

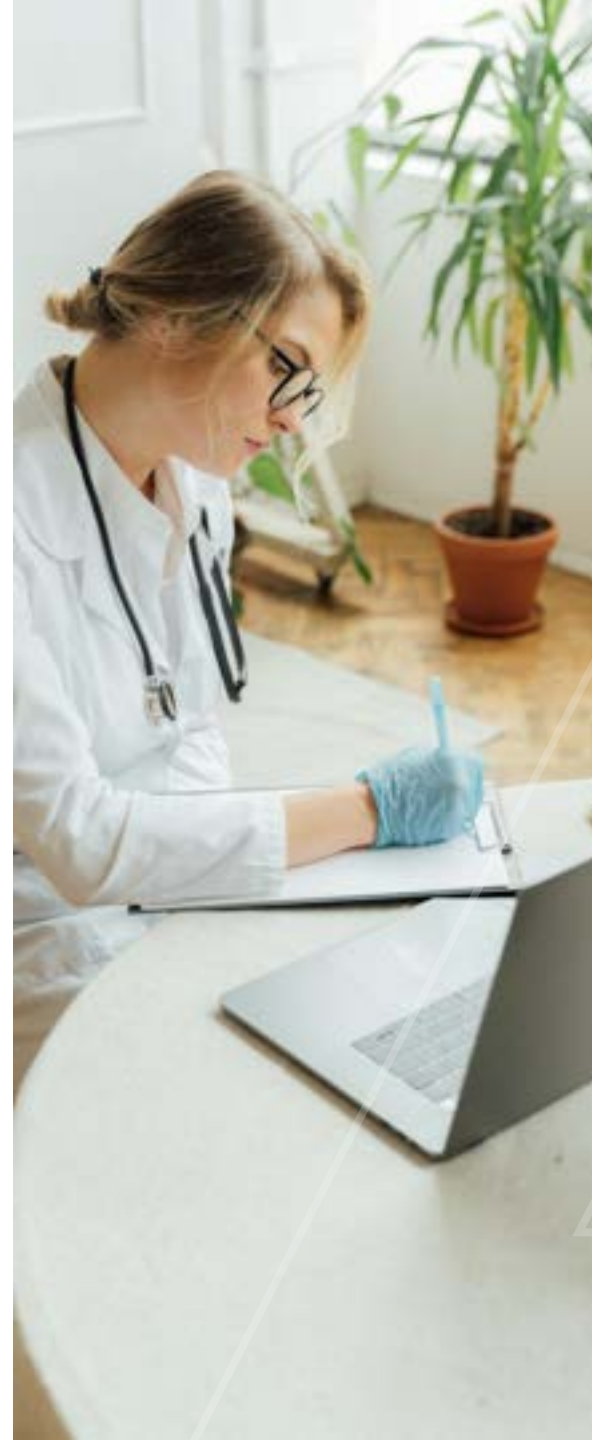
Modernising What Matters

How AI is transforming traditional operations in
Defence, Healthcare and Critical Infrastructure



Ben Schultz

Head of AI, EGM of Critical
Infrastructure







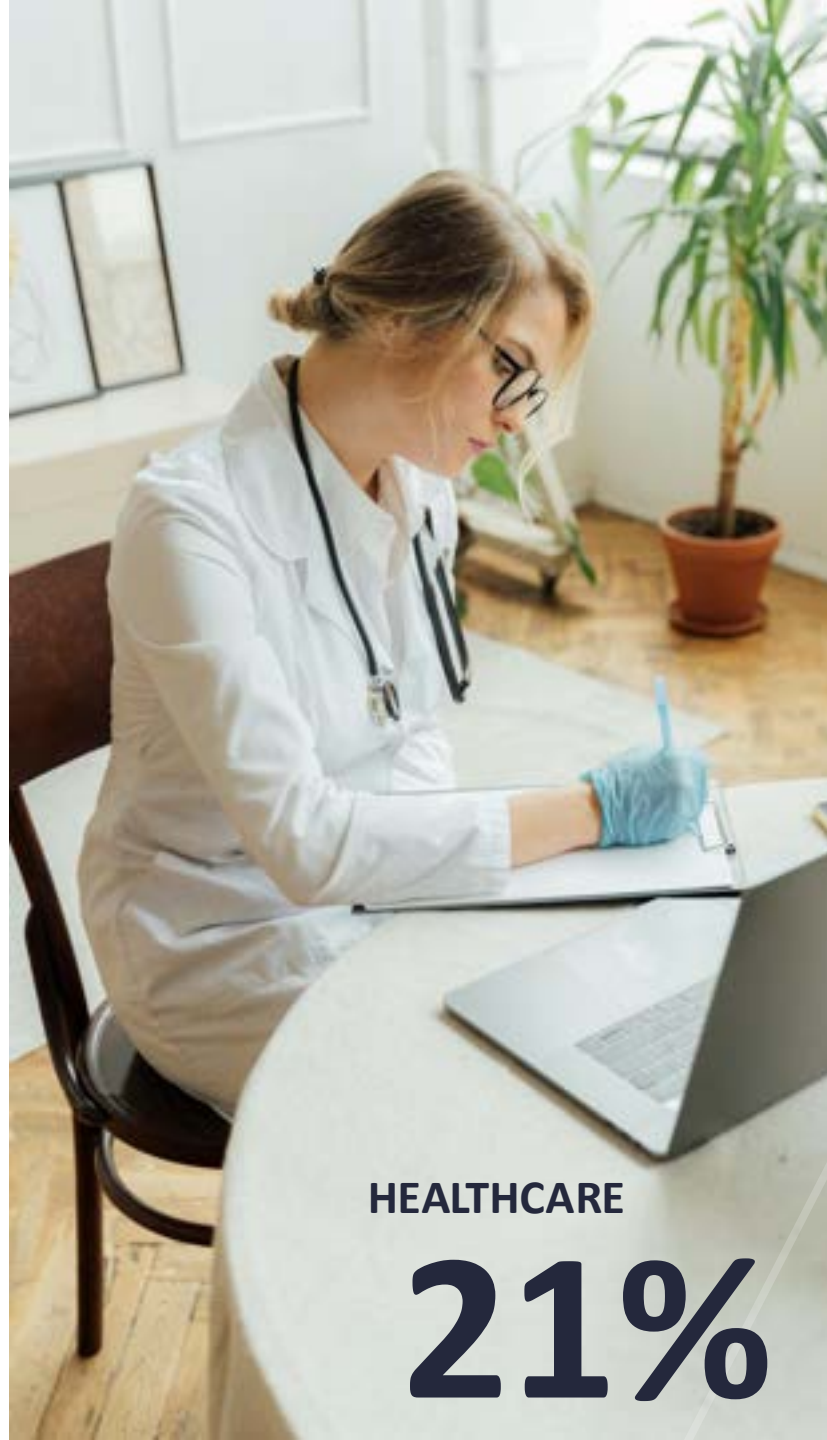




DEFENCE

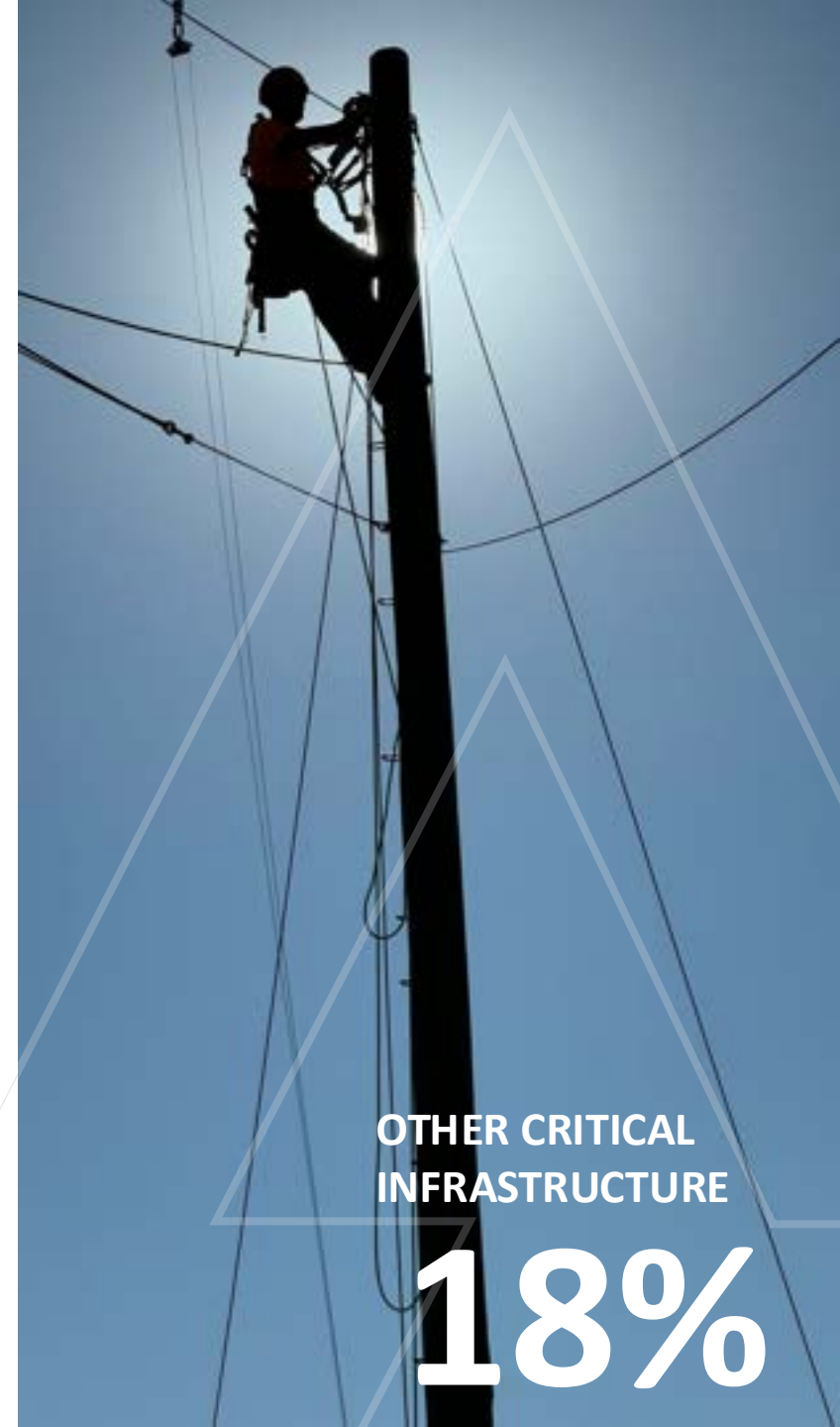
TOTAL AI
ADOPTION IN
AUSTRALIA?

10%



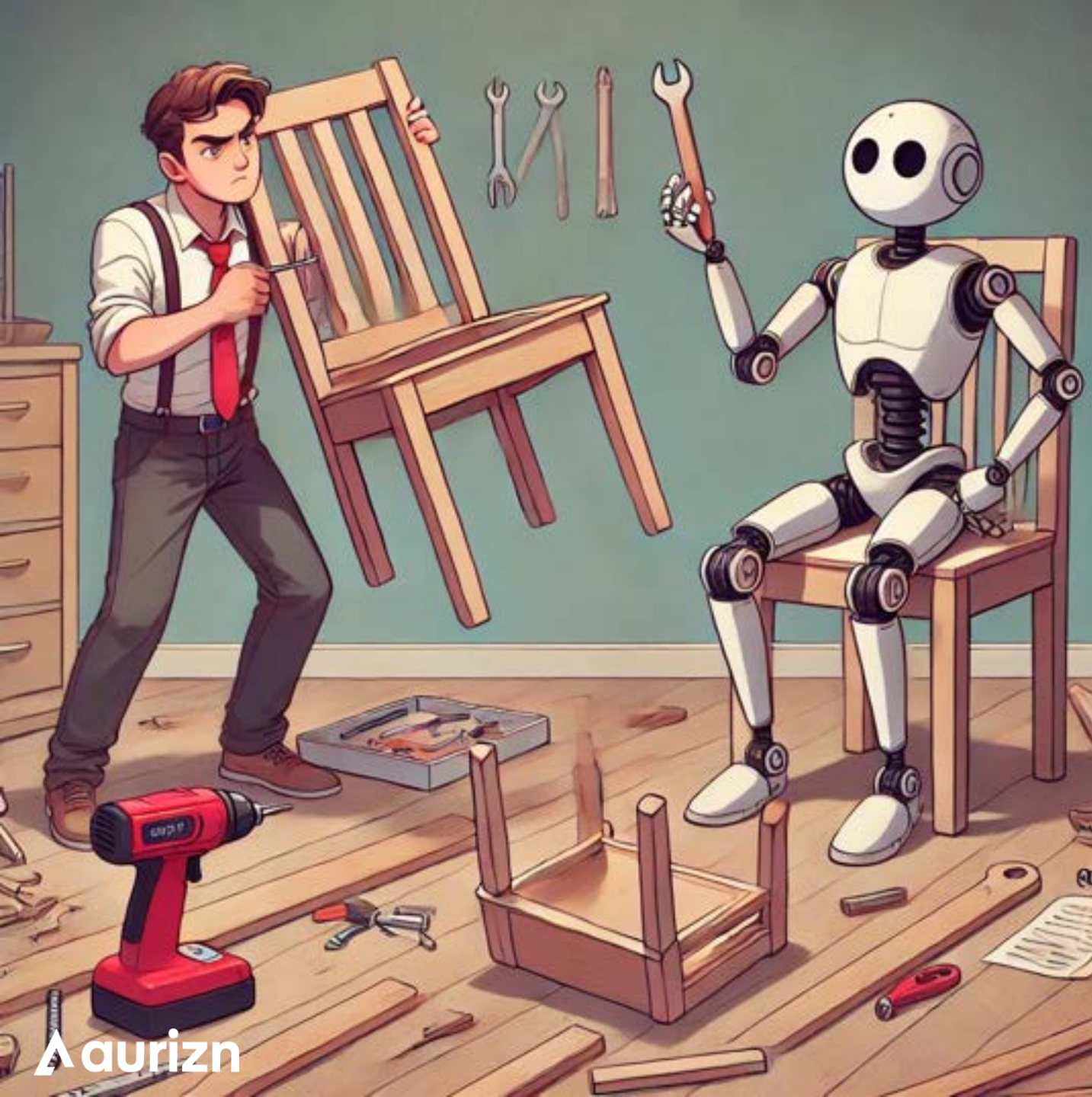
HEALTHCARE

21%



OTHER CRITICAL
INFRASTRUCTURE

18%



Whatever you're best at,
you're probably **better than
AI.**

But are we always at our best?

Effects of Total and Partial Sleep Deprivation on Reflection Impulsivity and Risk-Taking in Deliberative Decision-Making

This article was published in the following Dove Press journal:
Nature and Science of Sleep

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Marco Lauriola²
Daniela Tempesta¹
Pierpaolo Calanna³
Valentina Socci¹
Luigi De Gennaro⁴
Michele Ferrara¹

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Study Objectives: To evaluate the effects of total and partial sleep deprivation on reflection impulsivity and risk-taking in tasks requiring deliberative decision-making processes.

Participants and Methods: Seventy-four healthy young adults were selected to participate in two independent experiments, each consisting of a crossover design. In Experiment 1, 32 participants were tested after one night of regular sleep (RS), and after one night of total sleep deprivation (TSD). In Experiment 2, 42 participants were tested following five nights of RS and after five nights of partial sleep deprivation (PSD), implying five hours of sleep per night. In both the experiments, two deliberative decision-making tasks were administered, involving different decision-making constructs. The Mosaic Task (MT) assessed reflection impulsivity, the tendency to gather information before making a decision. The Columbia Card Task cold version (CCTc) evaluated risk-taking propensity in a dynamic environment.

Results: Unlike TSD, PSD led to an increment of reflection impulsivity and risk-taking. Nevertheless, analyses taking into account the individuals' baseline (RS) performance showed consistent results between the two experimental sleep manipulations. Participants who gathered more information to make decisions in the MT when well-rested, then relied on less evidence under sleep loss, and more cautious participants in the CCTc tended to make riskier decisions.

Conclusion: Results pointed to differential consequences of sleep deprivation depending on the habitual way to respond during decision-making involving deliberative reasoning processes. Results were interpreted according to a putative interaction between sleep loss effect and individual difference factors.

Keywords: sleep deprivation, sleep restriction, reflection impulsivity, risk-taking, deliberative decision-making, individual differences

Sleep deprivation leads to riskier, less evidence-based decisions, even in typically cautious individuals.

How to Save Yourself From “Information Overload”

by Lynne Cazaly

September 20, 2021



HBR Staff/Getty Images/Photo: Steve

Minimizing Risk in the Workplace

Using a hierarchy of controls as a response framework, companies can take a range of actions — weighing the effectiveness and financial impact of each — to combat Covid-19 in their buildings.



Note: “PPE” stands for personal protective equipment.
Source: Joseph Allen and John Macomber

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How AI Can Help Leaders Make Better Decisions Under Pressure

by Mark Purdy and A. Mark Williams

October 26, 2023



Illustration by Beatrice Casotti

Summary. More and more businesses are turning to AI-powered technologies to help close the data-insight gap and improve their decision-making capabilities in time-critical, high-pressure situations. These technologies encompass a wide range of tools, including virtual assistants, virtual and augmented reality, process discovery, task mining, and an array of data analytics and business intelligence platforms. Recently, there has been tremendous interest in generative AI or large-language models, a whole class of algorithms that are able to ingest vast tracts of data — text, numbers, software code, images, videos, formulas, and so on — understand their probabilistic structure, and create summaries, answers, simulations, and alternative scenarios based on these data. This article addresses three critical questions faced by decision-makers in using these technologies: 1) In what contexts are AI decision-making technologies likely to be beneficial? 2) What are some of the challenges and risks of using these technologies? and 3) How can business leaders effectively benefit from these technologies while mitigating the risks?

[close](#)

Technology And Analytics

How Generative AI Will Transform Knowledge Work

by Maryam Alavi and George Westerman

November 07, 2023



HBR Staff; Nenov/Getty Images; Midjourney

Decision Support

The most transformational digital change to operations in Defence, Healthcare and Critical Infrastructure.

APPROACH

ROLE OF AI

Decision Support

The most transformational digital change to operations in Defence, Healthcare and Critical Infrastructure.

APPROACH

DESCRIPTIVE
Situational
Intelligence

What happened?

ROLE OF AI

Helps me
understand

Decision Support

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What happened?

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PREDICTIVE Prediction Engines

What will happen?

Supports
my decision

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APPROACH

ROLE OF AI

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Situational Intelligence

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Helps me understand

PREDICTIVE
Prediction Engines

What will happen?

Supports my decision

PRESCRIPTIVE
Decision Automation

What should I do now?

Tells me what to do



Immersive Analytics

Descriptive understanding to provide situational awareness.

Proactive Remote Asset Management

Predicting the heights and growth rates of vegetation to inform maintenance scheduling, using satellite imagery and AI.

A laboratory setting with a microscope, a pipette, and a rack of test tubes. The background is slightly blurred, showing various lab equipment and a clean, white surface.

Personalised Health Recommendations

Streamlining **prescriptive** decision support with GenAI.

Clinton Hills Medical Record

Latest Blood Test Report				
Lab Blood Test Reports				
Recommendation				
Generated Reports				
Hematology				
Test	Unit	Normal Range	2024-01-04	2023-01-04
Hemoglobin	g/dL	11.5-16	14.3	16.2
MCV	fl	78-99	90	89
MCH	pg	27-33	26	29
Hct		<50	44	48
WBC	x10^9/L	4-11.0	3.9	4.9
PLATELET COUNT	x10^9/L	150-400	204	162
Renal function				
Test	Unit	Normal Range	2024-01-04	2023-01-04
UREA	mmol/L	2.8-7.2	4.9	5.6
CREATININE	umol/l	FEMALE: 45-84 / MALE: 50-120	48	61
eGFR	ml/min/1.73m2	> 60	>90	123
URIC ACID	umol/l	155-357 (208)	321	335



Generated in
Amazon Bedrock

Your Personal Recommendations

- Diet
1.

Increase Iron-Rich Foods: Low MCH can be related to iron deficiency. Include foods such as lean red meat, poultry, fish, lentils, beans, and spinach.
2.

Vitamin B12 and Folate: Essential for red blood cell production. Include sources like eggs, dairy products, fortified cereals, leafy greens, and legumes.
3.

Vitamin C: Helps in the absorption of iron. Consume citrus fruits, berries, tomatoes, and bell peppers.
4.

Zinc and Selenium: Important for immune function. Include nuts, seeds, shellfish, and whole grains.
5.

Probiotics: Support gut health and immune function. Include yogurt, kefir, sauerkraut, and kimchi.
6.

Avoid Excessive Alcohol and Processed Foods: These can negatively impact both iron levels and immune function.
- Exercise
1.

Moderate Exercise: Engage in moderate-intensity exercises like brisk walking, swimming, or cycling for at least 30 minutes most days of the week. Avoid overtraining as it can suppress the immune system.
2.

Strength Training: Incorporate weight training 2-3 times a week to improve overall health and muscle mass.
3.

Yoga and Mindfulness: Practices like yoga and meditation can help reduce stress, which is beneficial for immune function.
- Sleep
1.

Adequate Sleep: Aim for 7-9 hours of quality sleep per night. Sleep is crucial for immune function and overall health.
2.

Sleep Hygiene: Maintain a regular sleep schedule, create a comfortable sleep environment, and avoid screens before bedtime.



Clinton Hills Medical Record

Latest Blood Test Report Lab Blood Test Reports Recommendation Generated Reports

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**How willing are
we to trust AI?**

39%

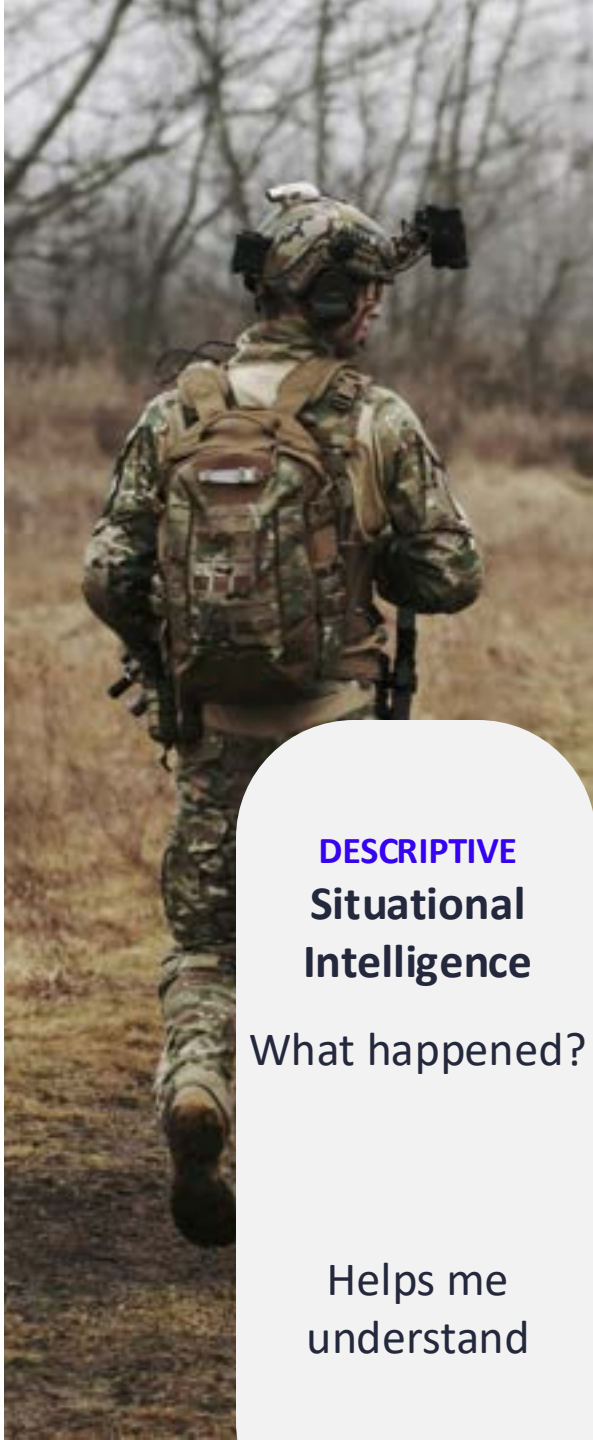
of people are trusting.

Modernising What Matters



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