

Schedule Design Consideration #3: Fixed vs. Rotating Shifts

A fixed shift schedule has crews that always work the same shift. Usually one crew works a day shift, another works an afternoon shift, and a third works the night shift.

A rotating shift schedule has the crews changing shifts, often on a weekly basis. So a crew might work day shift the first week, afternoon shift the next week, night shift the third week, and return to day shift the following week.

It's not easy to decide between a rotating and a fixed shift schedule. There are four points to consider: (1) employee preferences, (2) health concerns, (3) business needs, and (4) staffing requirements.

Employee Preferences

When surveyed, 90% of employees say they prefer a fixed shift schedule. Fixed shifts make it easier for them to schedule family events, doctor appointments, daycare, etc. Fixed shifts also increase opportunities to attend college, hold second jobs, and participate in community activities.

However, if employees don't think they'll get their preferred shift, they may say they prefer a rotating schedule. Many people feel that working their preferred shift part of the time is better than never working it.

The length of time employees have worked at a company also can affect their perception of the schedule. New employees in an organization with low turnover (and hence a lower chance to advance to better shifts), may see a rotating schedule as more fair. In the same organization, employees with long tenure can perceive a fixed shift schedule as more fair. As they see it, they put in their time on the less attractive shifts and now they deserve to work their preferred shift all the time.

Health Concerns

When we compare the hours of sleep from people working rotating shifts with those working fixed or "steady" shifts, we can see how this schedule attribute affects sleep. As seen in the table below, people working a rotating shift schedule average roughly the same amount of sleep over a four-week period as people working a fixed night shift schedule. They get less sleep than people working a fixed day shift or fixed afternoon shift.

Average Hours of Sleep Over a 4 Week Period Fixed vs. Rotating Shifts

Schedule Format	Shift	Days of Work	Hours of Sleep	Days Off	Hours of Sleep	Average
Fixed	Days	21	6.6	7	7.6	6.8
	Afternoons	21	6.9	7	7.6	7.0
	Nights	21	6.2	7	7.6	6.6
Rotating		21	6.4	7	7.5	6.6

In addition to more sleep, people on fixed shifts can avoid frequent changes in their sleep patterns, which is believed to be the primary source of long-term health problems. Being awake when the body expects to be asleep can trigger the release of hormones in higher levels than would usually be found at that time of day. Over time this may lead to higher rates of heart disease, cancer, and other diseases.

The problem is that some people on fixed night shifts don't adapt to their schedule. On their days off, they revert to a day shift sleep pattern, essentially making it a rotating schedule. On 8-hour fixed shift schedules, 1/2 to 2/3 of the night shift workers will do this. On 12-hour fixed shift schedules, roughly 3/4 of the night shift workers will do this.

Business Needs

Fixed shift schedules may be preferred by employees, but they raise several issues for managers: (1) management oversight, (2) communication, (3) training, (4) skill balance, and (5) recruiting and retention.

The schedule can have a big impact on how senior management interacts with first line supervisors and shift workers. With fixed shifts, the day shift often receives more attention than the afternoon and night shifts. Night shift employees may function like a different company, feeling left out of management initiatives as a result of limited interaction with senior managers.

Fixed night shift workers tend to rate management communication lower than rotating shift workers or fixed day shift workers. As mentioned above, they simply don't have as many opportunities to interact with senior managers.

Most jobs require some training. On-the-job training can be accomplished while working any shift schedule. But formal training, whether classroom or self-paced, usually occurs on the day shift. With rotating schedules, this training is usually scheduled when the employee rotates through day shift. Employees on fixed afternoon and night shifts are forced to change shifts with someone else, or come into work prior to their shift or on a day off.

A major problem with fixed shifts is how to balance the skills on every crew. Most shift workers

expect seniority to play a major role when assigning fixed shifts. This results in the senior, most skilled employees populating the day shift and junior, unskilled employees left to fend for themselves on the other shifts. This can result in uneven outputs from shift to shift, as well as lower overall productivity and quality.

A fixed shift schedule may impede recruiting efforts since new hires may have to wait for years before they can move to their preferred shift. On the other hand, long term employees may feel rewarded for their years of service and may be reluctant to lose their seniority by taking a job with a new employer.

Staffing Requirements

8-hour and 10-hour fixed shifts require more personnel than rotating shifts of the same length for most levels of coverage. They also require more personnel than 12-hour fixed shifts, as shown in the table below:

Staffing Requirements with Fixed Shifts

Coverage	Shift Length		
	8-Hour	10-Hour	12-Hour
1 per shift	6	6	4.2
2 per shift	9	12	8.4
3 per shift	12.6	15.75	12.6
4 per shift	18	21	16.8
5 per shift	21	27	21
6 per shift	25.2	31.5	25.2

Notes on fixed shift coverage:

(1) 8-hour fixed shifts are most efficient for 3-person coverage or multiples of 3 people (e.g., 6, 9, 12, etc.). In other words, they require the same number of people and work hours as 8-hour rotating shifts do for that amount of coverage.

(2) 10-hour fixed shifts are most efficient for 3- or 4-person coverage or multiples of these.

(3) 12-hour fixed shifts are most efficient for all levels of coverage. As a result, they are the most flexible of all shift lengths in their ability to accommodate different levels of coverage.

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