

2026 OECD FORUM ON DUE DILIGENCE IN THE GARMENT & FOOTWEAR SECTOR

SIDE SESSION

Keeping workers safe during periods of extreme heat: Lessons and recommendations from a study to understand and mitigate extreme heat impacts on workers in apparel production



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ETI is a leading alliance of trade unions, NGOs and companies, working together to advance human rights in global supply chains.

Who we are



NGOs

Our NGOs bring global presence, specialist insights, tools and resources to ETI's membership.



Businesses

Our company members' supply chains span many sectors and include retailers, brands, suppliers and manufacturers.



Trade unions

Our trade union members represent over 200m workers globally, in all countries where free trade unions can operate.

Vision | A world of work where everyone's human rights are protected and respected.

Mission | To advance human rights in global supply chains through collaboration between businesses, trade unions, and NGOs. We work to address systemic barriers, strengthen respect for human rights, and drive lasting change.

History

Pioneering brands, NGOs and trade unions established ETI in 1998 to promote fundamental human rights in global supply chains.

Based on the ILO core conventions, the **ETI Base Code** was developed, turning international labour standards into a practical framework for business.



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Heat Stress Intervention findings India



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Overview data generation

- A total of 400 workers wore CORE thermal sensors for 1 working day
- Each worker also conducted a 10-15-minute questionnaire at home, by phone
- Workers from each section of the factory in each factory building were requested to participate

Study details

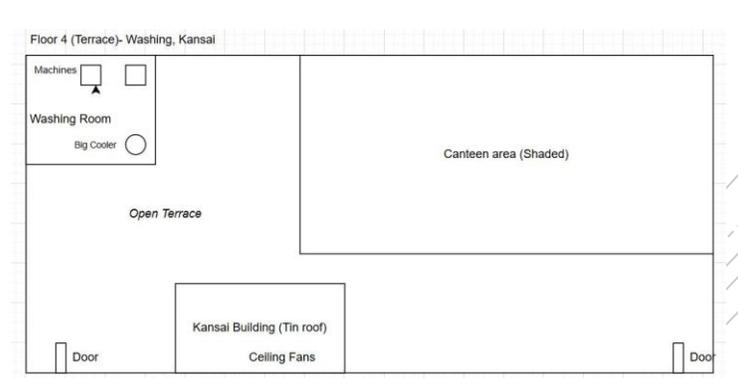
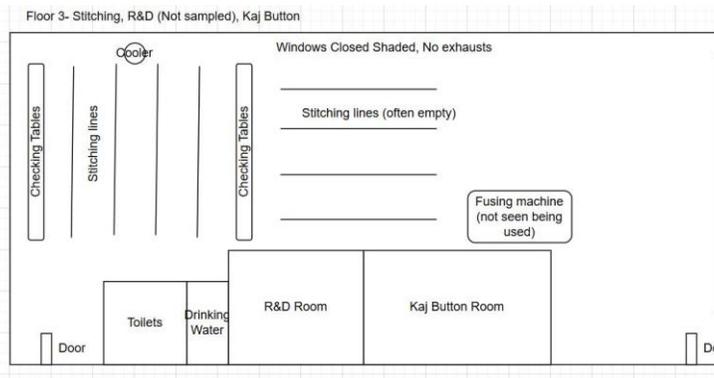
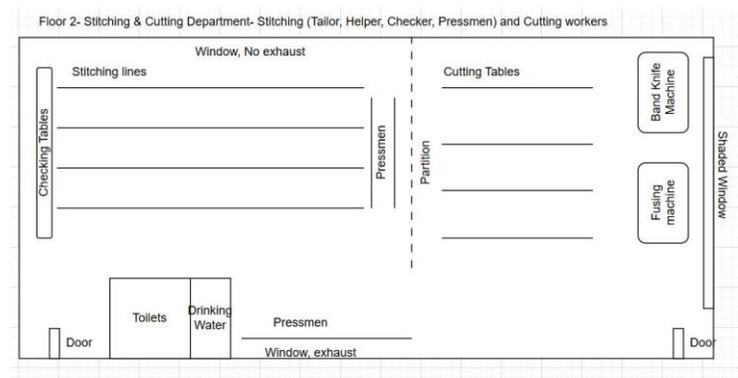
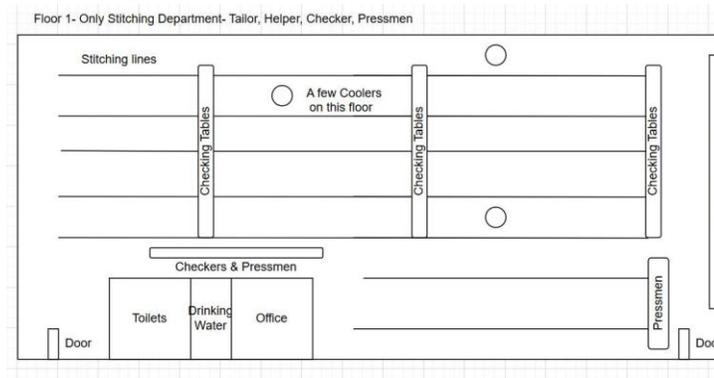
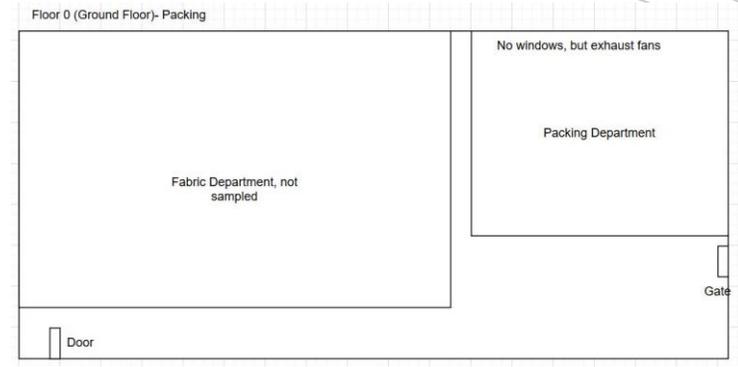
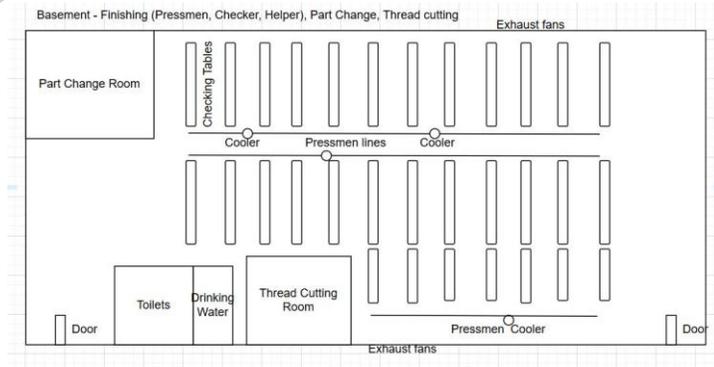
- The study took place in two phases:
- Phase 1: Heat stress testing
 - 160 workers were assessed for 5 days in order to understand who is most vulnerable to heat stress
- Phase 2: Testing recommendations
 - Three recommended interventions were implemented for testing:
 - Fans provided
 - Heat optimised working schedule
 - Target based work
 - 40 workers were assessed for a further 6 days in order to test the effectiveness of the recommendations. Each day, workers were divided into two groups: control and intervention, with the two groups swapping after 1 day.
 - Each intervention was thus tested for 2 days

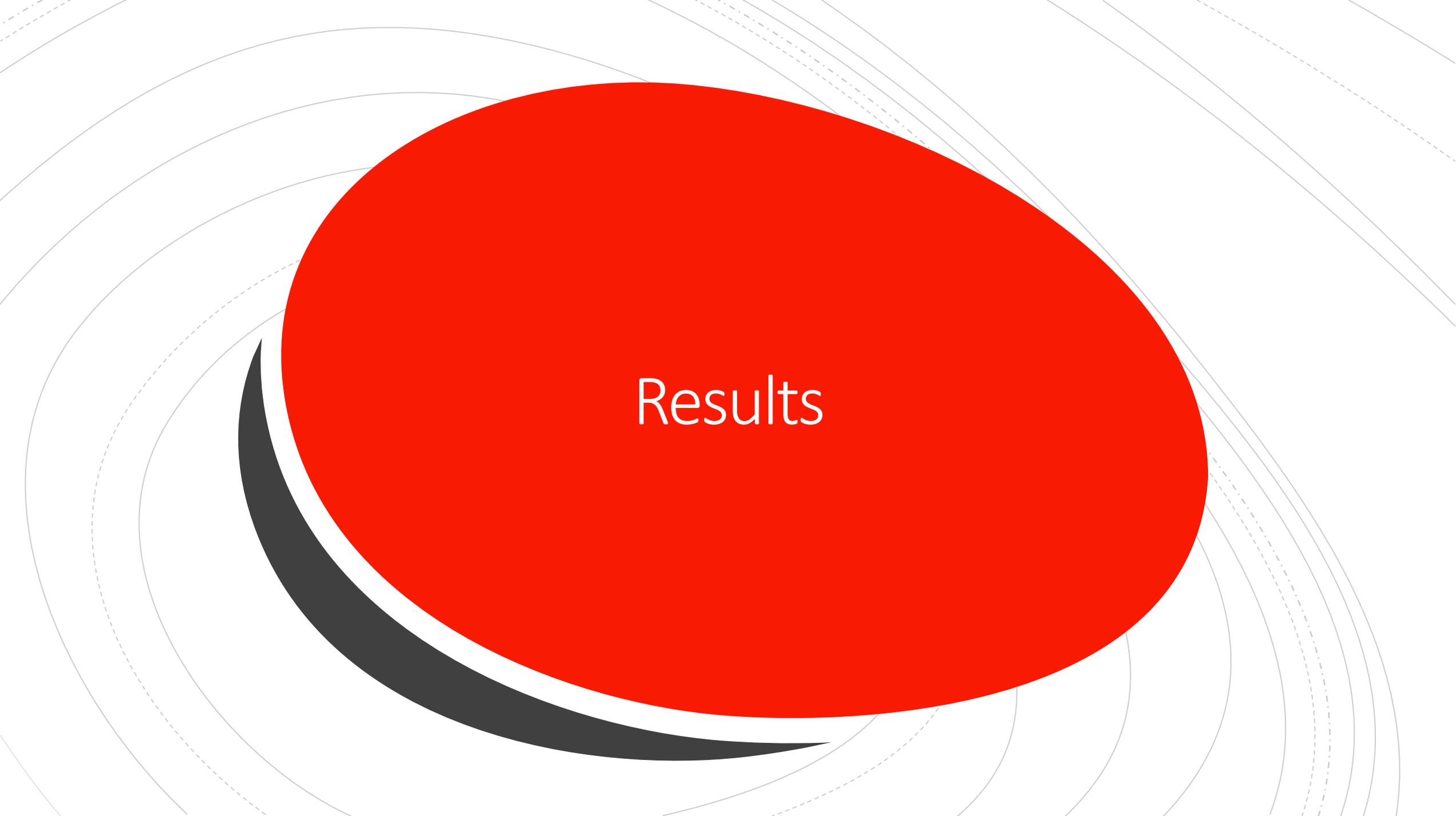
Phase 1

- In Phase 1 workers were selected via a sample designed to represent the factory both in terms of working sectors and physical locations

Job Role	Floor	Total	Sampled Phase 1
Stitching Tailor	1,2,3	374	67
Part Change	-1 (Basement)	8	6
Kaj Button	3	21	5
Finishing Checker	-1	42	12
Stitching Checker	1,2,3	28	7
Finishing Helper	-1	17	5
Stitching Helper	1,2,3	55	15
Other Helper	0,3	7	0
Finishing Pressman	-1	31	12
Stitching Pressman	1,2,3	18	10
Cutting	2	11	5
Finishing Threadcutting	-1	23	7
Washing	4	7	4
Packer	0	16	5
All workers		658	160

Sample distribution



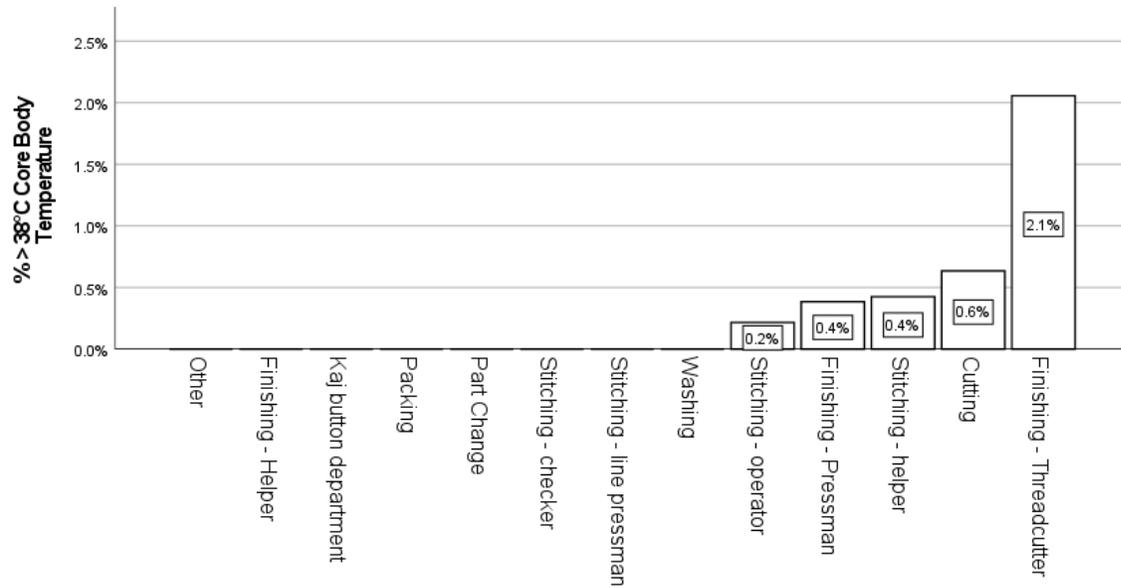
The image features a large, vibrant red oval centered on a white background. Inside the oval, the word "Results" is written in a clean, white, sans-serif font. The background is decorated with several thin, light grey concentric circles that create a subtle ripple effect. A thick, dark grey, curved swoosh or brushstroke element is positioned to the left and bottom of the red oval, partially overlapping it. The overall design is modern and minimalist.

Results

Heat stress: Overall

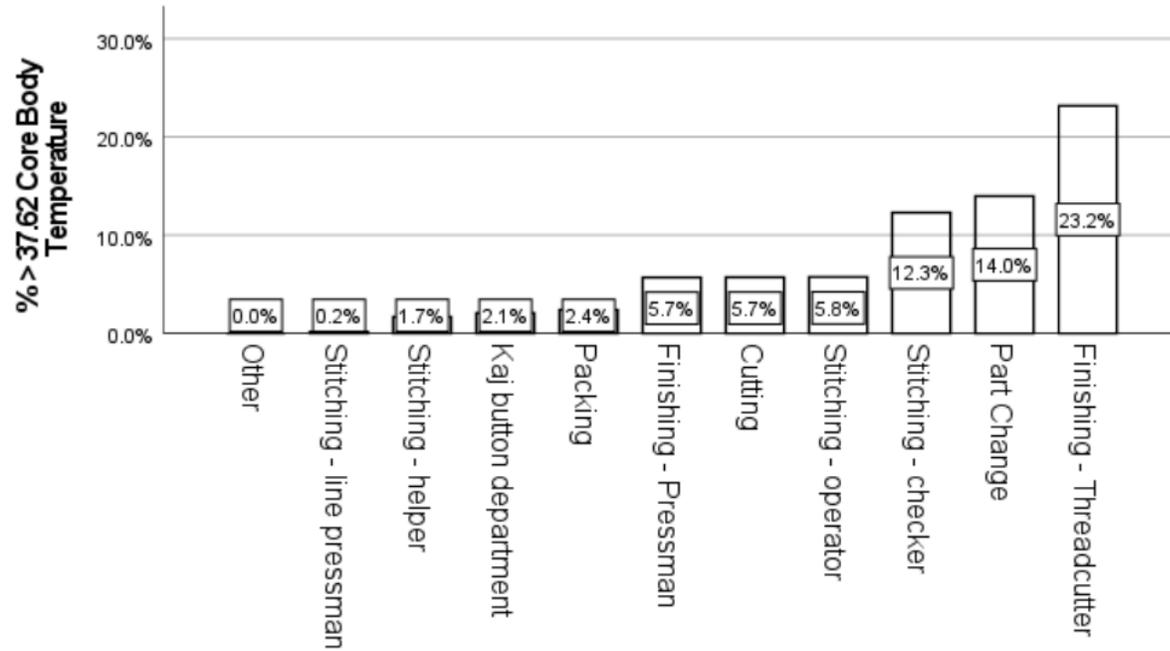
- Based on the results of the study, the data indicate that workers at the facility spend on average 1.5% of working time at unsafe core temperatures above 38°C
- In addition, 6.2% of working minutes were recorded as being above 37.62°C, determined outside normal range of core temperature for subjects below 60 years of age who constitute 99.6% of sample (Geneva et al.2019)
- This is comparable to the averages observed in Cambodia during the hot season. We do not currently have comparative data for other factories in India.

Heat stress by Sector: over 38°C



- As shown to the left, the proportion of working minutes at unsafe temperatures varies from 0% in the majority of sections, to 2.1% in the **finishing – threadcutter** department

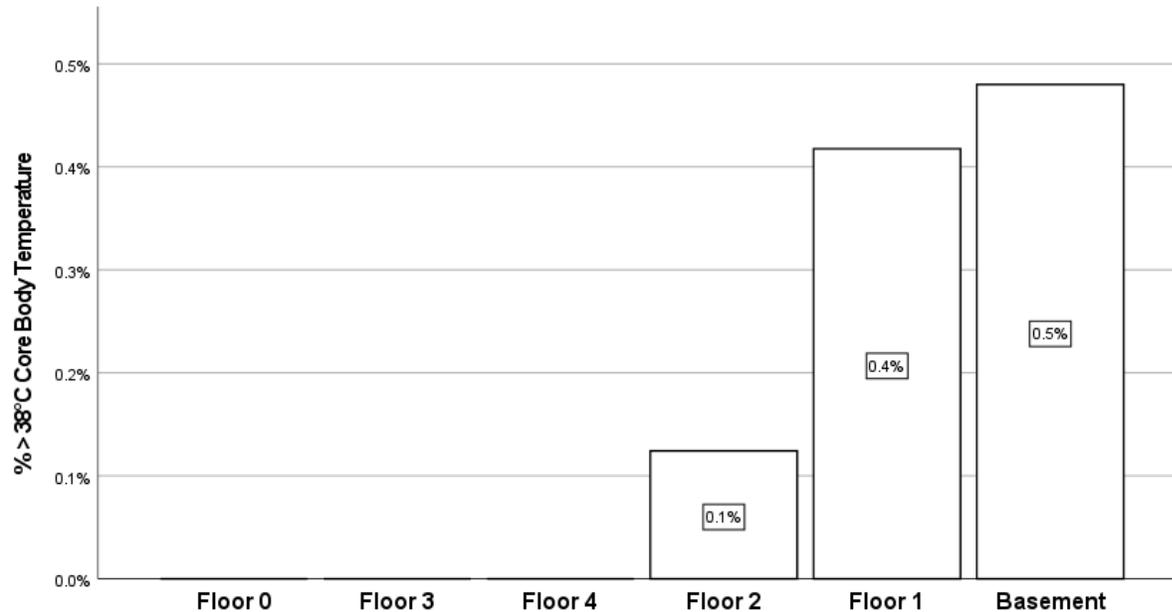
Heat stress by Sector: over 37.62°C

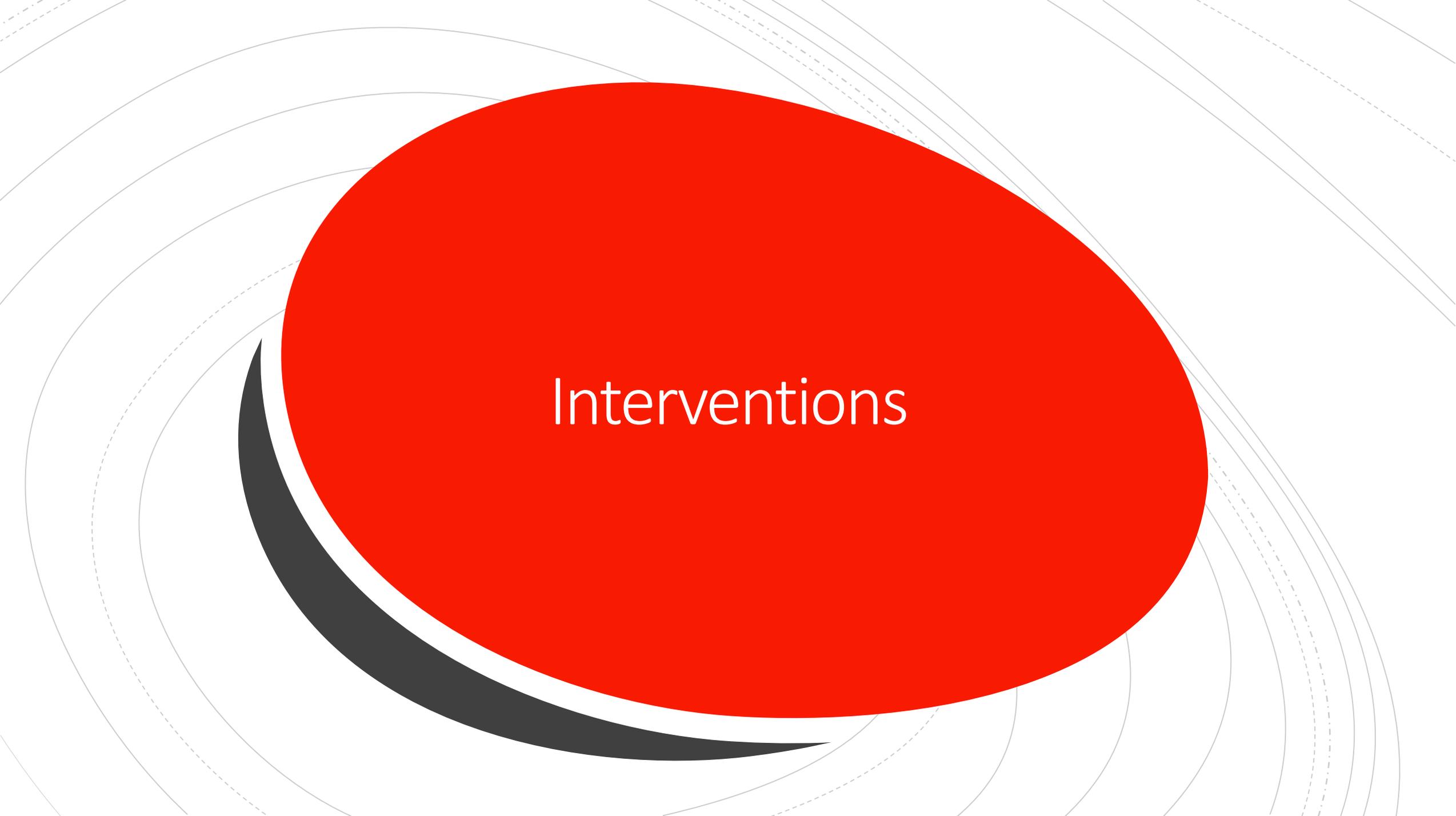


- As shown to the left, the proportion of working minutes at elevated core temperatures is significantly higher than those above 38°C
- Workers in the **Finishing - Threadcutter** department spend 23.2% of their working time at elevated temperatures, indicating a high vulnerability to heat stress during the hottest part of the year

Heat stress by floor

- As shown to the left, the proportion of working minutes at unsafe temperatures varies between floors
- Floor 1 and the Basement exhibited the highest proportion of working minutes at unsafe temperatures, at 0.4% and 0.5% of working minutes respectively





Interventions

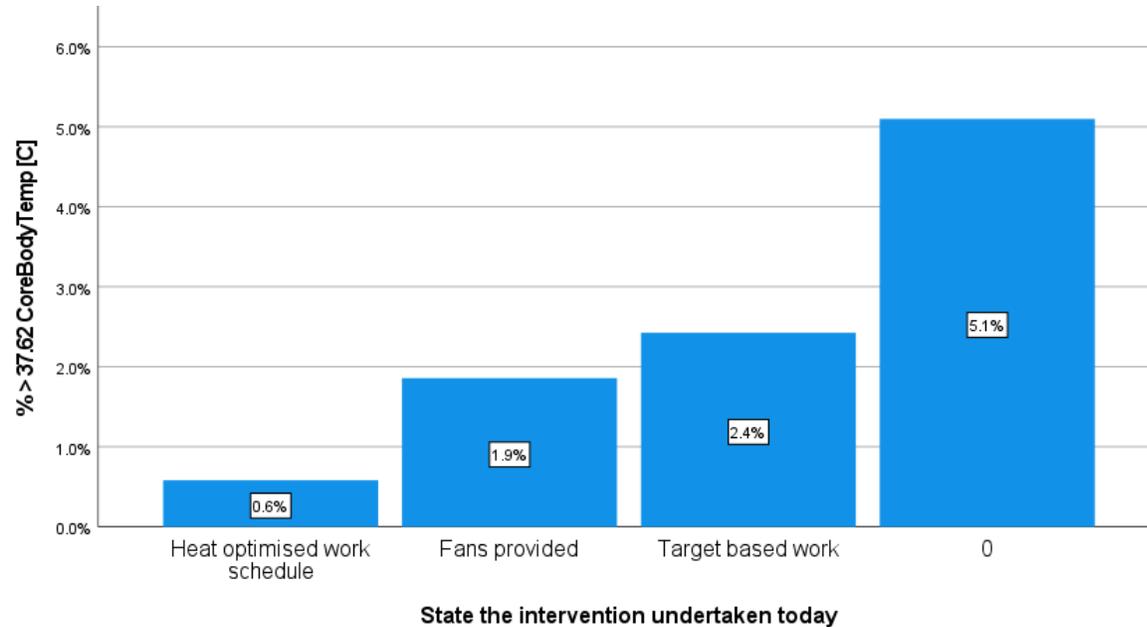
Interventions tested

- The research team tested three interventions in each section of the factory. The details of these interventions are as follows:
 - **Fans provided.** This intervention involved providing additional floor standing fans to all workers who do not already have them as part of their standard working conditions
 - **Heat optimised working schedule.** As shown in Figure 4, this intervention involved controlling workers' schedule to minimise work during the hottest part of the day, as shown to the right
 - **Target based work.** This intervention assigns workers their target for the day, with no other intervention from a foreman. When a worker has met their target, they are allowed to leave work.

Figure 4

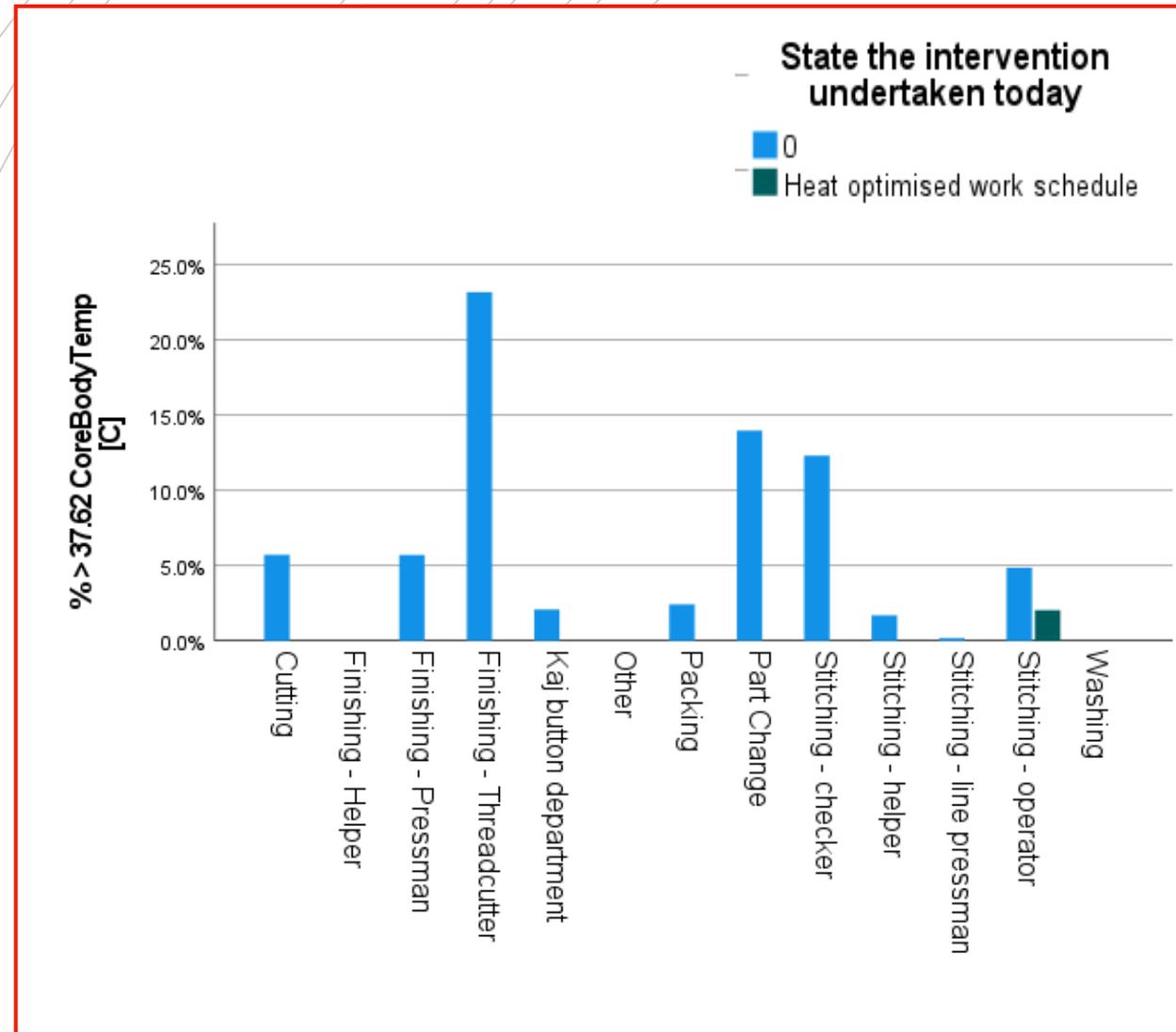
7-8am
NO BREAK
8-9am
NO BREAK
9-10am
NO BREAK
10-11am
15 minute break
11-12am
BREAK
12-1pm
BREAK
1-2pm
15 minute break
2-3pm
15 minute break
3-4pm
15 minute break
4-5pm
15 minute break

Interventions: Overall effectiveness



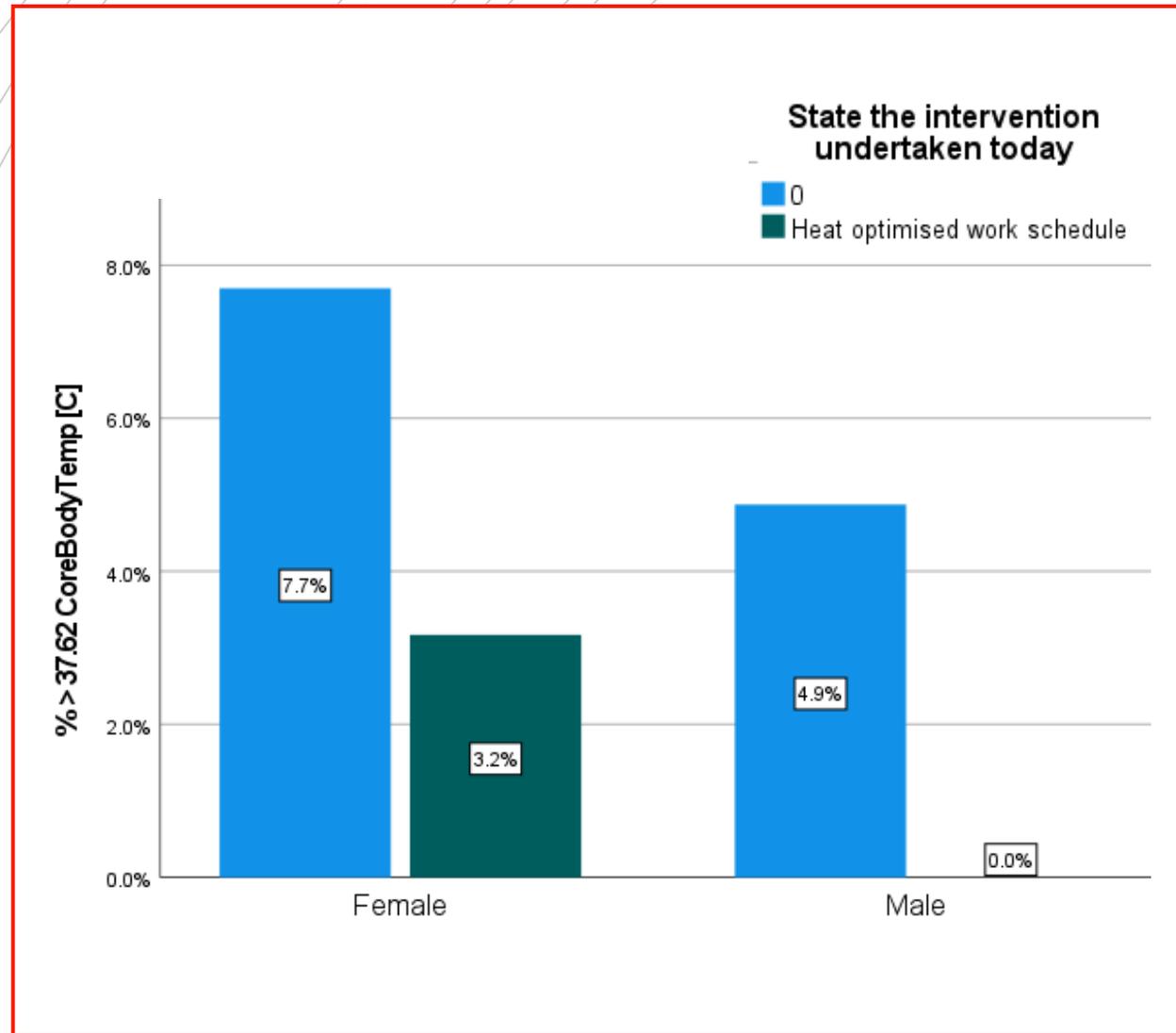
- On aggregate, all three interventions achieved significant reductions in the proportion of working minutes at unsafe temperatures, relative to the initial survey
- However, Heat optimized working schedule saw the greatest overall reduction in heat stress

Interventions: Effectiveness of Heat-optimised work schedule



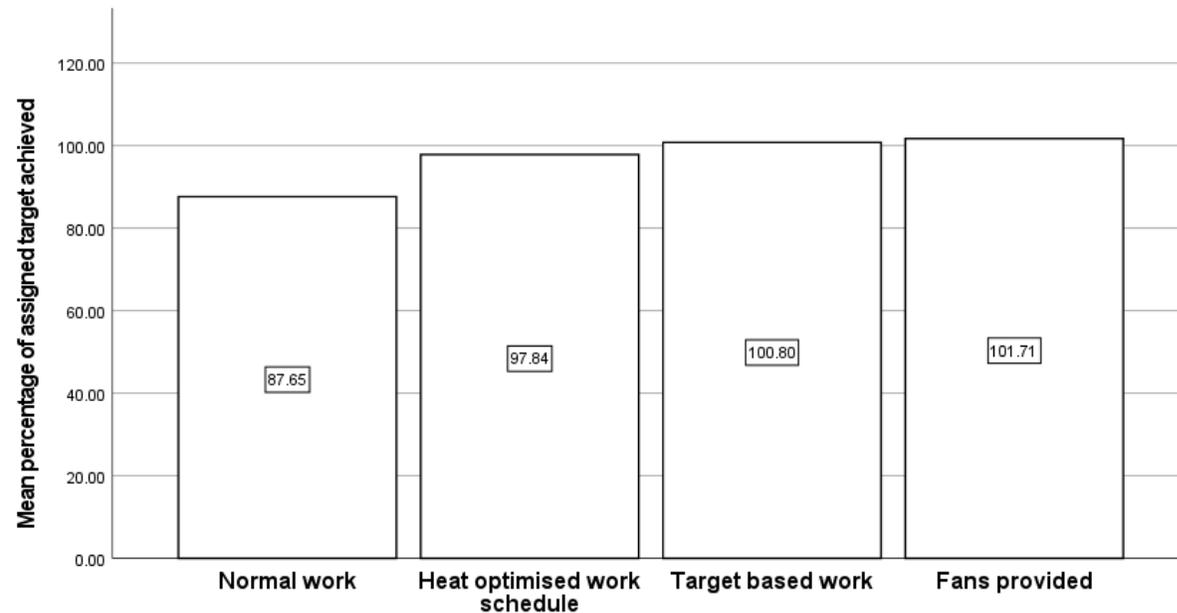
- A closer look at the data shows that the use of a heat optimised work schedule reduces the proportion of working minutes above 37.62°C in every sector of the factory

Heat stress by gender- Heat optimised work schedule



- As shown to the left, women overall had a higher level of heat stress than men. In the case of both men and women, the heat optimised working schedule was effective in reducing the proportion of time spent above 37.62 temperature.

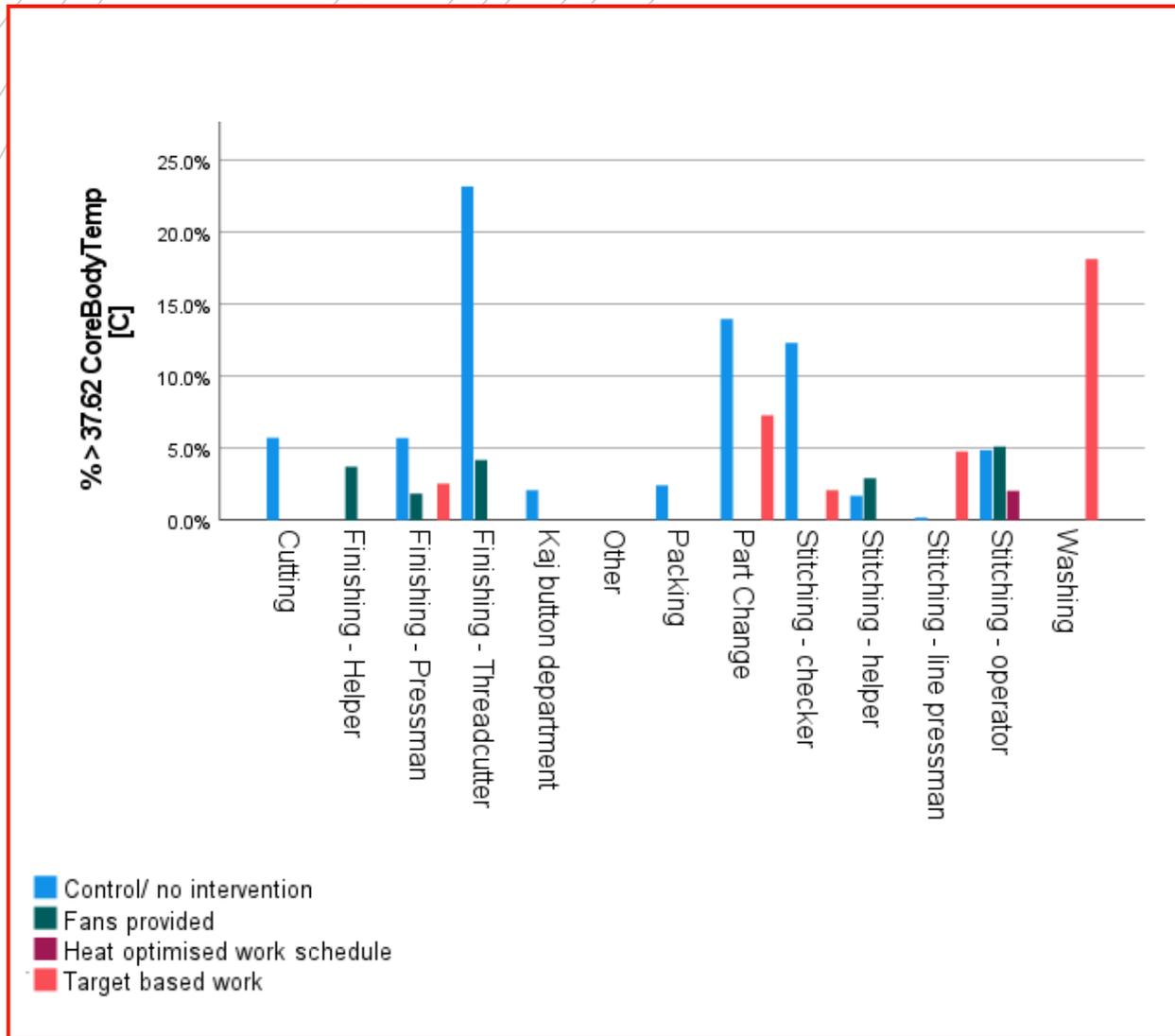
Interventions: Impact on Productivity



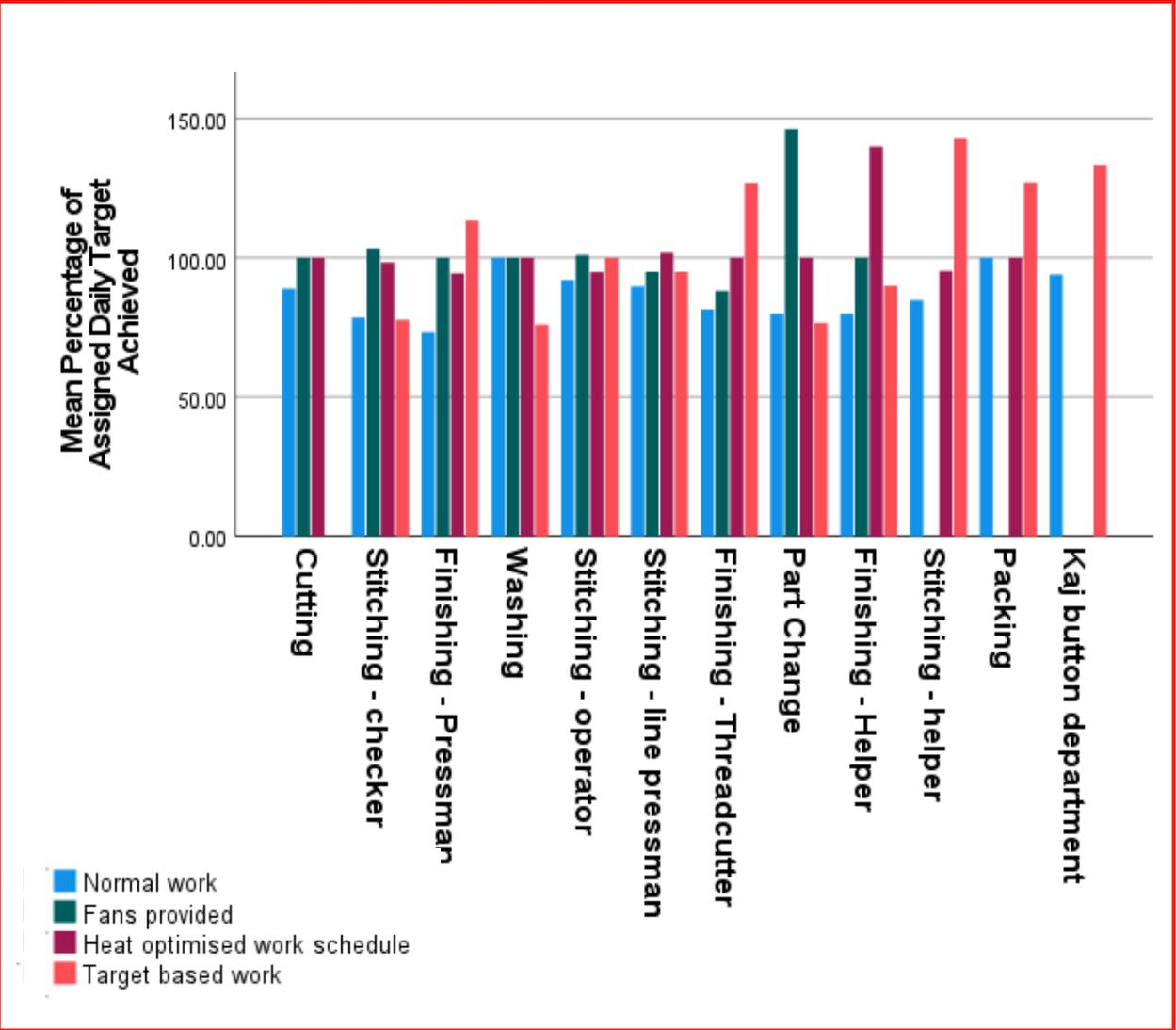
- On aggregate, all three interventions achieved significant increases in productivity versus normal work
- The addition of fans achieved the greatest increase in productivity, at 16%.
- Notably, target-based work achieved an increase in productivity of 15%, without any additional costs

Heat stress: by Sector

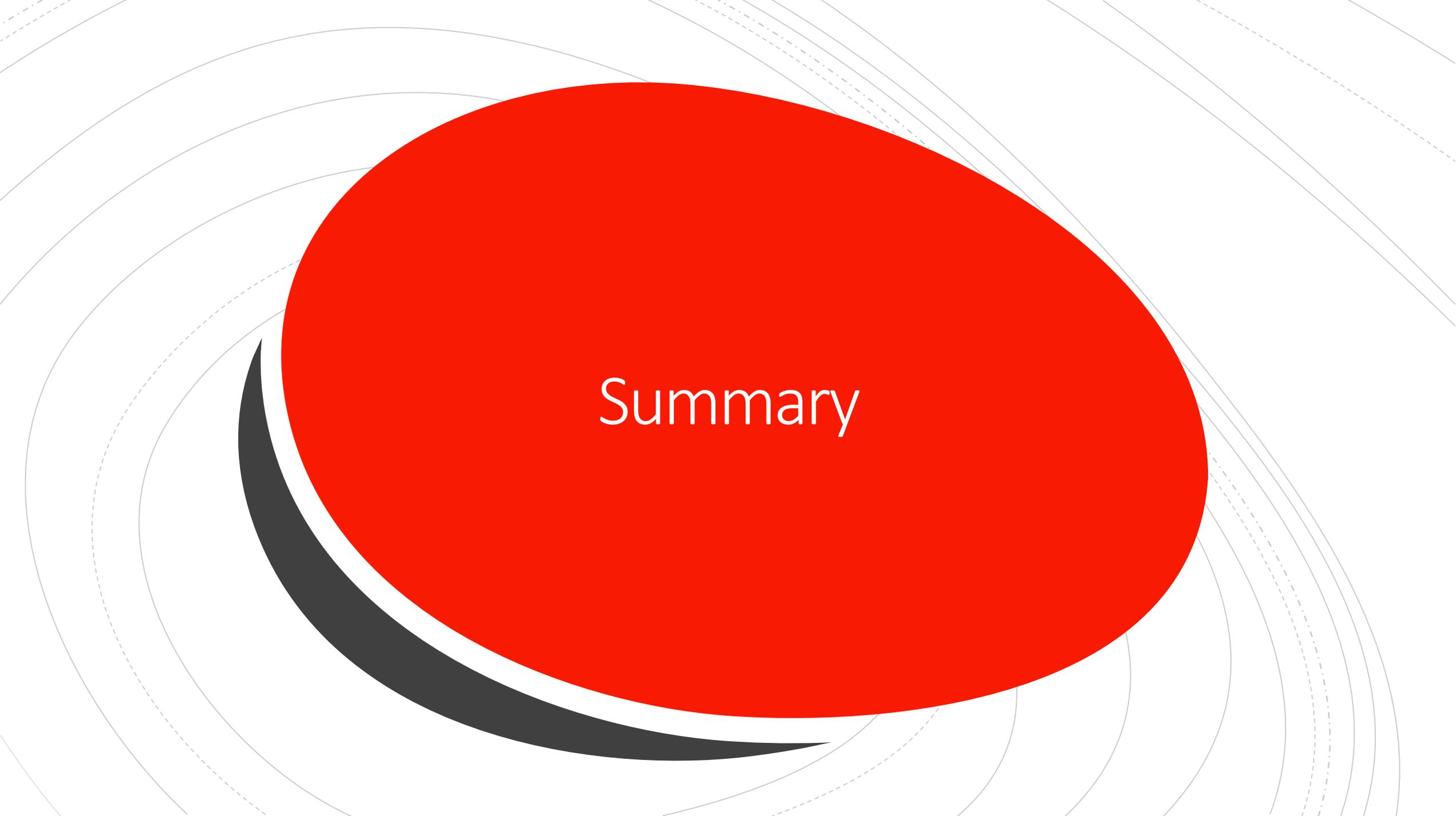
- As shown in the figure to the left, all three interventions were effective in the 4 sections that evidenced the greatest heat stress
- In the stitching – operator section, 2 out of 3 interventions were effective, but provision of fans marginally worsened heat stress



Productivity by Sector



- As shown to the left, all interventions improved productivity, with the exception of the washing sector, where productivity was unaffected or reduced



Summary

Summary of recommendations

- Based on the data generated, we recommend the following interventions be undertaken:
- Overall, all three interventions were effective. **Target-based work** provides an excellent balance between productivity gain and reduction in heat stress. **Heat Optimised Working Schedule** was especially effective in the most heat stressed sectors.
- These should be applied in the following high risk sectors: **finishing – threadcutter, cutting, stitching – helper, finishing – pressman, and stitching – operator**
- Our overall recommendation is that, whilst both fan provision and target-based work are effective in reducing heat stress, target-based work has a greater impact on improving productivity.
- Thus, **target-based work should be preferred where this is the priority**
- In high-risk sectors, **Heat Optimised Working Schedule** is very effective



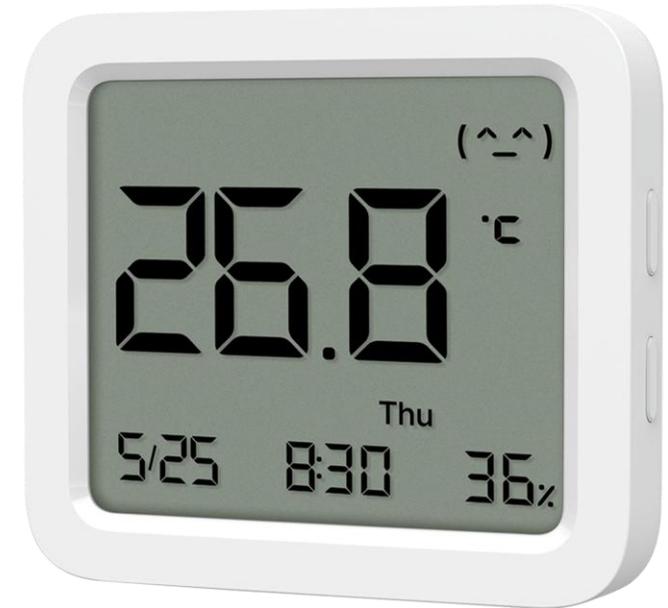
Recommendations

Training on Hydration

- **Continuous Drink Intake:** Workers must be encouraged to drink water regularly throughout their shift. Sugary drinks and Soda can worsen dehydration.
- **Electrolyte:** Sweating leads to water loss, but also loss in salt and electrolytes. Keep ORS Solution at hand.
- **Dietary Support:** Encourage the consumption of foods with high water content, such as fruits and green salad vegetables.
- **Buddy System:** Train supervisors and workers to recognize signs of heat fatigue, ensuring immediate first aid and fluid replacement when symptoms occur.
- **Outside of work Recovery:** Educate workers on the importance of "day-to-day recovery" outside work shift to avoid cumulative heat stress.

Monitoring Workspace through Heat Humidity Monitors- Calculating Heat Index

Calculate the Heat Index through a Online Calculator, such as [Heat Index Calculator](#) on Calculator.net



		Rest (115 W)	Light (180 W)	Moderate (300 W)	Heavy (415 W)	Very heavy (520 W)
Sun	Acclimatized	43	41	38	35	32
	Unacclimatized	37	35	32	29	26
No Sun	Acclimatized	46	44	41	38	35
	Unacclimatized	41	39	36	33	30

Table 4.1.4: Heat index (°C) exposure limits based on work effort (average metabolic rate) categories with reference metabolic rate for each category. Source: See Garzon-Villalba et al. (258)

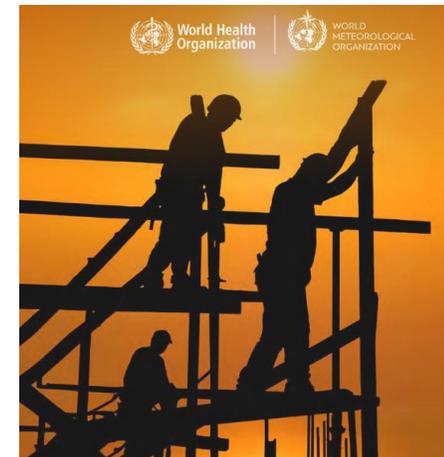
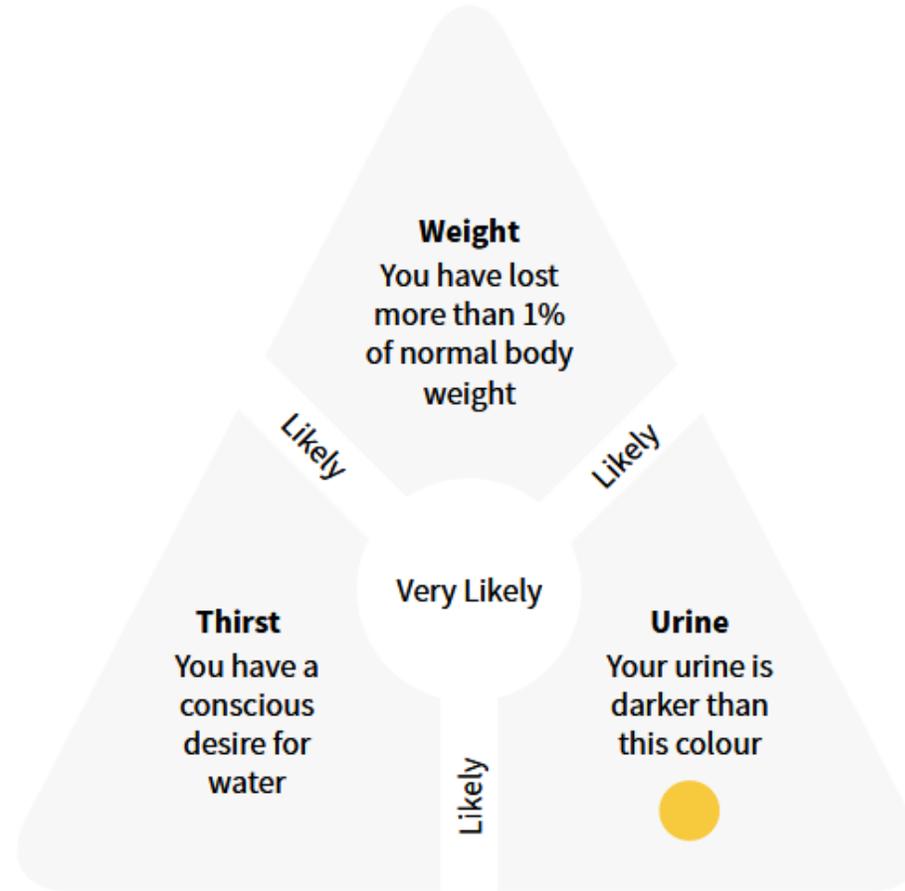
जानें कि आप हाइड्रेटेड हैं या नहीं

सामान्य

मूत्र का रंग



डिहाइड्रेटेड हो सकते हैं, अभी पानी पीजिए





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Thank you

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