



# SPREMINJAJOČI SE SVET DELA – OPAŽANJA SPECIALISTA MEDICINE DELA

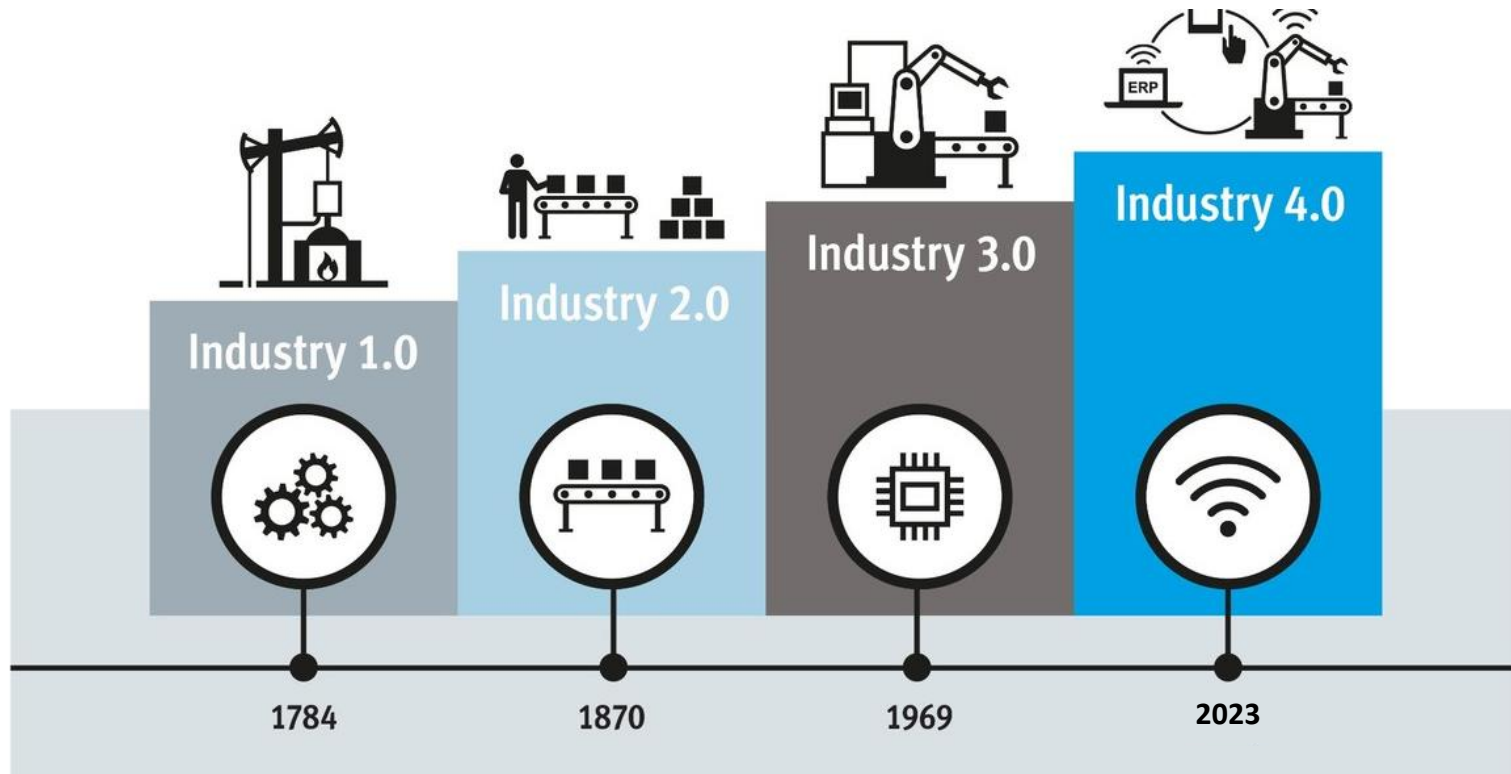
SPLETNI SEMINAR VARNO IN ZDRAVO DELO V DIGITALNI DOBI

asist. Dani Mirnik, dr.med., specialist medicine dela, prometa in športa

Zavod za varstvo pri delu, ZVD

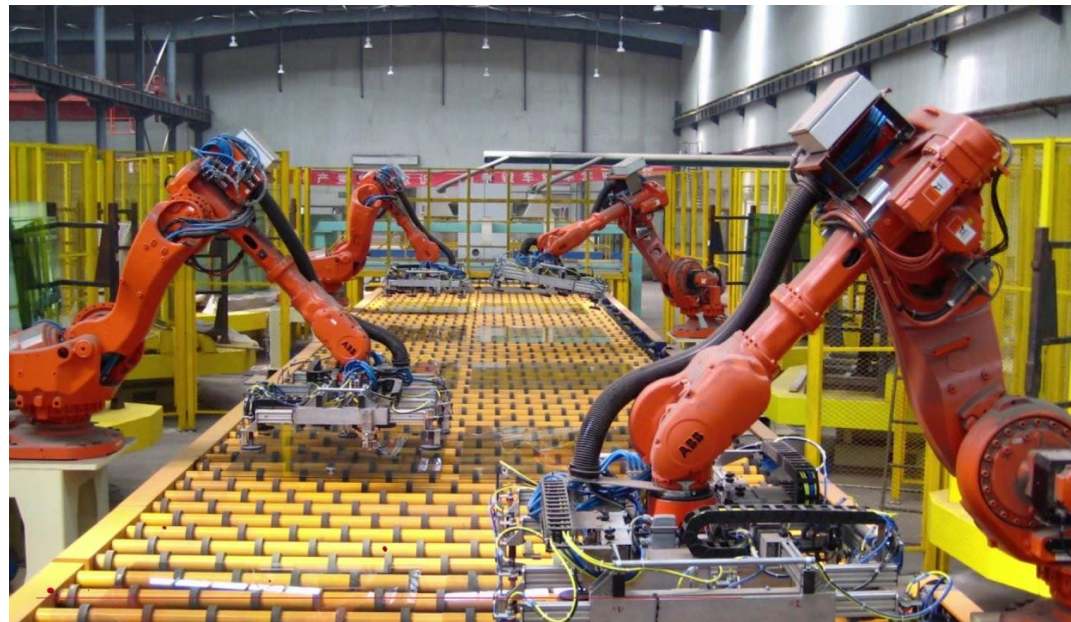
Vse pravice pridržane. Gradiva ni dovoljeno razmnoževati ali razpošiljati v kakršnikoli obliki brez predhodnega pisnega dovoljenja avtorja ter Ministrstva za delo, družino, socialne zadeve in enake možnosti. Prav tako gradiva ni dovoljeno predelati.

# INDUSTRIJSKE REVOLUCIJE SKOZI ČAS











# INDUSTRIJA 4.0



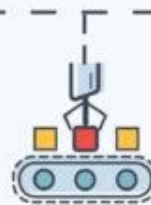
AVTOMATIZACIJA



BIG DATA



PODATKI V OBLAKU



AVTONOMIJA



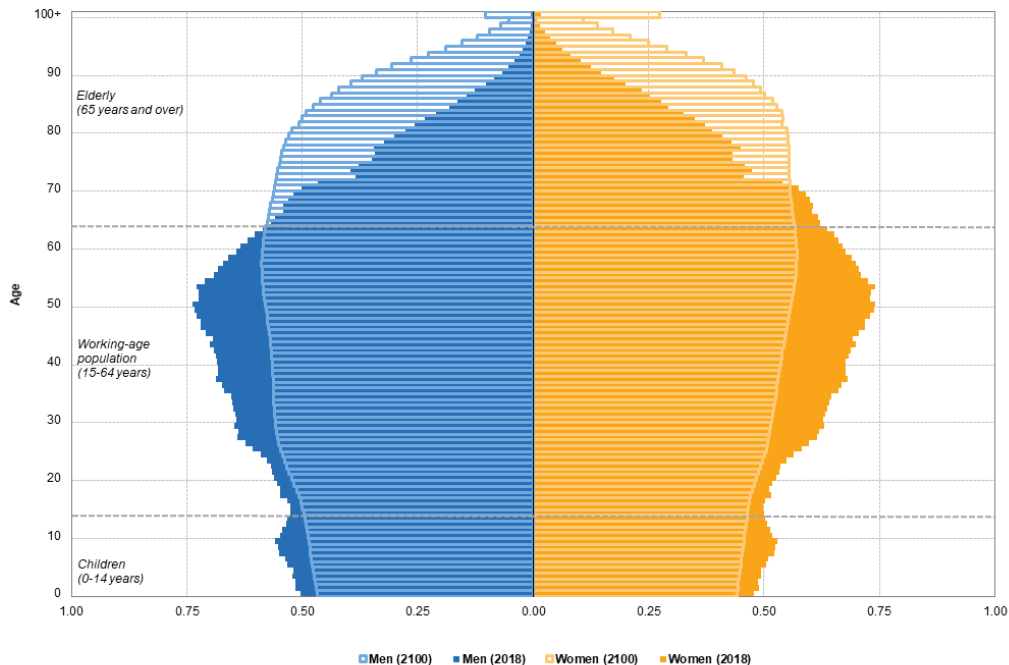
IOT



UMETNA  
INTILIGENCA

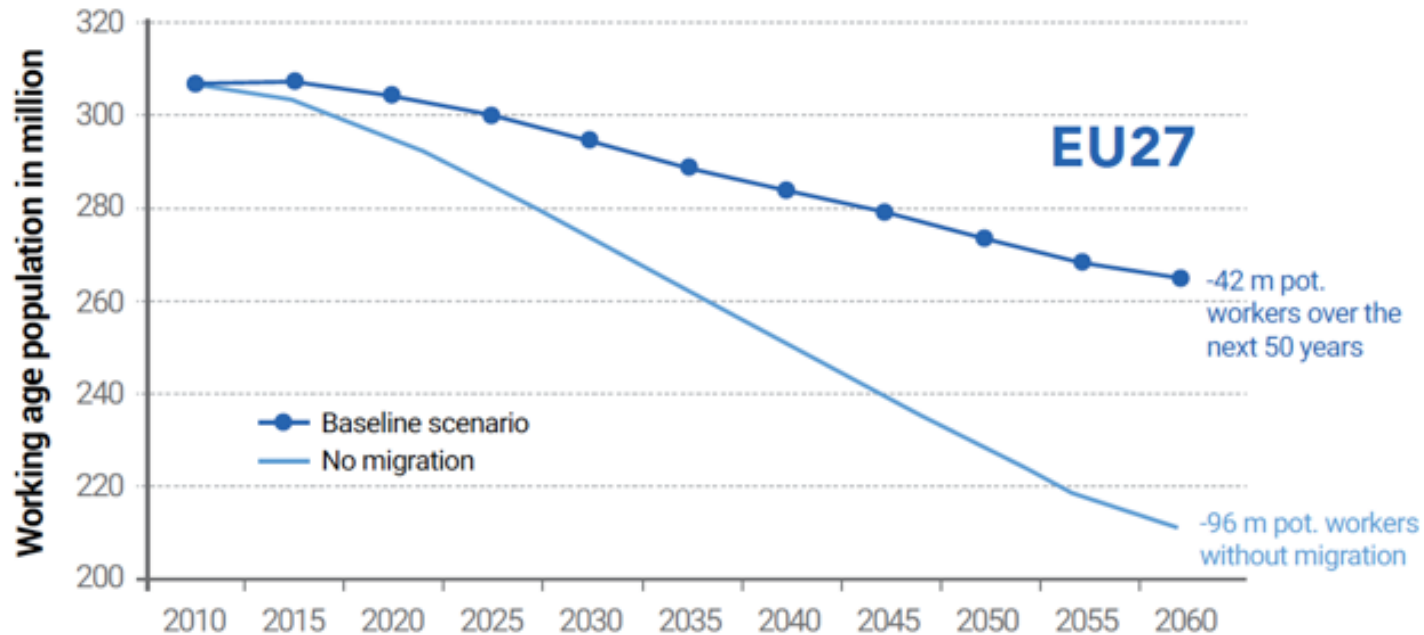
# DEMOGRAFIJA EVROPSKE UNIJE

Population pyramids of the EU, 2018 and 2100  
(% of total population)



Note: 2018, 2100: projections.  
Source: Eurostat (online data codes: pro\_18np)

# PROJEKCIJA DELOVNE POPULACIJE V EVROPSKI UNIJI





## Wanted: tens of thousands of teachers to staff Europe's schools

Class sizes are rising and recruitment standards being cut as low pay and burnout prompt staffing crisis



NEWS ARTICLES | 12 July 2023

## EU companies face difficulties in hiring ICT experts



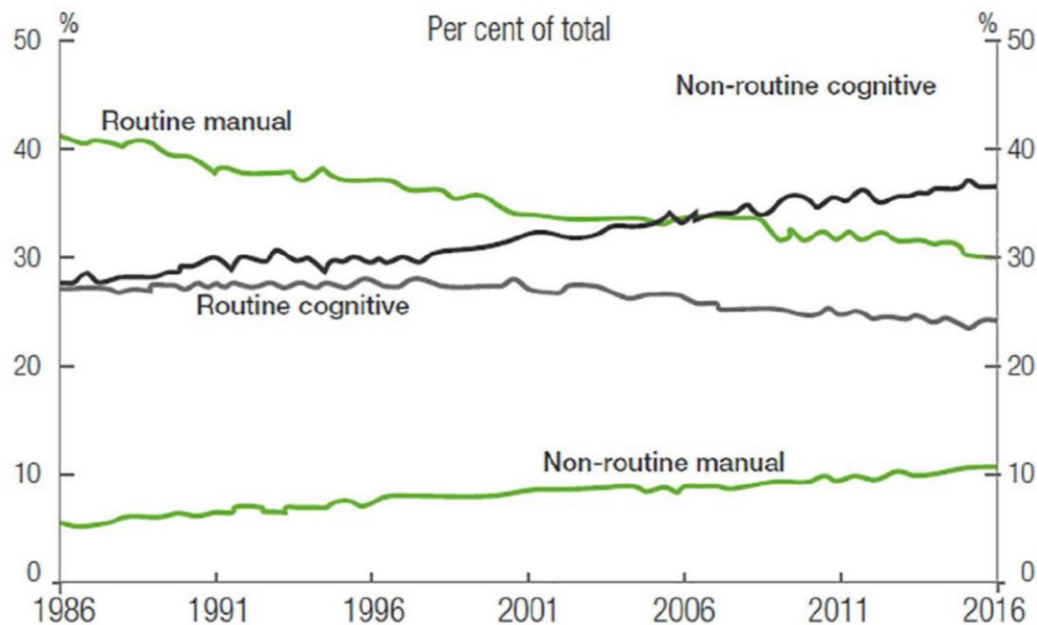
## A review and agenda for examining how technology-driven changes at work will impact workplace mental health and employee well-being

[Anya Johnson](#)  [Shanta Dey](#), (…), and [Samuel B Harvey](#)  [View all authors and affiliations](#)

[Volume 45, Issue 3](#) | <https://doi.org/10.1177/0312896220922292>

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### Employment by Skill Type\*



<https://www.healthy-workplaces.eu>

# KAKO BOMO REŠEVALI KADROVSKE IZZIVE?



*"How long is the wait usually to be seated?"*



# UPORABA DIGITALNIH TEHNOLOGIJ V EU

## Anketa OSH Pulse (EU-OSHA, 2022)

**Delavci v EU pri delu uporabljajo:**

- **prenosne računalnike, tablične računalnike, pametne telefone (73 %),**
- **prenosljive naprave (11 %),**
- **stroje ali robote, ki vključujejo umetno inteligenco (5 %),**
- **robote, ki komunicirajo z delavcem (3 %).**

# DELO NA DALJAVO- HIBRIDNO DELO

## Anketa OSH Pulse (EU-OSHA, 2022)

- Leta 2022 je 17 % delavcev delalo večinoma od doma.
- 90 % delavcev je uporabljalo prenosne računalnike, tablične računalnike in pametne telefone.
- Na 75 % delovnih mest v EU se redno izvaja ocenjevanje tveganja, vendar se to izvaja le pri 31 % delovnih mest, ki omogočajo delo na domu

## Podatki SLO – Inšpektorat za delo

- 1.1.2021 do 31.12.2021: 217.428 delavcev / 2.690 delodajalcev
- 1.1.2022 do 31.12.2022: 121.981 delavcev / 1. 953 delodajalcev
- 1.1.2023 do 30. 5. 2023: 35.625 delavcev / 933 delodajalcev

# AVTOMATIZACIJA DELOVNIH NALOG



*„Uporaba digitalnih tehnologij za postopke avtomatizacije prinaša številne priložnosti, pa tudi morebitna tveganja in izzive, kot so izguba človekovega zavedanja o razmerah, pretirano zanašanje na tehnologijo ali morebitna izguba posebnih znanj in spretnosti delavcev.“*

## OPREDELITEV

Uporaba sistemov ali tehničnih postopkov, ki omogočajo, da naprava ali sistem (delno ali v celoti) opravlja funkcijo, ki jo je prej opravljal ali bi jo verjetno lahko (delno ali v celoti) opravljal človek.

# UMETNA INTILIGENCA



Leta **2022** je bila svetovna vrednost zasebnih naložb v umetno inteligenco **18-krat večja** kot leta 2013.

**92 milijard \$**

# UMETNA INTILIGENCA



*„Pomembno je vzpostaviti zaupanje v te sisteme z obveščanjem, svetovanjem in omogočanjem, da delavci sodelujejo pri njihovem oblikovanju in izvajanju.“*



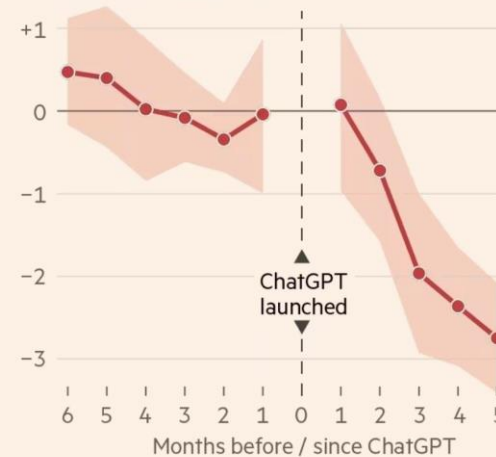
# VPLIV UI NA TRG DELA?



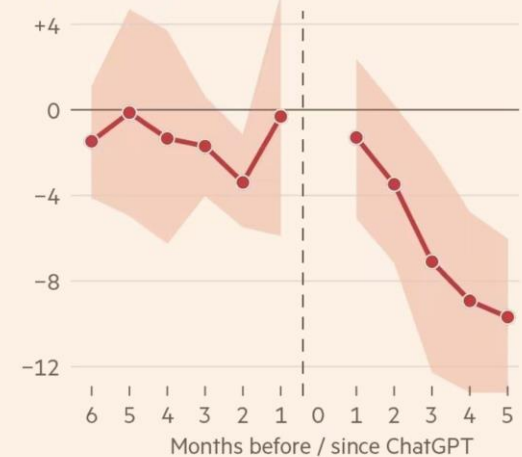
## Generative AI is already taking white-collar jobs and wages in the online freelancing world

Change in employment and earnings from writing and editing jobs on an online freelancing platform after the launch of ChatGPT

% change in monthly freelance jobs ...



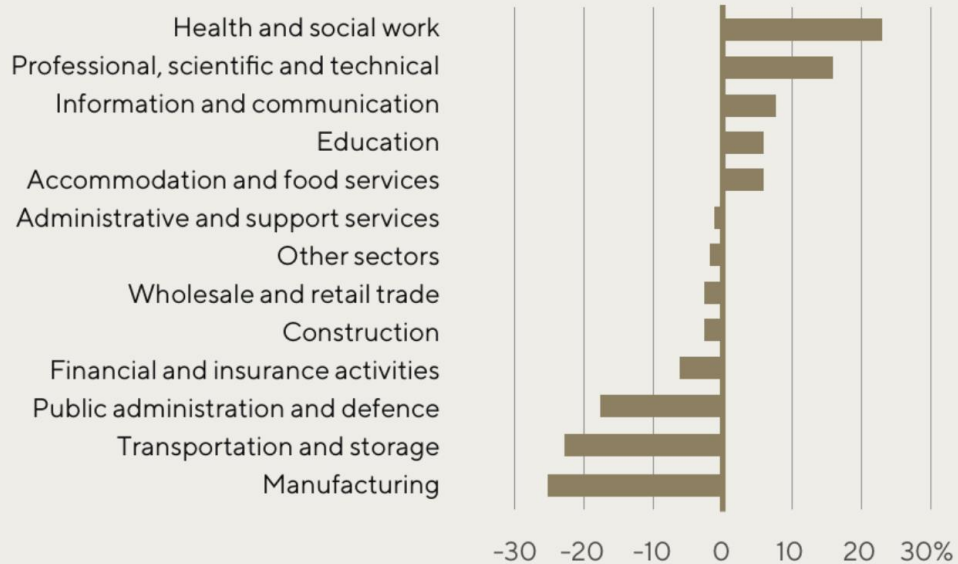
... and earnings



Source: *The Short-Term Effects of Generative AI on Employment: Evidence from an Online Labor Market* (Hui et al, 2023)

# How AI will affect the job market

Predicted net job creation by sector (2017-2037)



GUILD

artificial intelligence



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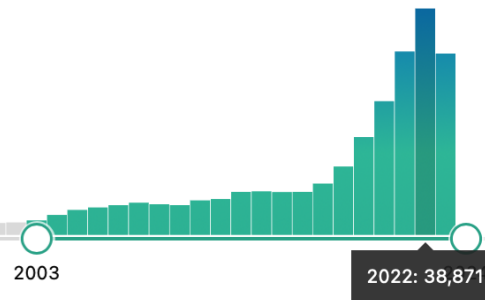
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Reset



KAKO DELAMO?

**AVTOMATIZACIJA IN NAPREDNE  
TEHNOLOGIJE**



VPLIV NA DUŠEVNO ZDRAVJE



KJE IN KDAJ DELAMO?

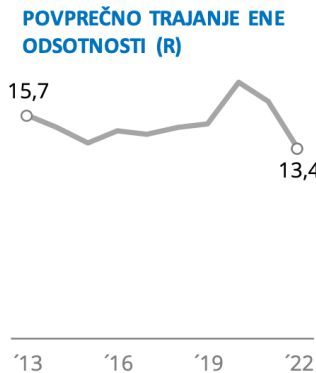
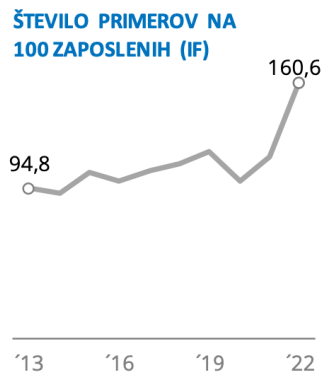
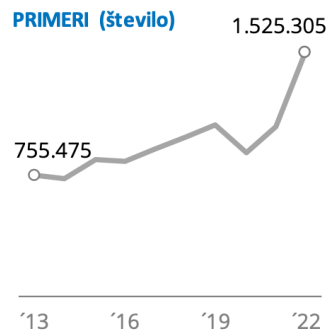
**FLEKSIBILNI IN HIBRIDNI NAČINI DELA**



VPLIV NA DUŠEVNO ZDRAVJE



# KAZALNIKI BOLNIŠKEGA STALEŽA V RS 2013-2022

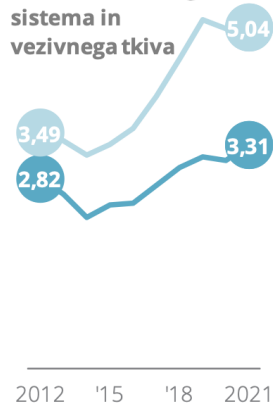


Viri: Evidenca začasne odsotnosti z dela zaradi boleznih, poškodb in drugih vzrokov (NIJZ3)

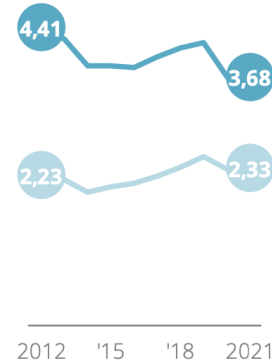
# INDEKS ONESPOSABLJANJA V RS OD LETA 2012-2021 ZA NAJBOLJ POGOSTE SKUPINE BOLEZNI

## Indeks onesposabljanja

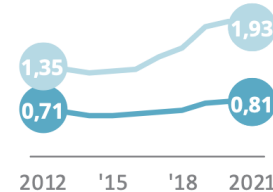
Bolezni mišičnoskeletnega sistema in vezivnega tkiva



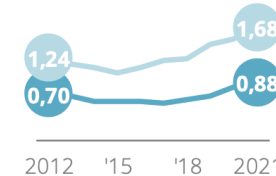
Poškodbe in zastrupitve



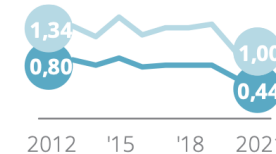
Duševne in vedenjske motnje



Neoplazme



Bolezni dihal

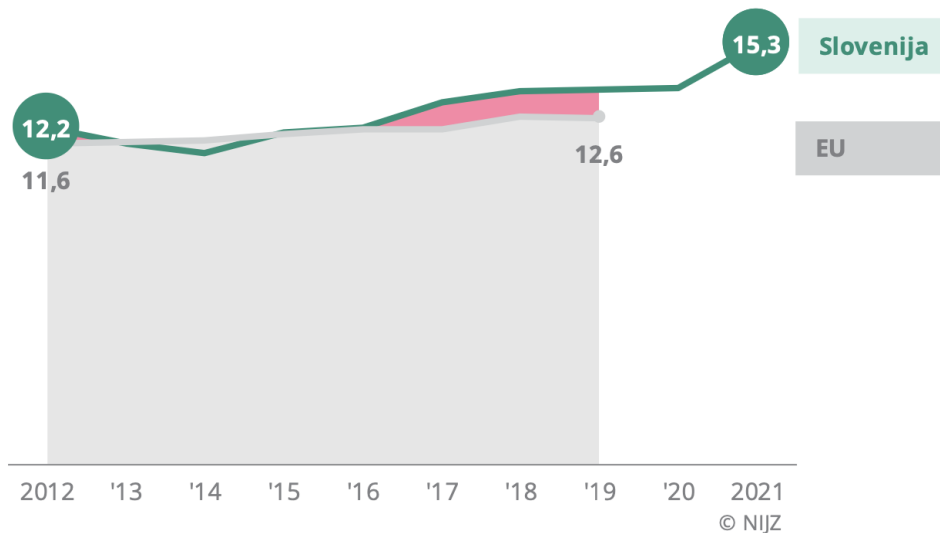


© NIJZ

Viri: Evidenca začasne in trajne odsotnosti z dela zaradi bolezni, poškodb nege, spremstva in drugih vzrokov (NIJZ 3)

# MEDNARODNE PRIMERJAVE BOLNIŠKEGA STALEŽA

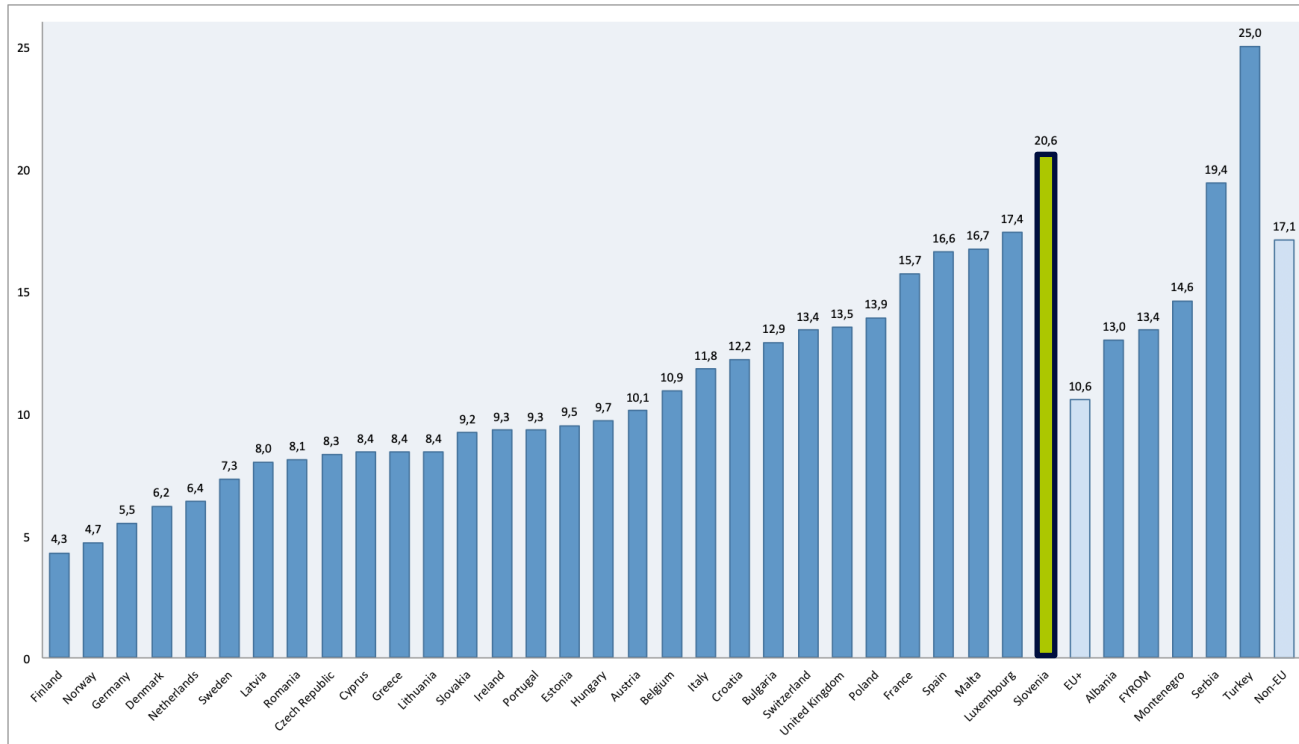
Indeks onesposabljanja



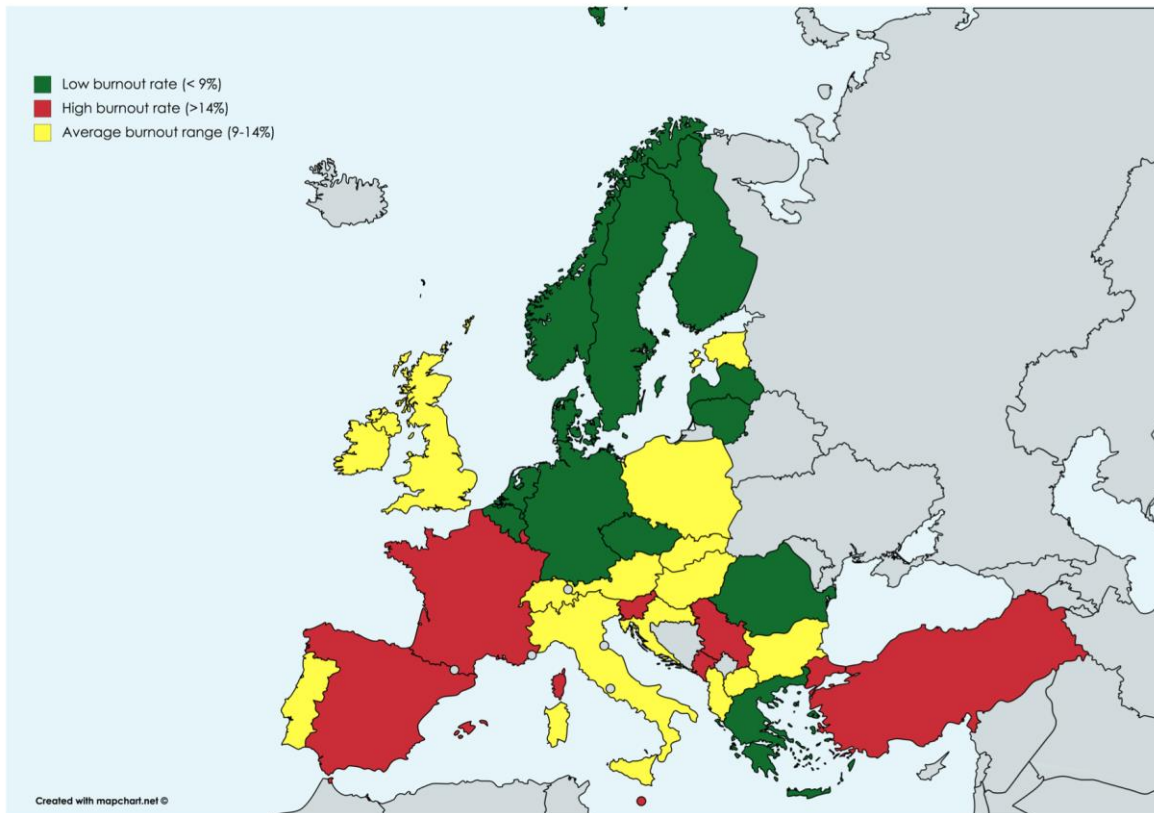
<sup>1)</sup> Metodologija poročanja za mednarodne baze: poroča se število delovnih dni. Za EU ni razpoložljivega podatka za leti 2020 in 2021.

Viri: WHO, [https://gateway.euro.who.int/en/indicators/hfa\\_411-2700-absenteeism-from-work-due-to-illness-days-per-employee-per-year/](https://gateway.euro.who.int/en/indicators/hfa_411-2700-absenteeism-from-work-due-to-illness-days-per-employee-per-year/), 03. 05. 2023

# OCENJEN ODSOTOTEK ZAPOSLENIH S SIMPTOMI IZGORELOSTI V EU



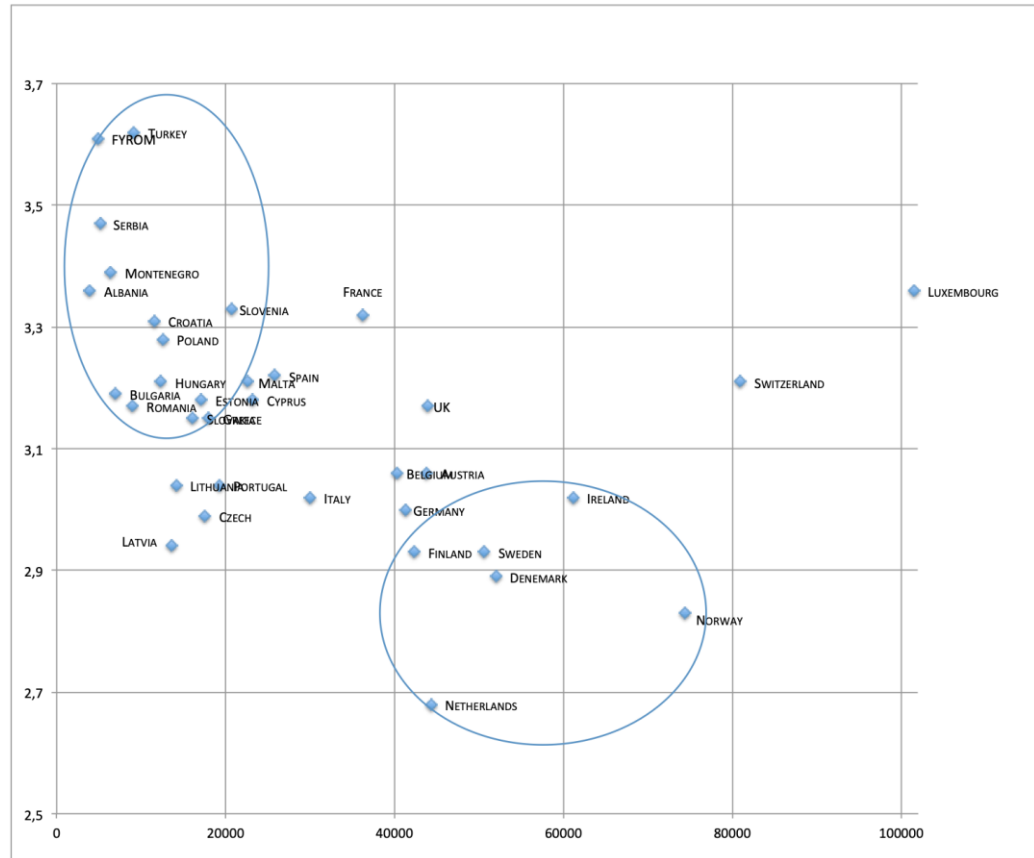




vir: Schaufeli, W.B. (2018). *Burnout in Europe: Relations with national economy, governance, and culture*. Research Unit Occupational & Organizational Psychology and Professional Learning (internal report). KU Leuven, Belgium.

<https://www.healthy-workplaces.eu>

# INDEKS IZGORELOST GLEDE NA BDP EU DRŽAV



Source: Word Bank and 6<sup>th</sup> EWCS - 2015

<https://www.nearity-workplaces.eu>

# KAJ OPAŽAMO V AMBULANTAH MEDICINE DELA?

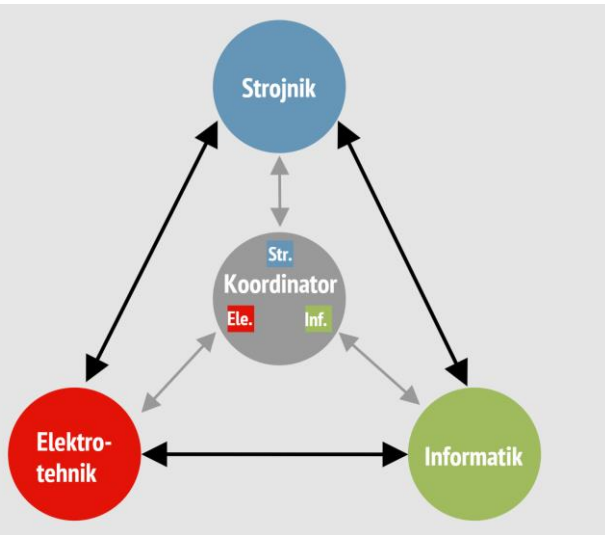
- **stanja pred pojavom bolezni – nespecifična stanja:**
  - različne faze izgorevanja
  - somatoformne motnje
  - težko usklajevanje privatne/zasebnega življenja
  - dolgi delovniki
  - slaba organizacija dela
  - slabi odnosi,
- **porast duševnih in vedenjskih motenj (anksioznost, depresija, panični napadi, itd.)**
- **porast motenj spanja**
- **vedno bolj težavna vračanja po bolniškem staležu**

# NAŠI GLAVNI IZZIVI

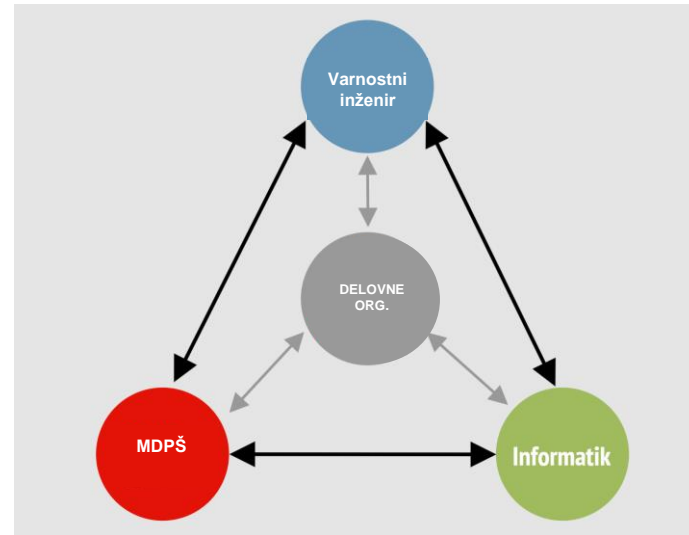
- **Pristop, osredotočen na človeka**
- **Zaostajanje regulativ, zakonodaje, pravilnikov in strokovnih usmeritev glede na hiter razvoj industrije**
- **Kako ocenjevati tveganja (delo na domu, nove tehnologije, raznolikost delovnih mest, tehnostres, itd)**
- **Prilagajanje zdravstvenega nadzora in ostalih ukrepov VZD**
- **Spodbujanje celostnega pristopa k ocenjevanju digitalnih tehnologij in sistemov**
- **Izkoriščanje novih tehnologij na področju VZD**
- **Zagotoviti pravočasno, učinkovito in varno vseživljenjsko izobraževanje delavcev**

# MULTIDISCIPLINARNI PRISTOP

INDUSTRIJSKI INTERDISCIPLINARNI TIM



INTERDISCIPLINARNI TIM VZD



# ZANESLJIVA IN ETIČNA IMPLEMENTACIJA UI

- **Spoštovanje človekove avtonomije** - Vsi sistemi umetne inteligence naj sledijo oblikovanju, ki je osredotočeno na človeka, spodbuja kognitivne, socialne in kulturne veščine ljudi ter ne sme manipulirati, zavajati ali odvzeti avtonomije.
- **Preprečevanje škode** - Sistemi umetne inteligence ne smejo povzročati ali poslabševati fizične ali psiho-socialne škode ljudem. To vključuje tudi prizadevanje za preprečevanje škode naravi.
- **Pravičnost** - Sistemi umetne inteligence naj zagotavljajo enake možnosti ljudem, ne smejo diskriminirati in ne smejo odvzeti svobode izbire. Ta načelo je tesno povezano z diskriminatorno pristranskostjo odločanja, o kateri smo prej govorili.
- **Razumljivost** - Sistemi umetne inteligence naj bodo čim bolj pregledni in zagotavljajo čim več informacij o logiki za svoje rezultate, da lahko odločevalci ustrezno ocenijo njihovo delovanje.



The title of your lecture, "SPREMINJAJOČ SE SVET DELA – OPAŽANJA SPECIALISTA MEDICINE DELA," translates to "CHANGING THE WORLD OF WORK – OBSERVATIONS OF AN OCCUPATIONAL MEDICINE SPECIALIST." Given this theme, here are some key points you might consider discussing during your lecture:

1. **Introduction to Changing Work Environments:**

- Explore the evolving landscape of the workplace globally.
- Discuss how technological advancements, globalization, and societal changes impact the nature of work.

2. **Health and Safety Challenges:**

- Address the emerging health and safety challenges in modern workplaces.
- Discuss the impact of new technologies on occupational health and safety.

3. **Mental Health in the Workplace:**

- Highlight the growing importance of mental health in the workplace.
- Discuss strategies for addressing and promoting mental well-being among workers.

4. **Adapting Occupational Medicine Practices:**

- Share insights on how occupational medicine practices are adapting to meet the changing needs of workers.
- Discuss the role of preventative medicine in maintaining a healthy workforce.

5. **Remote Work and Telemedicine:**

- Explore the impact of the rise of remote work on occupational health.
- Discuss the role of telemedicine in providing healthcare services to remote workers.

Regenerate

6. **Workplace Ergonomics:**

- Address the importance of ergonomic design in the changing workplace.
- Discuss how to create work environments that promote both productivity and health.

7. **Legislation and Regulations:**

- Highlight any changes in legislation or regulations related to occupational health and safety.
- Discuss the role of occupational medicine specialists in shaping and implementing these regulations.

8. **Case Studies and Practical Examples:**

- Share real-world case studies or examples from your own experiences as an occupational medicine specialist.
- Discuss successful interventions or challenges faced in adapting to the changing world of work.

9. **Collaboration and Interdisciplinary Approaches:**

- Emphasize the importance of collaboration between different stakeholders, including employers, employees, healthcare professionals, and policymakers.
- Discuss how interdisciplinary approaches can enhance the effectiveness of occupational medicine.

10. **Q&A Session:**

- Allocate time for a question and answer session to engage with the audience and address specific concerns or interests.

Tailor these points to the specific needs and interests of your professional audience. Providing a mix of theoretical insights, practical examples, and opportunities for audience engagement will make your lecture informative and engaging.

Regenerate

Zdravo delovno  
okolje 2023-2025

**Varno in zdravo delo  
v digitalni dobi**

 **EU-OSHA**



REPUBLIKA SLOVENIJA  
MINISTRSTVO ZA DELO, DRUŽINO,  
SOCIALNE ZADEVE IN ENAKE MOŽNOSTI

**HVALA ZA POZORNOST**



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