
200 YEARS OF RAILWAYS
200 LAT KOLEI
100 LAT PKP
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POLSKIE KOLEJE PAŃSTWOWE
Spółka Akcyjna

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Centrum Naukowe Medycyny Kolejowej

PKP S.A. Railway Occupational Medicine Department

POLSKIE KOLEJE PAŃSTWOWE
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200 LAT KOLEI

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The Monotony of a Train Driver's Work Modern Physical and Mental Stresses

Based on survey research, conducted between January and July 2025

PKP POLSKIE KOLEJE PAŃSTWOWE
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Conducting the survey

Timeframe: from January to July 2025

The Railway Medicine Research Centre conducted a research project entitled *Monotony of Train Driver Work*, to which Railway Occupational Medicine Preventive Examination Clinics located in major Polish cities were invited to participate.

1. The questionnaires were handed out by medical staff immediately before the start of preventive examinations (periodic examinations).
2. Participation in the survey was completely voluntary and anonymous.
3. The survey was conducted between January and July 2025.
4. The survey was addressed exclusively to employees working as train drivers – both passenger and freight trains.

Respondents

Statistical data about survey responders

The study was conducted on a sample of **657** employees working as train drivers, including:

- 8 women,
- 649 men

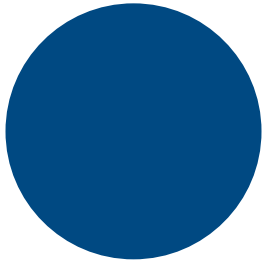
- The average age of respondents was: 35 years
- Average height: 187 cm
- Average weight: 92 kg
- Average upper blood pressure: 132.5 mmHg
- Average diastolic blood pressure: 83.5 mmHg
- Average length of service as a train driver: 16 years

Research objective:

To measure selected psychophysical factors affecting the monotony of train drivers' work and to attempt to determine their impact on health.

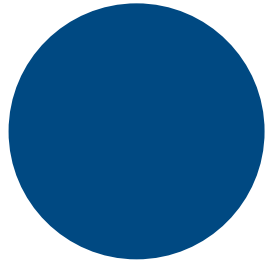
Methodology:

Each respondent was given five questions and was asked to assign values ranging from the lowest (1) to the highest (6) on the response scale indicating impact of each possible answer. Participants could also give no response to a question (marked as 0 on a scale).



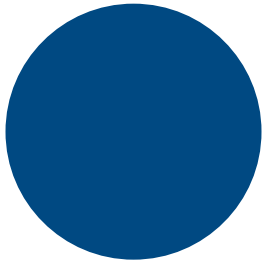
Changes in concentration

Impatience, nervousness, feeling of anxiety



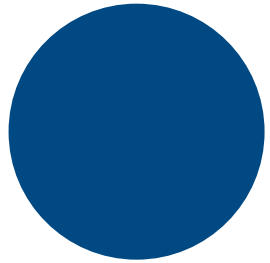
Working conditions

Divided attention, intense sunlight



Fatigue

Drowsiness, eye strain, heaviness of the body



Pain

Eye, head and back pain

Survey – Questions

(division into blocks)

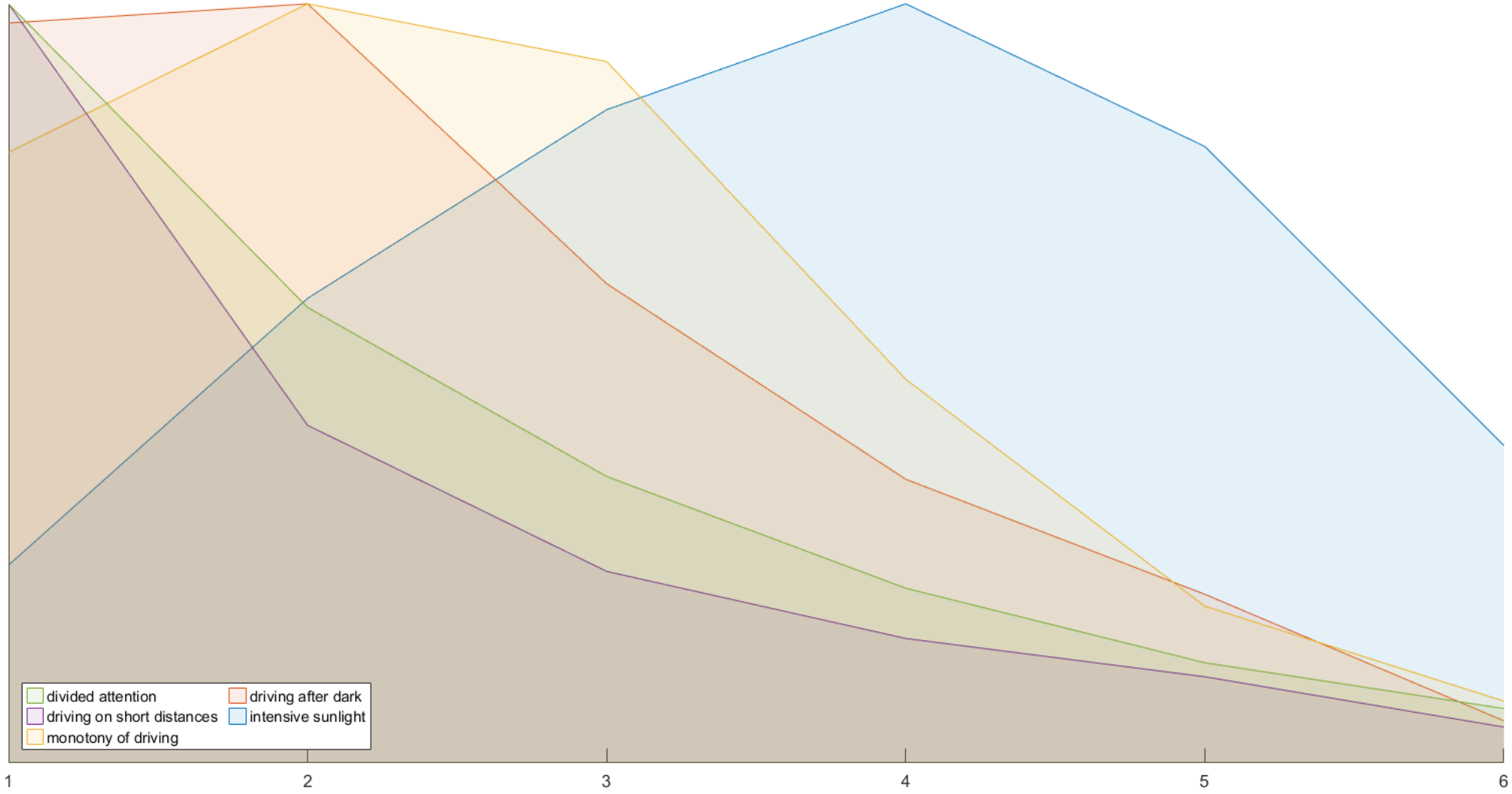
- Changes in concentration:
  - What distracts you most when driving a train?
  - Do you experience changes in concentration when driving a train?
- Working conditions:
  - Do you experience any of the following symptoms at work?
- Fatigue:
  - Do you notice signs of fatigue after finishing work?
- Pain:
  - Do you experience pain after finishing your shift?

Survey – results

Question no. 1: What distracts you most when driving a train?

	1	2	3	4	5	6	No response
intense sunlight	43	101	142	165	134	69	3
driving after dark	193	198	125	74	44	11	12
monotony of driving	148	184	170	93	38	15	9
driving on short distances	317	141	80	52	36	15	16
divided attention	265	159	100	61	35	19	18

Histogram of answers normalized to highest value for each of them

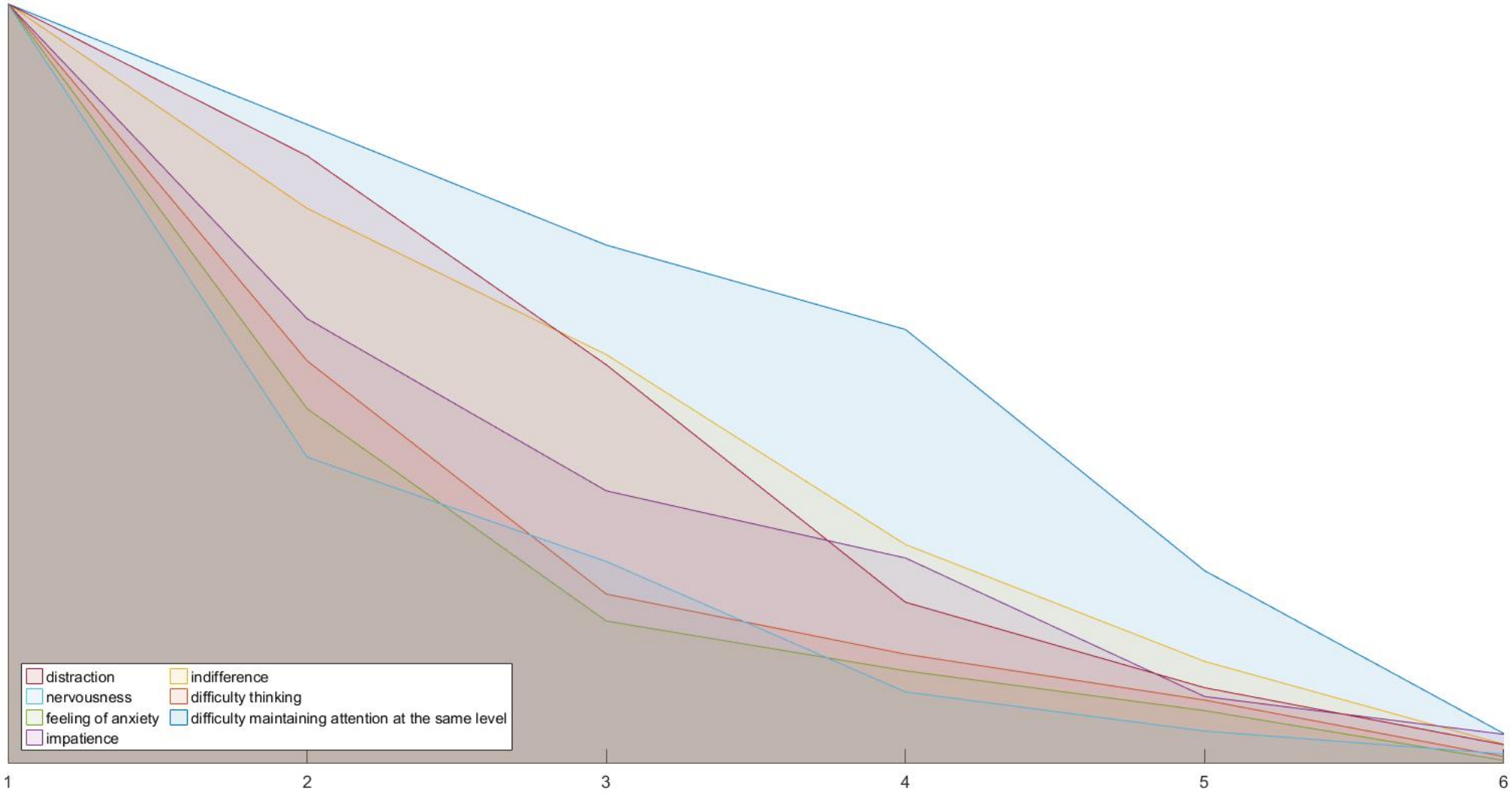


Survey – results

Question no. 2: Do you feel any changes of concentration while driving a train ?

	1	2	3	4	5	6	No response
difficulty maintaining attention at the same level	126	106	86	72	32	5	230
difficulty thinking	215	114	48	31	18	2	229
indifference	156	114	84	45	21	4	233
impatience	181	106	65	49	16	7	233
feeling of anxiety	229	107	43	28	16	1	233
nervousness	233	94	62	22	10	3	233
distraction	160	128	84	34	16	4	231

Histogram of answers normalized to highest value for each of them

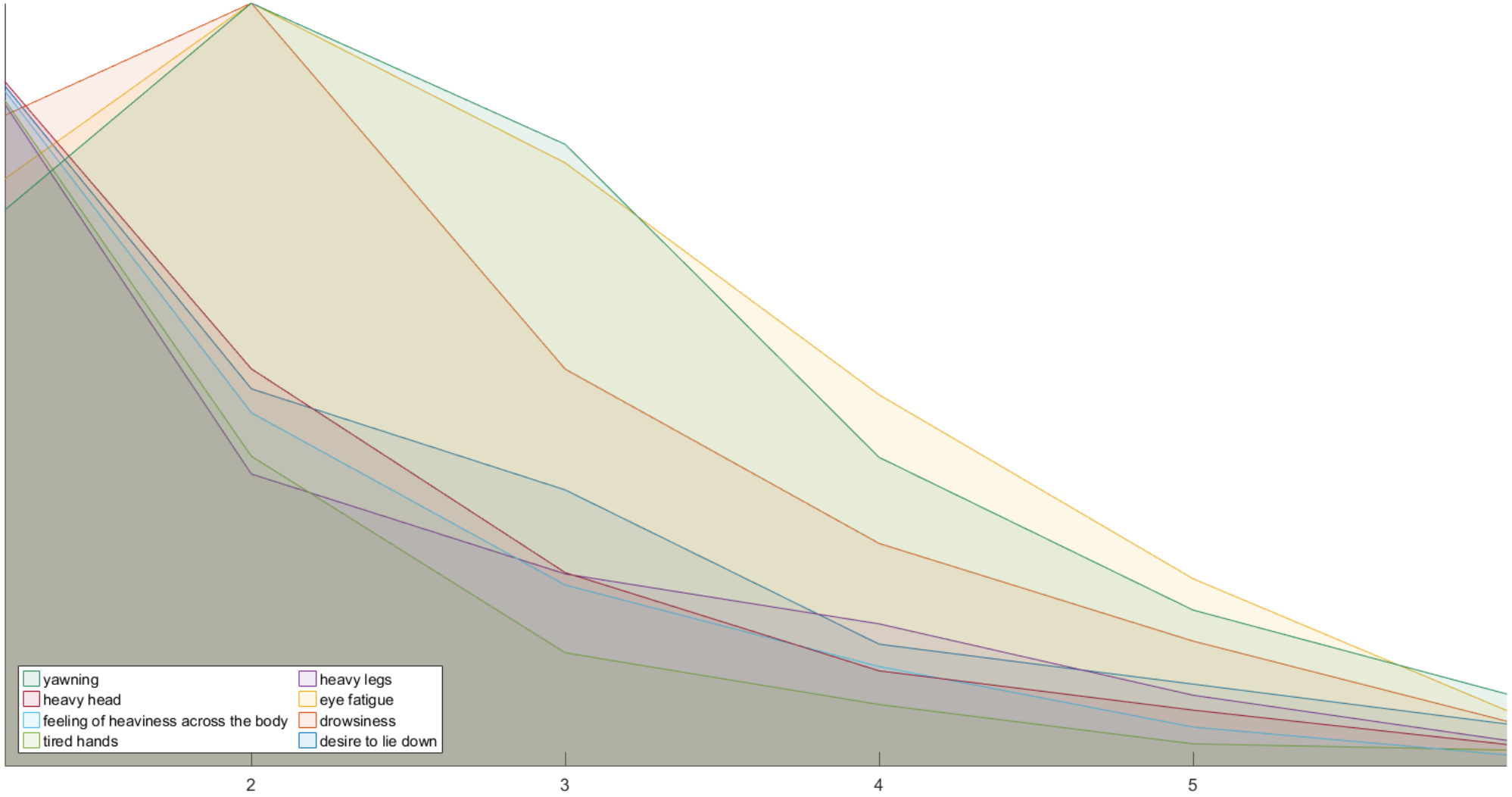


Survey – results

Question no. 3: Do you experience any of the following symptoms while working:

	1	2	3	4	5	6	No response
desire to lie down	287	142	104	46	31	16	31
drowsiness	178	219	114	64	36	13	33
eye fatigue	135	191	151	93	47	14	26
heavy legs	321	123	81	60	30	11	31
tired hands	369	150	55	30	11	8	34
feeling of heaviness throughout the body	328	152	78	43	17	5	34
heavy head	311	162	79	39	23	9	34
yawning	131	200	163	81	41	19	22

Histogram of answers normalized to highest value for each of them



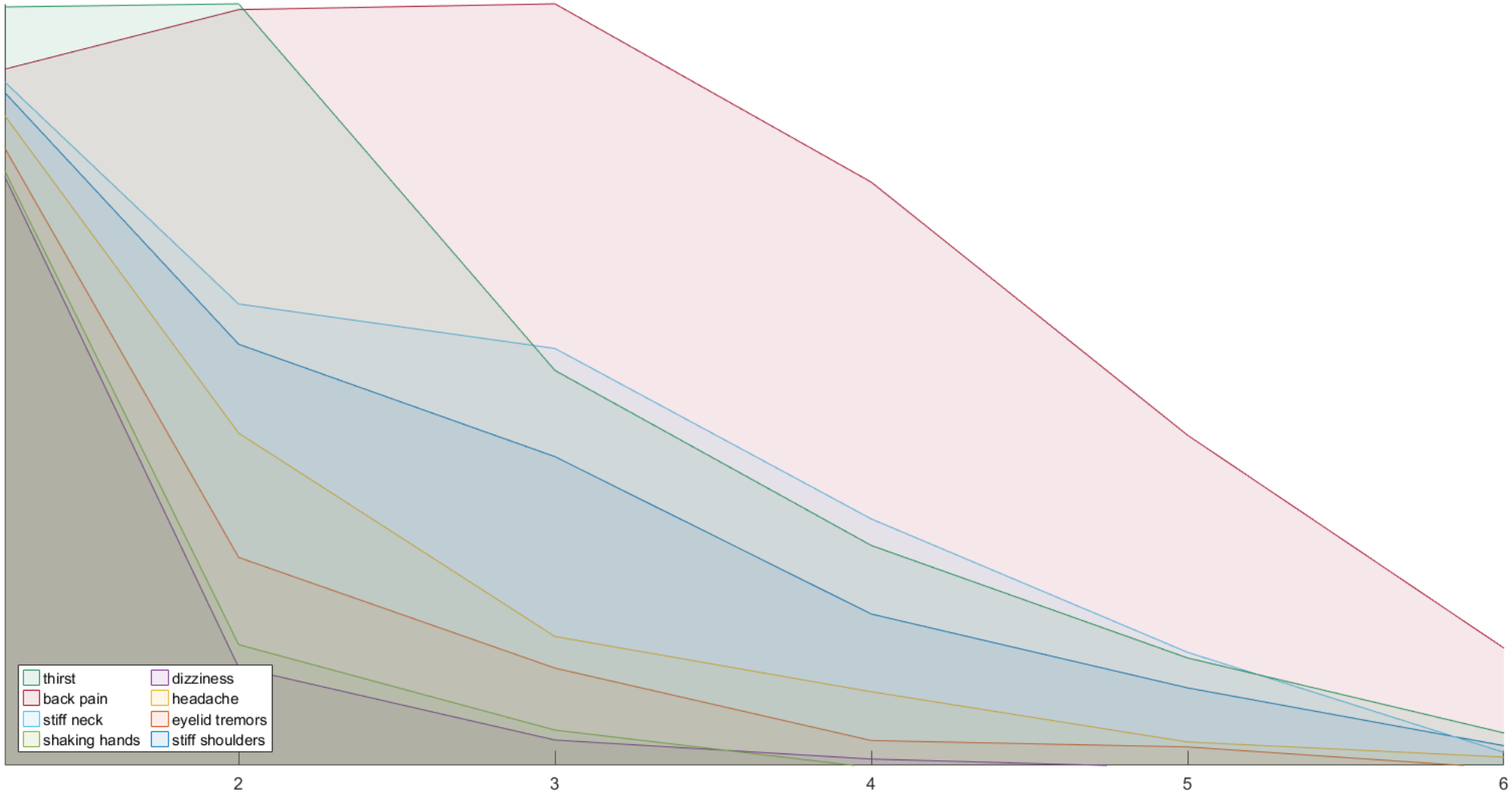
Survey – results

Question no. 4: Have you noticed any signs of fatigue after finishing work?

:

	1	2	3	4	5	6	No response
stiff shoulders	240	134	99	50	27	9	98
eyelid tremors	362	102	50	16	13	3	111
headache	307	136	55	33	13	7	106
dizziness	446	62	20	9	4	2	114
shaking hands	433	73	25	4	5	1	116
stiff neck	208	127	115	69	33	6	99
back pain	119	133	134	103	59	22	87
thirst	184	185	97	55	28	10	98

Histogram of answers normalized to highest value for each of them

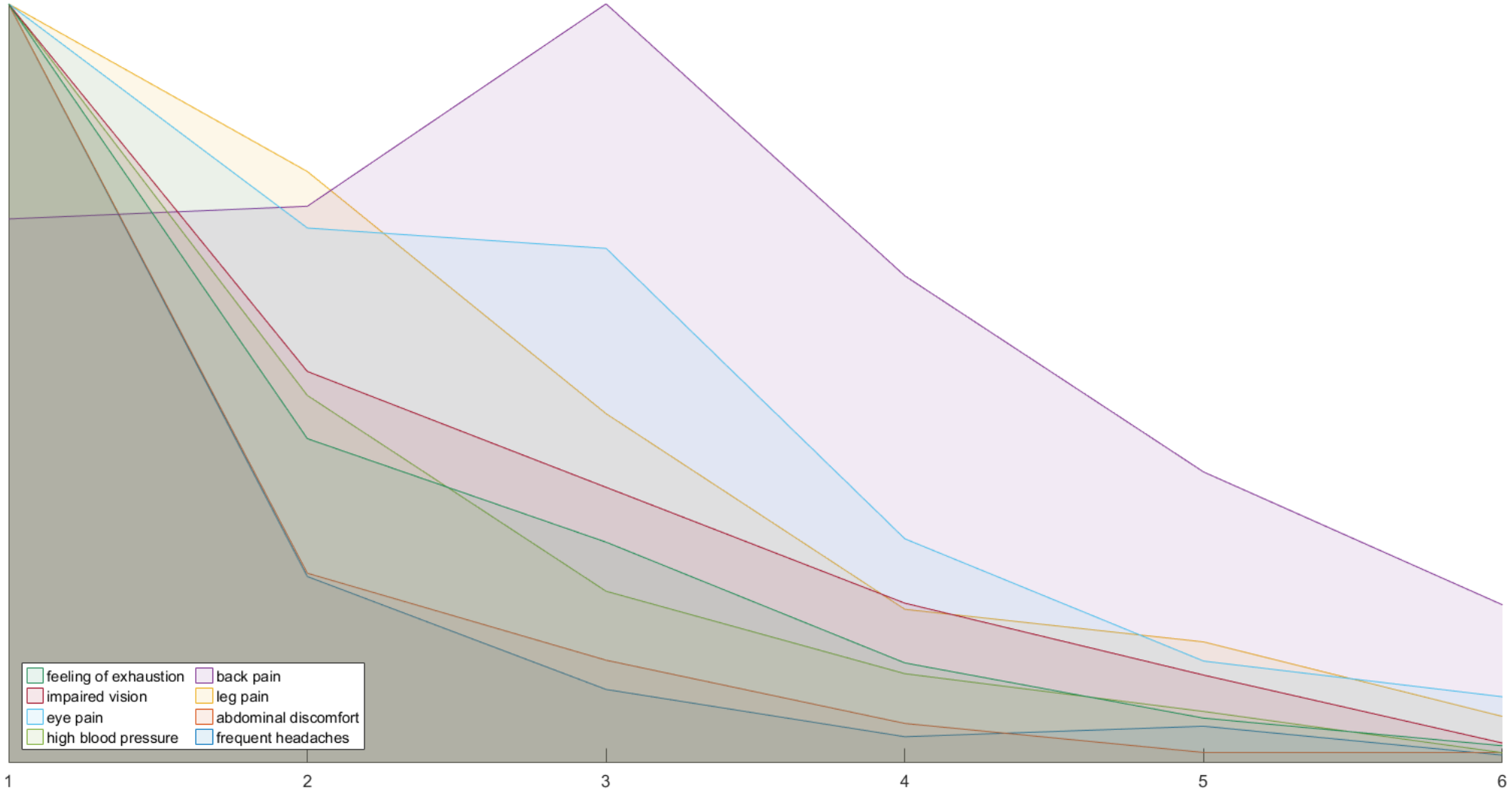


Survey – results

Question no. 5: Have you noticed any pain after finishing your shift?

	1	2	3	4	5	6	No response
frequent headaches (twice or more per week)	289	71	28	10	14	3	242
abdominal discomfort	288	72	39	15	4	4	235
leg pain, including knees and feet	163	127	75	33	26	10	223
back pain	86	88	120	77	46	25	215
high blood pressure	221	107	50	26	15	3	235
eye pain	149	105	101	44	20	13	225
impaired vision	190	98	69	40	22	5	233
feeling of exhaustion	220	94	64	29	13	5	232

Histogram of answers normalized to highest value for each of them



ANALYSIS

Statistically significant data

(highest mean scores on scale 1-6)

I. The most distracting factors when driving a train:

1. Intense sunlight – 3.69
2. Monotony of driving (long intervals between stops) – 2.59
3. Driving after dark – 2.40

II. Strongest symptoms of distraction:

1. Difficulty maintaining attention – 2.52
2. Indifference – 2.23
3. Impatience – 2.14

III. Symptoms observed during work:

1. Eye fatigue – 2.63
2. Yawning – 2.62
3. Drowsiness – 2.36

ANALYSIS

Statistically significant data

(highest mean scores on scale 1-6)

IV. Signs of fatigue after finishing work (duty):

1. Back pain – 2.85
2. Stiff neck – 2.30
3. Thirst – 2.26

V. Pain after finishing work (duty):

1. Back pain – 2.96
2. Eye pain – 2.35
3. Leg pain, including knees and feet – 2.22

Monotony at work – psychological effects

Monotony is a state of reduced activity that can result from performing repetitive, monotonous tasks for long periods of time. Monotony can cause significant psychological stress, as it involves emotional underload caused by a lack of or monotony in stimuli and activities.

Monotony at work – possible consequences

The consequences of monotonous work can be seen both in relation to the musculoskeletal system and can cause mental and intellectual strain, e.g.:

- deterioration of motor coordination
- reduced ability to work
- deterioration of well-being
- reduced alertness
- weakened perception
- impaired concentration
- excessive excitability and irritability
- rigid thinking patterns
- increased number of errors in mental tasks

Prevention

Prevention of work-related stress is one of main goals of Railway Occupational Medicine and should focus on both broadly understood working conditions and the employees themselves.

By conducting this research we wish to show what issues and problems train drivers meet on regular basis and help finding possible causes of such symptoms.

CONCLUSIONS

Statistics

- The average age of respondents indicates a continuing shortage of train drivers.
- The ratio of women to men indicates that the profession is not very popular among women.

Questionnaire

Among train drivers with extensive professional experience, there is a noticeable percentage of only partially completed questionnaires, which may be related to:

- concerns about associating their health with the answers given in the questionnaire, or
- less physically demanding work compared to when they started their employment, e.g. driving and operating rolling stock withdrawn from service (e.g. steam locomotives, electric and diesel locomotives), frequent overtime..

Survey results

- The irregular nature of the work, which is performed at different times of the day and night and involves shifts of up to 12 hours, causes pain in the cervical spine, spine and legs, as well as headaches.
- The need to maintain high concentration causes feelings of anxiety and distraction (observing signals on the route, listening to radio messages, cooperating with the train manager).
- Physical conditions at the workplace, such as no stops on the railway line or driving towards bright sunlight, may contribute to railway incidents or accidents.
- In the opinion of the CNMK, periodic examinations for train drivers, carried out annually from the age of 50, allow for proper monitoring of the health of employees in this position and enable an early response to the first signs of deteriorating health.

GENERATIONAL CHANGES:

1. downplaying emerging symptoms related to deteriorating health among the oldest train drivers, which may be related to fears about the possibility of losing their jobs (tough man model),
2. awareness of maintaining a good work-life balance among the youngest train drivers, who are more aware than the older generation of the potential risks associated with working conditions and health, and for whom the job of train driver offers few prospects (AI).

Thank you for your attention
Dziękuję za uwagę

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