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# Better Fatigue Management with Rostering Automation

Enhancing Safety, Productivity, and  
Employee Well-Being in 24/7 Operations



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# INTRODUCTION

STAR



# Introduction

Fatigue is a common challenge in 24/7 operations, significantly impacting individual performance, team dynamics, and organizational safety. While individual and organizational fatigue management strategies are well-documented, the effects of fatigue on team functioning remain underexplored despite teams being essential to operations. Understanding and addressing team-level fatigue offers a promising path for improving overall fatigue risk management in such settings.

*Source: Banks, S., Landon, L. B., Dorrian, J., Waggoner, L. B., Centofanti, S. A., Roma, P. G., & Van Dongen, H. P. (2019). Effects of fatigue on teams and their role in 24/7 operations. Sleep medicine reviews, 48, 101216.*





# IMPORTANCE OF FATIGUE MANAGEMENT



# Importance of Fatigue Management

Fatigue management is essential in a 24/7 workforce because fatigue directly impacts safety, productivity, and employee well-being:



## Safety and Decision-Making

Fatigue impairs cognitive functions such as decision-making, problem-solving, and attention. Workers are more prone to accidents and errors, particularly in safety-critical industries like aviation, healthcare, and Air Traffic Control (ATC). Chronic sleep deprivation of less than six hours per night can impair cognition as significantly as staying awake for 48 hours.



# Importance of Fatigue Management



## Health and Well-Being

Fatigue contributes to a wide range of health issues, including obesity, diabetes, cardiovascular diseases, and mental health conditions like depression and anxiety. This reduces the workforce's long-term availability and increases absenteeism.



## Efficiency and Morale

A fatigued workforce shows reduced efficiency, lower morale, and increased turnover. Chronic fatigue leads to poor team relationships and career dissatisfaction, potentially causing early retirements and resignations.





**UNDERSTANDING  
FATIGUE IN 24/7  
OPERATIONS**

# Understanding Fatigue in 24/7 Operations

Fatigue is a significant challenge in 24/7 operations, such as Air Traffic Control (ATC), where high vigilance and decision-making are critical. The primary causes of fatigue include:

- **Extended Work Hours:** Long shifts, such as 12-hour schedules, lead to cumulative fatigue and reduced cognitive performance.
- **Circadian Rhythm Disruption:** Shift work disrupts the body's natural sleep-wake cycle, causing sleep deprivation and diminished alertness.
- **High Workload and Stress:** Physically and mentally demanding tasks increase the likelihood of fatigue, especially in high-pressure environments like ATC.



# Understanding Fatigue in 24/7 Operations

Understanding fatigue requires recognizing its multifaceted nature, including physiological, psychological and organizational factors. By addressing these root causes and promoting better scheduling practices and employee support, organizations can mitigate fatigue's impact, ensuring both safety and well-being in 24/7 operations.

Having explored the causes of fatigue, it is essential to understand its real-world consequences, which profoundly affect the workforce's safety, health, and productivity, especially in demanding industries like Air Traffic Control.



**REAL-WORLD  
CONSEQUENCES  
OF FATIGUE FOR  
THE WORKFORCE**



# Real-World Consequences of Fatigue for the Workforce

Fatigue has significant real-world consequences, both immediate and long-term:



## Accidents and Errors:

Workplace accidents are more likely due to reduced vigilance and impaired decision-making. **Fatigue is implicated in 13% of workplace injuries.**

*Source: Workplace Fatigue Is Nothing to Yawn At/ Illinois Gov*



# Real-World Consequences of Fatigue for the Workforce



## Health Risks:

Long-term fatigue increases risks of chronic conditions like diabetes, heart disease, and even certain cancers. Shift work has been classified as a probable carcinogen due to its circadian disruption.

Mental health issues like depression and anxiety are exacerbated by sleep disruption, **with sleep-deprived workers being 97% more likely to suffer from depression.**

Source: <https://www.nsc.org/workplace/safety-topics/fatigue/fatigue-reports>





# Real-World Consequences of Fatigue for the Workforce



## Productivity Loss:

Fatigue significantly impacts productivity by increasing the likelihood of workplace injuries, lowering efficiency, and diminishing employee well-being.

When **97% of workers have at least one fatigue risk factor, and over 80% have two or more, the compounded risks can lead to higher absenteeism, increased errors, and reduced output.**

Source: <https://www.nsc.org/workplace/safety-topics/fatigue/fatigue-reports>



# Real-World Consequences of Fatigue for the Workforce



## Increased Risk During Routine Tasks:

Fatigue impacts routine and less stimulating tasks, often leading to accidents post-shift or during commuting due to the relaxation of compensatory mechanisms.

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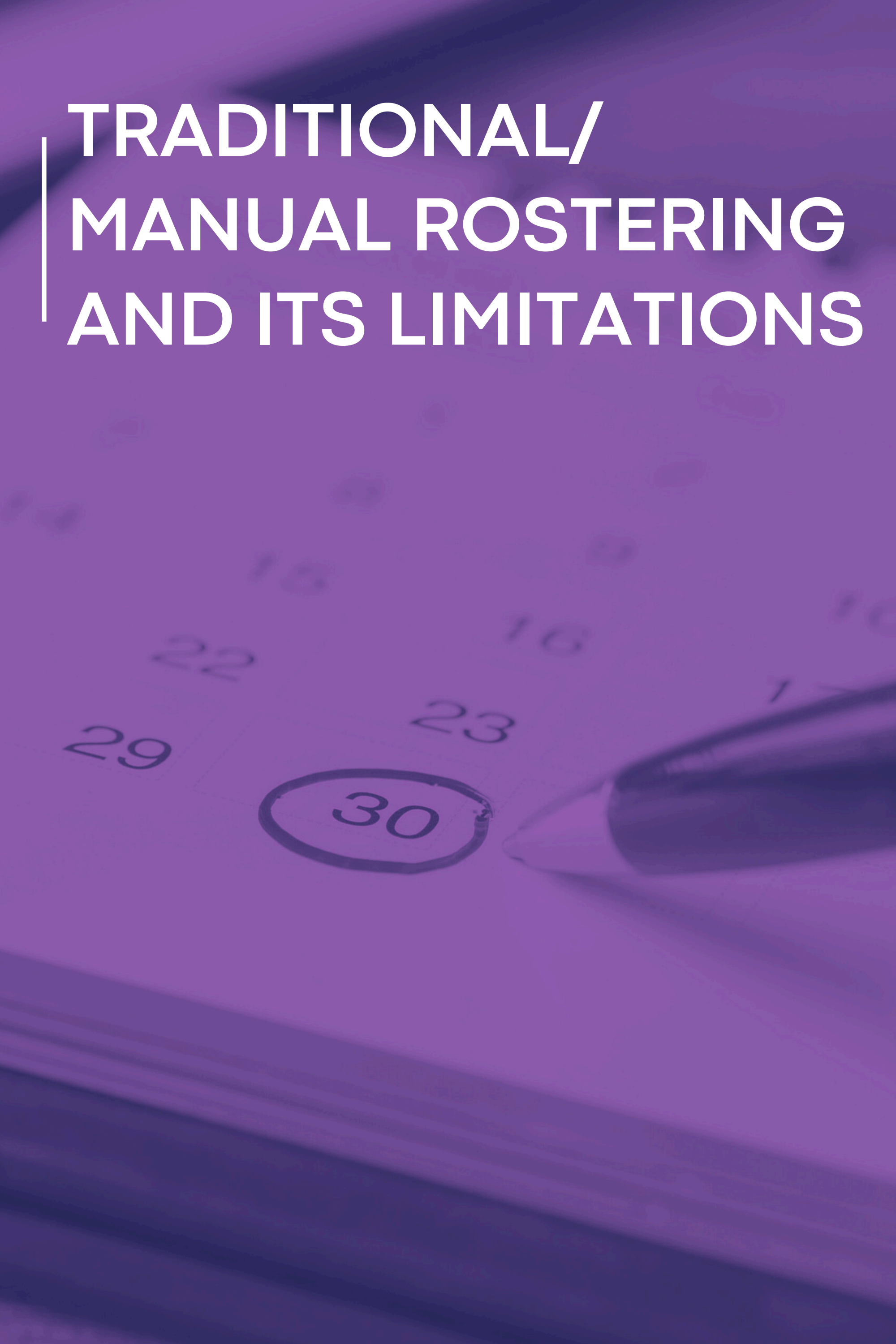
In the ATC industry, where continuous vigilance is required to manage air traffic safely, fatigue management is not just a necessity—it is a critical safety measure. These findings underline the urgent need for robust fatigue management strategies, including optimized scheduling, education and real-time monitoring.

*Source: Introduction to Work-Related Fatigue. Unit 3:*

*The state of fatigue and its consequences Prepared by: Centre for Human Factors, University of Hull Commissioned and supported by: Energy Networks Association*

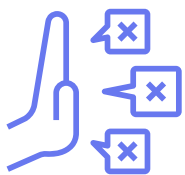


# TRADITIONAL/ MANUAL ROSTERING AND ITS LIMITATIONS



## Traditional/Manual Rostering and Its Limitations

In industries that operate around the clock, such as Air Traffic Control (ATC), effective scheduling is crucial to ensure safety and operational efficiency. Traditional manual rostering methods, however, often fall short in addressing the complexities of 24/7 operations, leading to significant limitations:



**Inflexibility:** Manual schedules typically lack the adaptability to accommodate unforeseen changes, such as sudden staff shortages or unexpected increases in workload.



**Human Error:** The manual creation of rosters is susceptible to mistakes, including overlapping shifts or non-compliance with labor regulations, which can result in staff fatigue and legal complications.



**Limited Consideration of Fatigue:** Traditional rostering often overlooks critical factors like circadian rhythms and adequate rest periods, increasing the risk of employee fatigue and associated safety hazards.



# Challenges with Manual Scheduling

Manual scheduling introduces multiple obstacles that hinder both employee well-being and organizational effectiveness:

- **Time-Consuming Processes:** Developing schedules by hand is labor-intensive and diverts managerial resources from other essential tasks.
- **Inconsistent Shift Distribution:** Without automated systems, ensuring fair and balanced shift assignments becomes difficult, potentially leading to employee dissatisfaction and increased turnover.
- **Reactive Adjustments:** Manual systems often address scheduling conflicts or fatigue-related issues only after they arise, rather than proactively mitigating them.



**THE ROLE OF  
TECHNOLOGY IN  
WORKFORCE  
FATIGUE MANAGEMENT**



# The Role of Technology in Workforce Fatigue Management

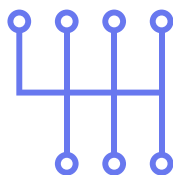
Technology plays an essential role in managing workforce fatigue by automating and optimizing schedules to ensure safety, compliance, and employee well-being in 24/7 operations. Rostering automation platforms analyze complex variables such as workload, shift patterns, and rest requirements, creating rosters that reduce human error and account for fatigue risks. By leveraging data-driven insights and predictive models, these technologies not only enhance operational efficiency but also proactively prevent fatigue-related incidents, safeguarding both employees and organizational performance.

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# Advantages of Rostering

## Automation

The shift to rostering automation platforms offers several transformative advantages:



### Optimized Shift Patterns:

Automated platforms use algorithms to align schedules, ensuring employees receive adequate rest and reducing fatigue risks.

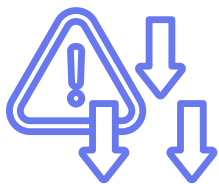


### Increased Flexibility:

They can quickly adapt to changes like unexpected absences or workload fluctuations, maintaining efficiency without overburdening staff.

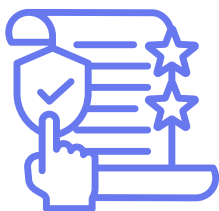


# Advantages of Rostering Automation



## **Error Reduction:**

Automation eliminates common manual scheduling errors such as overlapping shifts or non-compliance with labor regulations.



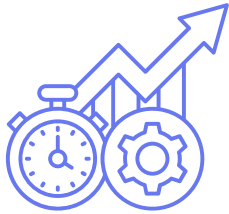
## **Enhanced Compliance:**

These systems ensure adherence to fatigue risk management standards and legal guidelines, reducing potential liabilities.





# Advantages of Rostering Automation



## **Resource Efficiency:**

Automating scheduling saves time and administrative effort, allowing managers to focus on higher-value tasks.



## **Employee Satisfaction:**

Rostering automation platforms can accommodate preferences and ensure fairness, boosting morale and retention.



# SkyRoster Capabilities for Fatigue Management

SkyRoster is a powerful rostering automation platform specifically designed to manage fatigue in 24/7 operational environments. It automates compliance with best practices by integrating rules like required rest periods between shifts and limits on consecutive working hours. This ensures that schedules are not only efficient but also aligned with fatigue management principles, preventing back-to-back shifts or insufficient rest periods.

# SkyRoster Capabilities for Fatigue Management

## **Shift Swapping for Flexibility:**

SkyRoster includes a shift-swapping feature that allows employees to exchange shifts with compatible colleagues while adhering to planning constraints. This flexibility ensures workers can get the rest they need without disrupting operations, contributing to a safer and more efficient work environment.

## **Fair Workload Distribution:**

Managers can use SkyRoster's advanced distribution rules to fairly assign public holidays, weekends, and night shifts. By promoting equitable workload allocation, the platform helps reduce fatigue and resentment while improving morale, team cohesion, and overall operational efficiency.





# SkyRoster Capabilities for Fatigue Management

## **Proactive Fatigue Monitoring:**

SkyRoster automates the monitoring of hours worked, shift patterns, tasks performed, and breaks taken. This enables managers to identify employees at risk of burnout and implement sustainable changes to mitigate fatigue before it escalates into a larger issue.

## **Streamlined Leave Management:**

The platform simplifies leave requests and approvals, accommodating both planned and unplanned leaves. This ensures staff availability is managed efficiently while respecting individual preferences, allowing employees to take necessary breaks and reduce both physical and mental exhaustion.



# FUTURE OF FATIGUE MANAGEMENT

As industries increasingly prioritize employee well-being and operational efficiency, the future of fatigue management is set to be shaped by emerging technologies and innovative approaches.

# Emerging Technologies in Rostering and Employee Health



## **AI-Driven Scheduling:**

Advanced algorithms will become even more sophisticated, enabling hyper-personalized schedules that adapt to individual needs, preferences, and fatigue risks.



## **Wearable Health Tech:**

Devices that track sleep patterns, activity levels, and stress indicators will integrate with rostering systems to provide real-time data, allowing proactive adjustments to reduce fatigue.



# Emerging Technologies in Rostering and Employee Health



## **Predictive Analytics:**

Fatigue management systems will leverage predictive models to identify and mitigate risks before they escalate, ensuring safer and more productive operations.



## **Integrated Well-Being Platforms:**

Holistic solutions will combine fatigue monitoring with mental health support, wellness programs, and training resources to foster a healthier workforce.



SkyRoster



Filter by unit

# Leave Management

- Home
- Leave Management
  - Calendar
  - Scheduler
  - Requests
- Strategic Roster
- Competency Management
- Sector Planning
- Shift Planning
- HR Management
- Reporting
- Admin

Documentation

## Calendar

Use the calendar to navigate through days off



Adrian Bedford

### January

MO	TU	WE	TH	FR	SA	SU
1 ME	2 ME	3 ME	4 NGT	5 OFF	6 ME	7 ME
8 At	9 At	10 At	11 At	12 At	13 At	14 At
15 MOR	16 OFF	17 MOR	18 AFT	19 NGT	20 R	21 OF
22 MOR	23 MOR	24 ME	25 R	26 ME	27 AFT	28 AF
29 NGT	30 R	31 OFF				

### April

MO	TU	WE	TH	FR	SA	SU
1 MOR	2 AFT	3 NGT	4 R	5 OFF	6 MOR	7 AF
8 NGT	9 R	10 OFF	11 MOR	12 AFT	13 NGT	14 R
15 OFF	16 MOR	17 AFT	18 NGT	19 R	20 OF	21 OF
22 MOR	23 AFT	24 NGT	25 R	26 OFF	27 R	28 AF
29 MOR	30 AFT					

### July

IMPLEMENTING ROSTERING  
 AUTOMATION FOR  
 FATIGUE MANAGEMENT

# Implementing Rostering Automation for Fatigue Management

As mentioned before, fatigue is a critical issue in 24/7 operations, leading to decreased productivity, safety risks, and employee dissatisfaction. Manual rostering often overlooks essential factors like adequate rest periods and equitable shift distribution, exacerbating these issues.

So, what does it take to manage fatigue better? Implementing rostering automation platforms proactively addresses these challenges by integrating fatigue management principles directly into schedules, ensuring compliance, efficiency, and employee well-being.



# How to get started with SkyRoster?

Getting started with SkyRoster is easy and designed to show you how automated rostering can transform your scheduling process. Here's how it works:

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1

## Share Your Current Roster

Send us a sample of your existing schedule (an Excel file or scanned copy), with personal details anonymized.

2

## Analyze Your Roster

The SkyRoster team will study your schedule to understand your shift patterns, workforce needs, and scheduling rules.

3

## Create a Digital Version

We will recreate your roster in SkyRoster, giving you a digital version that matches your current setup.

# How to get started with SkyRoster?

4

## **Optimize Your Roster**

Using advanced AI algorithms, SkyRoster will optimize your schedule to improve efficiency, fairness, and compliance with fatigue management principles.

5

## **Review the Results**

You'll get an optimized schedule to see the benefits of automation and how it can enhance your operations.



# Ready to see the difference?

Start your journey with SkyRoster today and discover how automated rostering can make fatigue management effortless.

[Book a Product Tour](#)

