12.08	Thursday	0:30
2022.12.09	Friday	0:14
2022.12.10	Saturday	0:12
	Average	**0:23**

Correlation coefficient	**0.47976091**

4. Analysis

- *Does increasing screen time is the cause of eye health getting worse? ->* **This question cannot be answer due to lack of data.**
- There is no trends of screen time duration considering the day of the week because **screen time does not differ significally on weekend and weekdays.**
- **Unusual apps usages:**
  - Shopping on 4th of Dec due to one time shopping activities, not expected to happen again soon.
  - Productivity&finance on 4th of Dec due to created reminder for the next week, so may happen regularly.
  - Entertainment on 6th of Dec due to Youtube videos watched by child ☺, not expected to happen again soon.
- Calculated **correlation coefficient** between count of sleep intervals and screen time duration before sleep is equal to **0.48**, so there is no solid linear correlation.
- The biggest part of the screen time is spent on social Apps, so for the answers we need deeper investigation and additional data.

Collecting more data…

- In order to manage screen time of social Apps, it is important to know the usage of particular Apps, so collected the usage by every social App;

- According the data, **only Facebook and Instagram time might be reduced**, because Messenger and Linkedin are used for communication.

Social Apps usage

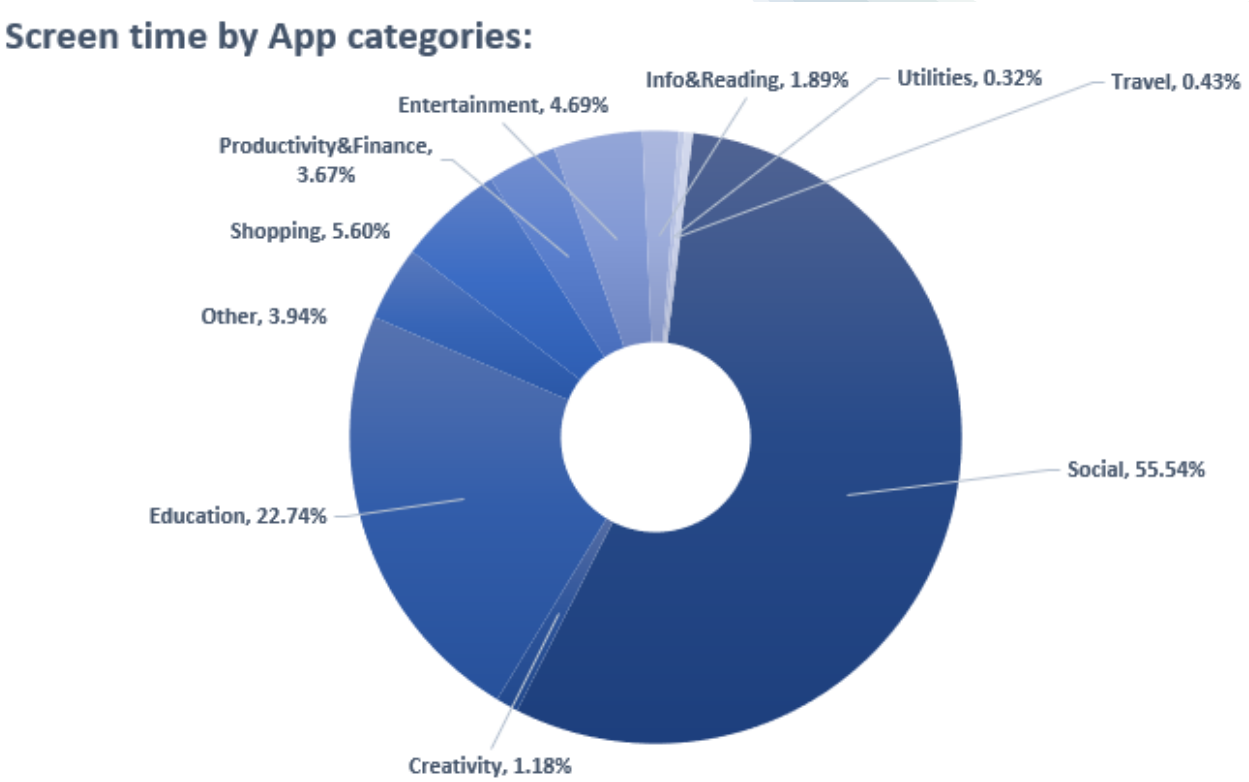
	Facebook	Instagram	Messenger	Linkedin	Total
2022.12.01	0:40	0:42	1:48	0:00	**3:10**
2022.12.02	0:44	0:44	1:01	0:07	**2:36**
2022.12.03	1:35	0:31	0:31	0:08	**2:43**
2022.12.04	0:41	0:33	0:20	0:15	**1:49**
2022.12.05	0:32	0:48	0:59	0:11	**2:30**
2022.12.06	0:35	0:34	0:30	0:00	**1:39**
2022.12.07	0:41	0:30	0:33	0:00	**1:44**
2022.12.08	0:54	1:25	0:07	0:05	**2:31**
2022.12.09	0:47	1:43	0:43	0:05	**3:18**
2022.12.10	0:39	0:27	0:16	0:07	**1:29**
Average	**0:46**	**0:47**	**0:40**	**0:05**	**2:20**
Total time (h)	**7:48**	**7:57**	**6:48**	**0:58**	**23:29**
% of total	**33%**	**34%**	**29%**	**4%**	

5. Answering the questions

- *Does increasing screen time is the cause of eye health getting worse?* –> **cannot be answered due to lack of data.**

- *Does less screen time before bed improve sleep quality?* –> **According data and correlation coefficient, there is no significant relation between sreen time and sleep for me personaly.**

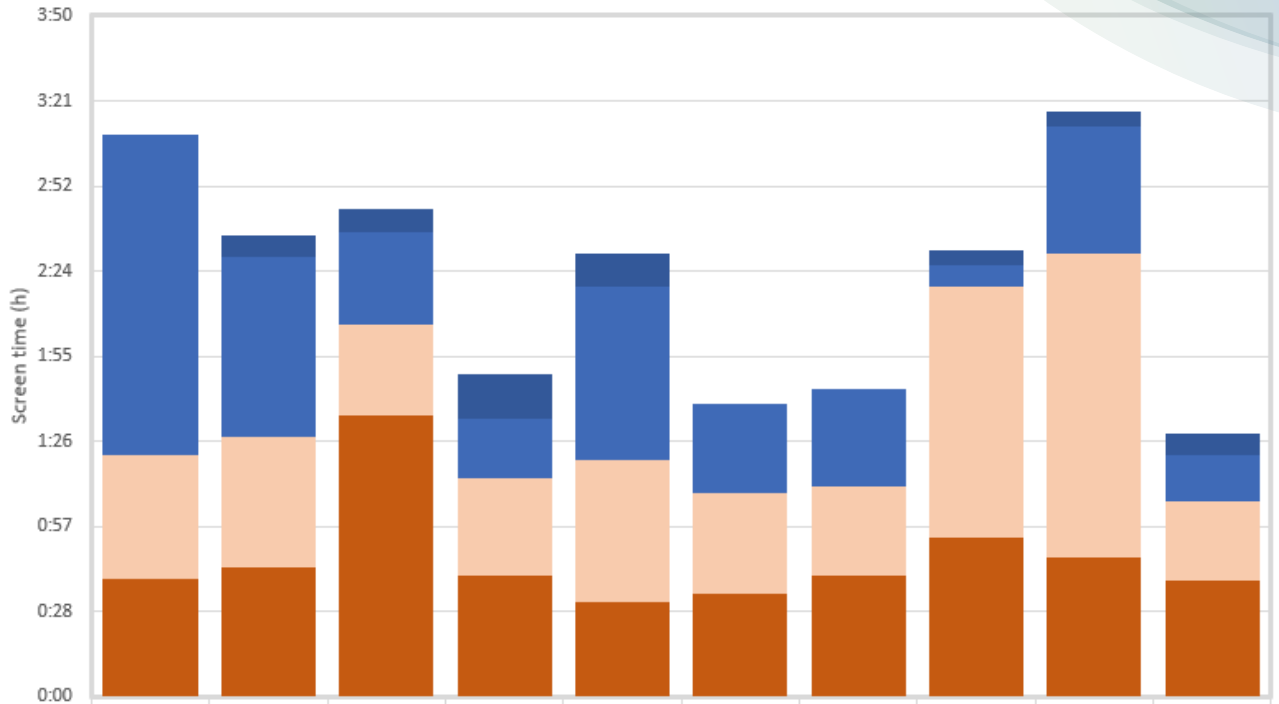
- *What type of screen time might be reduced in order to have more time for studies and family?* –> **Social Apps, because they take the majority of the time.**



Answering the questions

- If I could reduce usage of Facebook and Instagram, it could save me around **1 h 30 minutes every day**. It could be spent with family or studying.

Screen time by App:



	2022.12.01	2022.12.02	2022.12.03	2022.12.04	2022.12.05	2022.12.06	2022.12.07	2022.12.08	2022.12.09	2022.12.10
Linkedin	0:00	0:07	0:08	0:15	0:11	0:00	0:00	0:05	0:05	0:07
Messenger	1:48	1:01	0:31	0:20	0:59	0:30	0:33	0:07	0:43	0:16
Instagram	0:42	0:44	0:31	0:33	0:48	0:34	0:30	1:25	1:43	0:27
Facebook	0:40	0:44	1:35	0:41	0:32	0:35	0:41	0:54	0:47	0:39

6. Key takeaways

Next steps:

- Add limits to the apps in order to manage time spent on them (especially social Apps);
- Collect more data for evaluation of screen time impact to eye health;
- Do deeper analysis of correlation of screen time before sleep and sleep quality, for example collect the data of sleep stages (REM, core, deep);
- For better fairness of data analysis add screen time of TV, PC and other devices;
- Consider possible impact to mood and anxiety.

Thank You!