Efficient Coverage

The ideal schedule will provide the required coverage as efficiently as possible. Everything else is secondary. Unless you can ensure adequate coverage, there is no point in discussing other schedule features such as shift length, fixed vs. rotating shifts, on-off work patterns, shift start times, and so on.

There are three considerations in efficient coverage. The first is the number of workers you need to show up on each shift. In most cases, this will be driven by the volume of work, the nature of the job, and the equipment. The second is the number of employees. The third is the average hours they work each week. For simplicity, we combine the last two factors into one which we call "Available Resources."

Coverage Requirements
How many employees do you need to show up at different times of the day? What skills do they need to have? Are these numbers the same all week? Answer this and you've defined your basic coverage requirements.

Determining the coverage requirements is relatively straightforward for organizations with a workload that remains constant throughout the day and throughout the week. They need the same number of employees to show up on every shift. One example is a manufacturing process that requires two operators, three helpers, and one lead at all times the equipment is running. Another example is a police unit that needs a minimum of three patrol officers and one sergeant on every shift.

It's organizations with variable workloads that have the most trouble defining their coverage requirements. Call centers, for example, may have a substantial increase in customer calls every evening. Manufacturers may have certain processes that run for only a few hours every day. These companies need to boost their coverage during the high workload periods to meet the demand.

An effective schedule will match the number of employees with the workload throughout the day. Yes, it's easier to schedule the same number of employees on every shift. But it's inefficient if the workload fluctuates. If the volume of work is excessive for just a few hours, employees and productivity/service levels will suffer. If the work volume is low, employees will be less productive or idle. In either case, the business will incur unnecessary costs.

Available Resources
How many employees are needed satisfy your coverage requirements? The theoretical answer is simple. Add up all the employee hours of work needed to meet your coverage requirements and divide by 40 (the standard weekly work hours).

For example, if you need 2 people to work 24 hours a day, 7 days a week, you'll need:

(2 * 24 * 7) / 40 = 8.4 employees

Suppose you only have 8 employees and can't hire anyone else. You can use overtime to make up the difference. How much? Multiply the coverage requirements by the total weekly hours and divide by the number of employees. From the previous example, we have:

(2 * 24 * 7) / 8 = 42 hours per week

This means each employee will have an average of 2 hours of overtime a week to make the schedule work.

You can use the "staffing calculator" on this web site to perform similar calculations.

Suppose you only have 7 employees. That will make the overtime much higher (8 hours a week per employee). Remember, we haven't taken vacations or other absences into account. You may not be able to cover every absence, as the overtime might be excessive for some of your employees.

Another option is to look for places to lower the scheduled coverage. Maybe you can lower the coverage on weekends or the night shift without adversely affecting service levels or productivity.

Even though you calculated the theoretical number of employees needed, there may be occasions where this number is insufficient. If several employees want to take a vacation at the same time, this may leave you short-handed. If someone takes a leave of absence due to health problems, pregnancy, or family care, you may not be able to replace them. Use of temporary employees may help, assuming you can find someone with the necessary skills.