

CASE STUDY : FORECASTING

What is Forecasting ?

- ▶ *Forecasting* is the art and science of predicting future events . Forecasting may involve taking historical data and projecting them into the future with some sort of mathematical model.



Forecasting time horizons:

- ▶ 1- **short-range forecast**: This forecast has a time span of up to 1 year but is generally less than 3 months.

Used for: planning purchasing , job scheduling , and production levels.

- ▶ 2- **Medium –range forecast** : Forecast generally spans from 3 months to 3 year.

Used for: sales planning, cash budgeting, and analysis of operating plans.

- ▶ 3- **Long-range forecast**: Generally 3 year or more in time span .

Used for: planning for new products , capital expenditures , facility location, and development.

A CASE

- ▶ XYZ, the national sales forecasting manager at galaxy Communication, addressed the managers gathered in the conference room.
- ▶ Galaxy Communications is the regional telecom, offering traditional residential and commercial telephone service as well as wireless plans.

A CASE

- ▶ XYZ said “we are getting a lot of customers complaints,” “we always seem to be running out of stock of key equipment for installation and repair, and customers complain about long waits for customer service. It seems to me that we simply can not do a good job of forecasting the demand for each type of telecommunication service so that we can accurately determine our equipment and staffing needs. We need help and we need it quickly. Any Ideas?”

B CASE

- ▶ Think of a health care industry, the demand for hospital beds and related products is driven in part by population demographics, hospital admissions and surgical procedures rates, hospital construction, interest rate, and many other factors. Identifying those factors, collecting historical data to understand trends, and building a useful forecasting model is very challenging task.
- ▶ Good models provide the type of information that top managers need to plan product development, long term capacity decisions, and other key strategic decisions.

C CASE Forecasting Meals on Airline Flights

Providing in-flight meals to airline passengers is big business. Northwest Airline and Continental's Food budgets are each around \$300 Million per year. Delta serves about 135000 meals per day. American Airlines spends around \$800 million per year on food, with each meal averaging \$8.20. With these huge expenses for meals, airlines are very interested in accurately forecasting the number of meals that will be needed on each flight.

C CASE Forecasting Meals on Airline Flights

What will be factors that make air line meal forecasting difficult?

1. Passenger no shows
2. Passengers purchasing tickets just before a flight
3. Cancelled flight load
4. Some passengers will not have meals
5. First class passengers receive different meals than economy class passengers
6. There may be choice to have two or more meals
7. Some flights may be 60% full others may be 100%

C CASE Forecasting Meals on Airline Flights

If an airline orders too many meals for a flight, the extra meals must be thrown away, although some items such as boxed cereal might be given to charity. If it does not order enough meals, then hungry passengers may be upset and may not fly on that airline in the future.

In the entire airline industry, meal shortages run around 1%.

Accurate demand forecasting is critical to providing good customer service in a cost efficient manner.

D CASE

- ▶ Collaborative demand planning at Colgate-Palmolive
- ▶ Colgate Palmolive is a global consumer products company with such products as toothpaste, pet foods... About 80% of its employees are located outside the USA. Company uses an integrated operating system to give its customers and suppliers complete access to business critical data such as order status, forecasts production plans and schedules, and world wide inventory status. The system provide platform for collaboration on many supply chain decisions such as demand planning.

D CASE

- ▶ To reduce supply chain costs, Colgate Palmolive implemented three supply chain strategies simultaneously. First established VMI Programme with key customers to reduce channel inventory and cycle time. Secondly moved from regional to global sourcing of raw materials, component parts, and packing. Finally, Colgate implemented a collaborative supply chain planning process with its suppliers and customers to manage promotional demand, improve forecast, and synchronize activities along supply chain. These initiatives have improved on time order performance from 70 to 98 % for VMI, reduced total inventories by 10% and improved customer order fulfillment rates to 95%.

When it comes to the world's respected global brands, **Walt Disney Parks & Resorts** is a visible leader.

Although the monarch of this magic kingdom is no man but a mouse – Mickey Mouse – **It's CEO Robert Iger** who daily manages the entertainment giant.



Disney's global portfolio includes Hong Kong (opened 2005), Disneyland Paris (1992), And Tokyo (1983). But it is Walt Disney World Resort (in Florida) and Disneyland Resort(in California) that drive profits in this \$43 billion corporation, which is ranked 54th

In the Fortune 500 an 70th in the Financial times Global 500.

Revenues at Disney are all about people – How many visit the parks and how they spend While there.



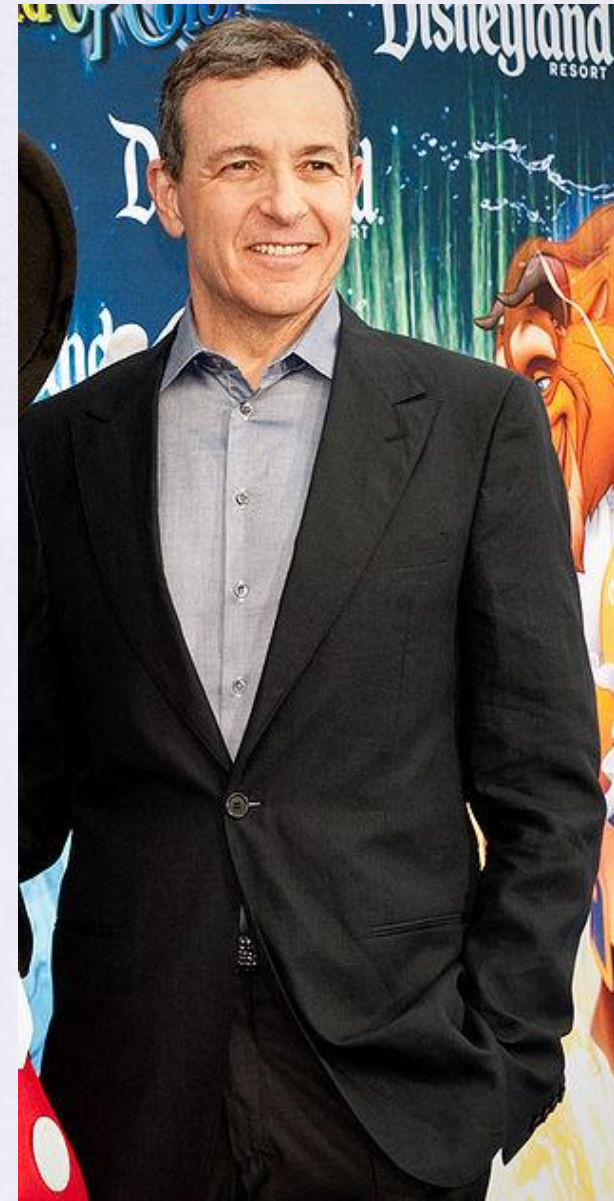
Iger receives a daily report from his four theme parks near Orlando, the report contains only

Two numbers :

1 – The forecast of **yesterday's attendance** at the parks (Magic Kingdom, Epcot, Disney's Animal Kingdom, Disney-MGM Studios, Typhoon lagoon, and Blizzard Beach).

2- The **actual attendance**.

An error close to zero is expected. Iger takes his forecasts very seriously.



58000 cast members working at Walt Disney World Resort near Orlando.

The giant sphere is the symbol of Epcot, one of Disney's Orlando Parks, for Which forecasts of meals, lodging, entertainment, and transportation must be Made.



This Disney monorail moves guests among parks and the 20 hotels on the massive 47-square-mile property (about the size of San Francisco and twice The size of Manhattan).



Works of the forecast team in Walt Disney world resorts

The forecasting team provides daily, weekly, monthly, annual, and 5-year forecasts for:

- 1- **labor** management.
- 2- **maintenance** department.
- 3- **operations** department.
- 4- **finance** department.
- 5- park **scheduling** department.

How the staff of world Disney deals with foreign costumers



- World Disney world resorts is one of **the biggest resorts in the world** so there are a lot of costumers coming from outside the U.S.A with a **20% of foreign visitors** so they must give outstanding costumer services such as dealing with cross-exchange rates and giving an every bit better ordinary costumer service they also **hired 35 analysts and 70 field people to survey 1 million costumers** to improve year by year.

How can the help employs help the forecast team?

- ▶ With the help employees doing the surveys it helps the forecast team to study how the rides are organized how the travel planes are done and how to improve the profit.



Is the forecast team important?

- ▶ **Yes** they are especially in Walt Disney world resorts with an astonishing only 5% average error on attendance forecast average and a 0% to 3% average error on weather forecast so they are very important and **help greatly to growth the profit of the resort.**



Is the forecast team important?

Attendance forecasts for the park drive a whole slew of management decisions:

For example, capacity on any day can be increased by opening at 8 A.M. instead of usual 9 A.M. , by opening more shows or rides, by adding more food/beverage carts (9 million hamburgers and 50 million cokes are sold per year), and by adding more cast members (employees).

Demand can be managed by limiting the number of guests admitted to the parks, with the “fast pass” reservation system, and by shifting crowds from rides to more street parades.



At Disney, forecasting is a key in the company's success and competitive advantage.

Hotel

Room
nights
sold

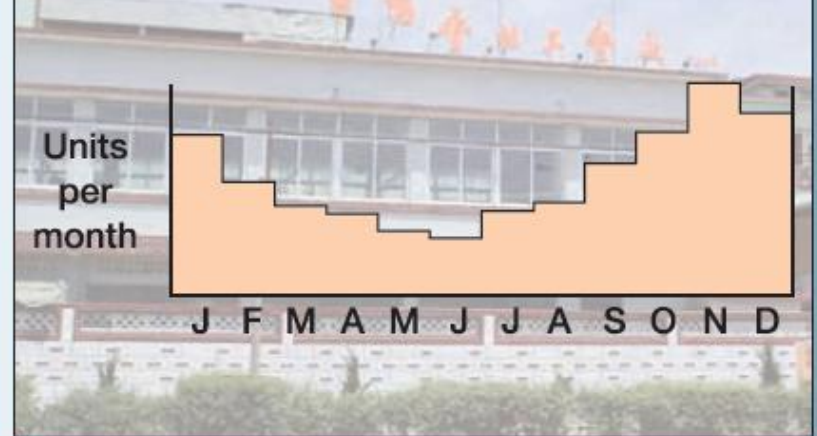
J F M A M J J A S O N D



Woollen knitwear factory

Units
per
month

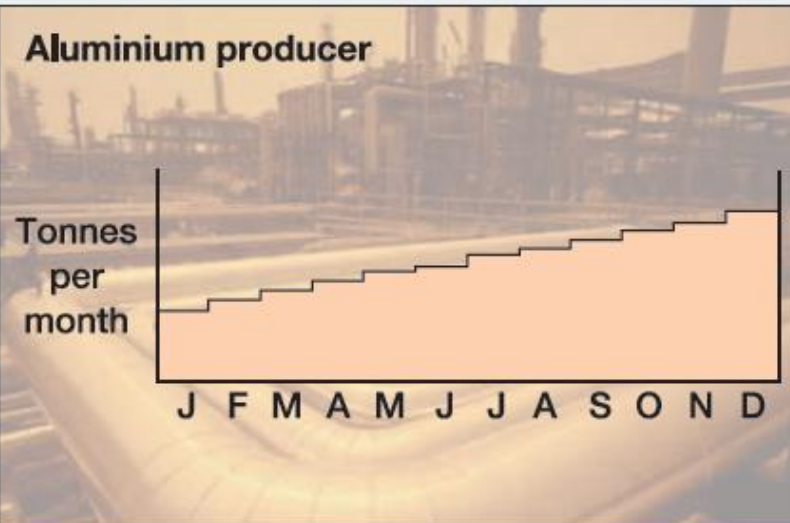
J F M A M J J A S O N D



Aluminium producer

Tonnes
per
month

J F M A M J J A S O N D



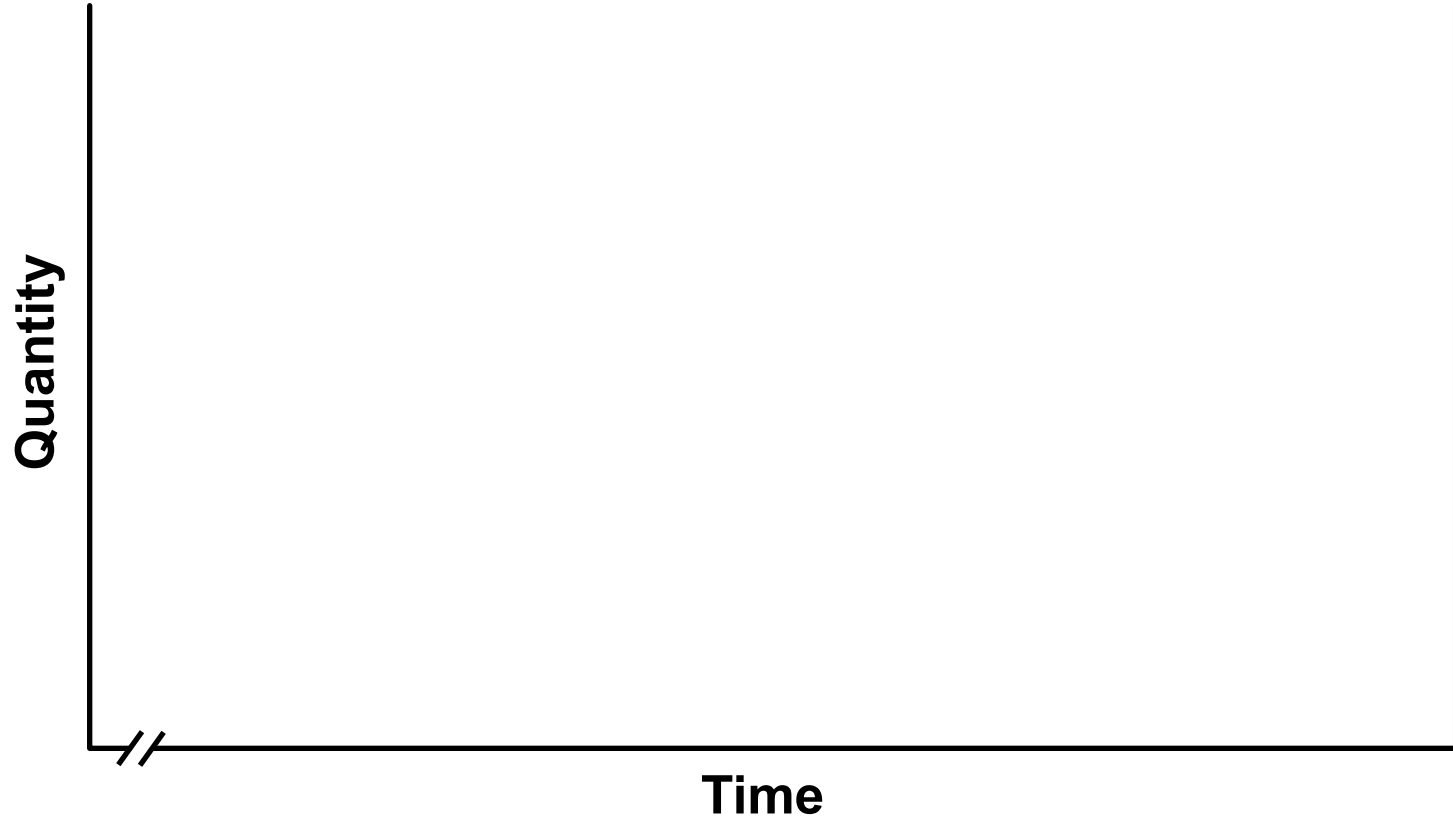
Retail store

Revenue
per
month

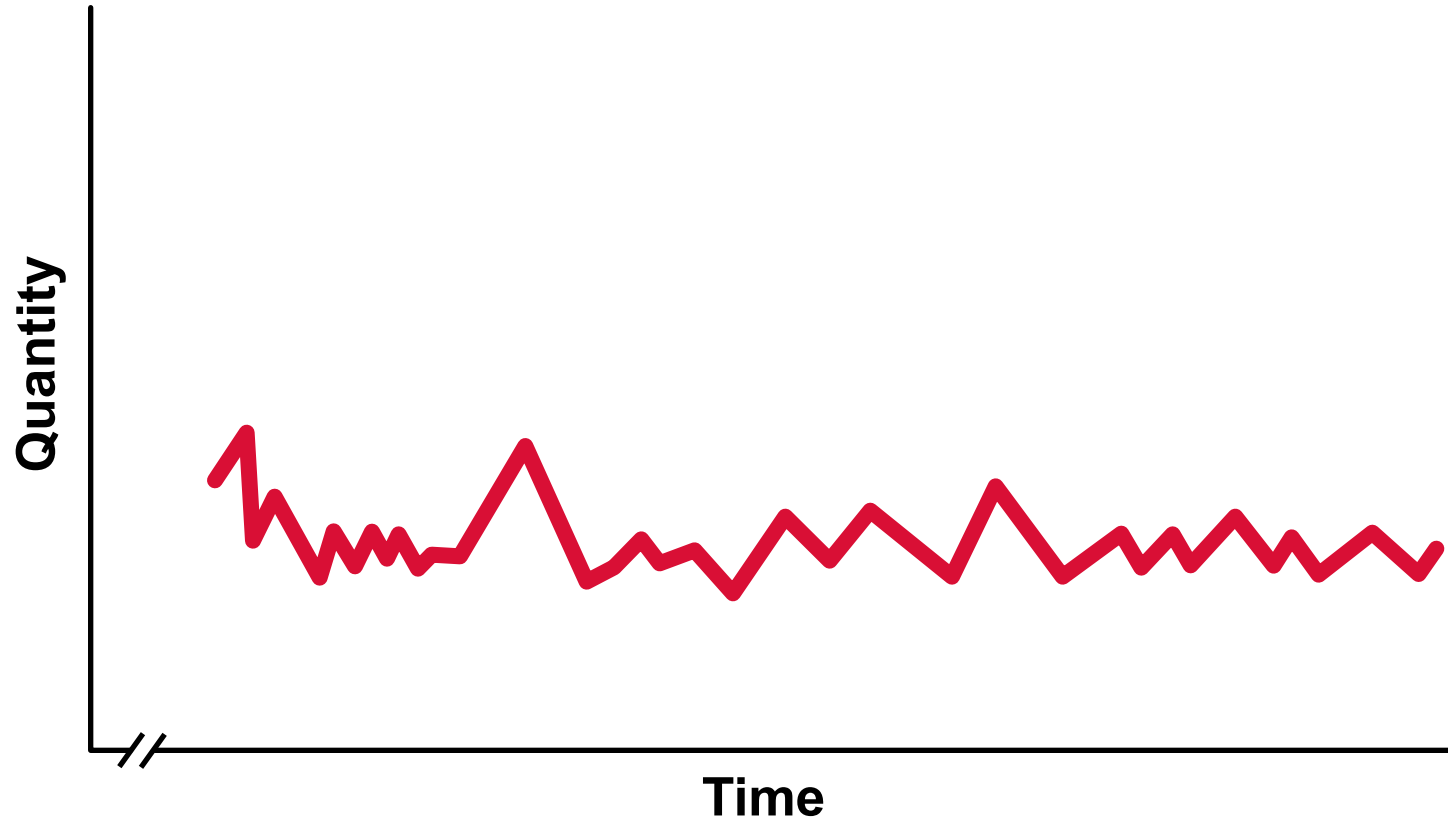
J F M A M J J A S O N D



Patterns of Demand

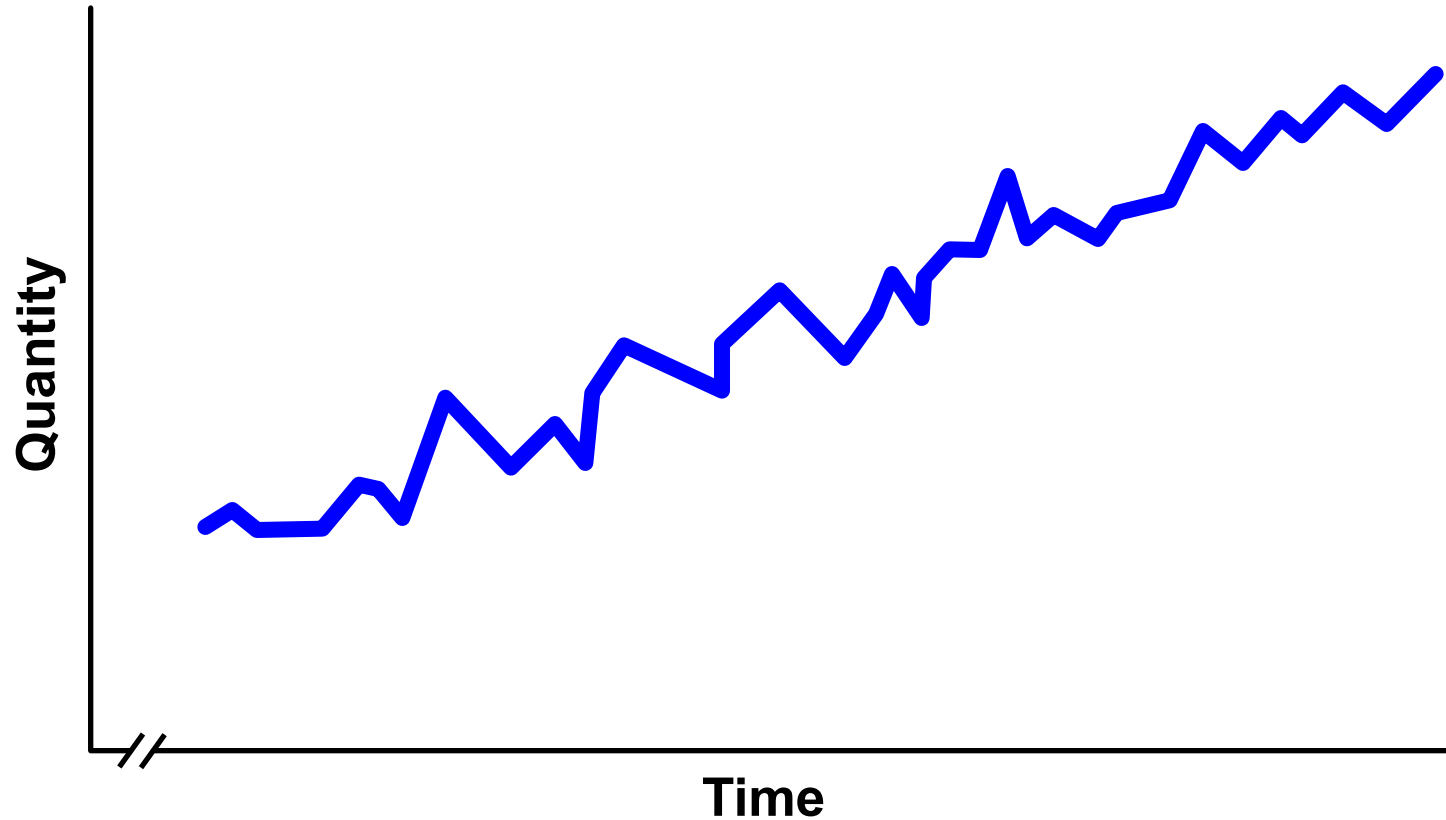


Patterns of Demand



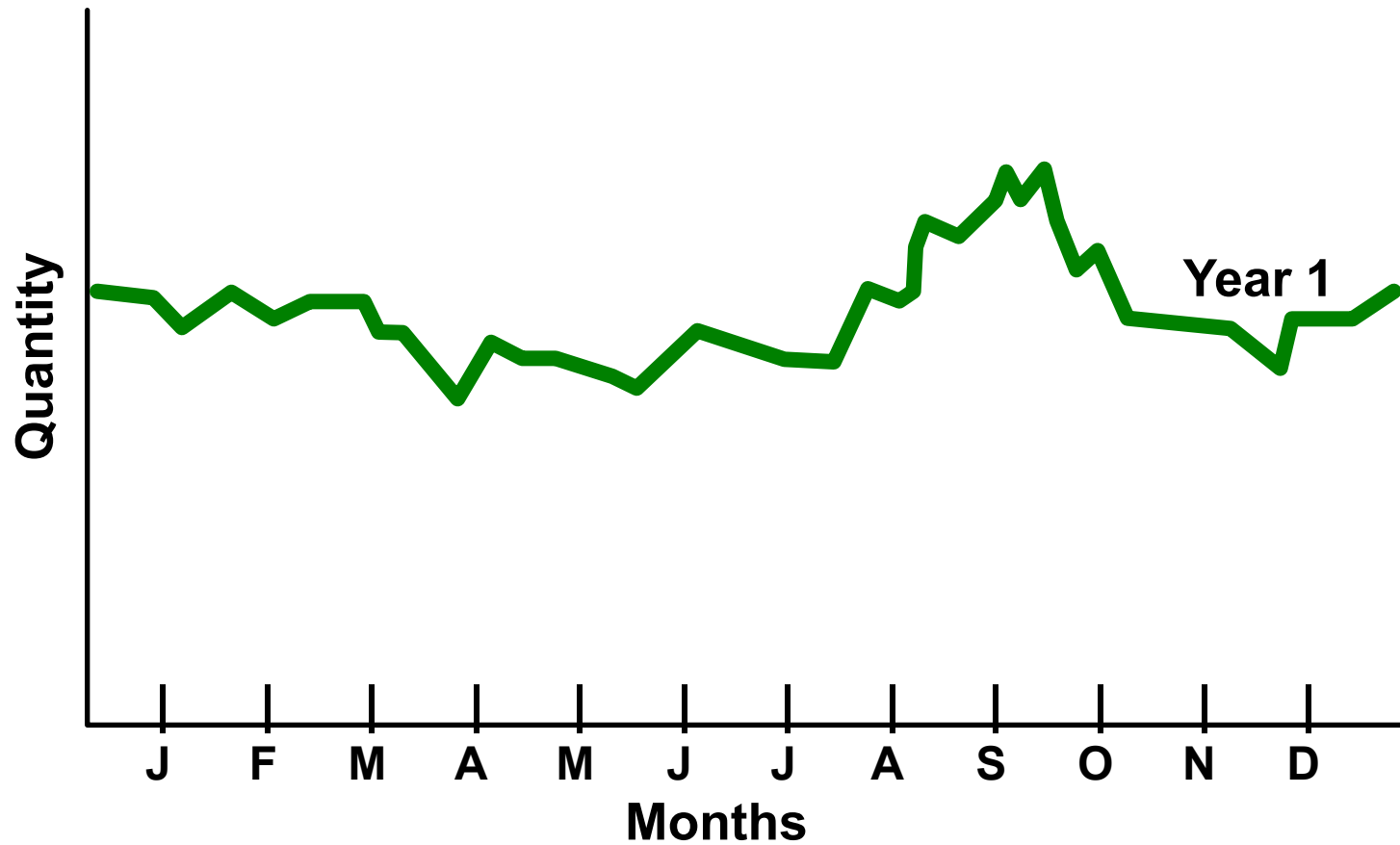
(a) Horizontal: Data cluster about a horizontal line.

Patterns of Demand



(b) Trend: Data consistently increase or decrease.

Patterns of Demand



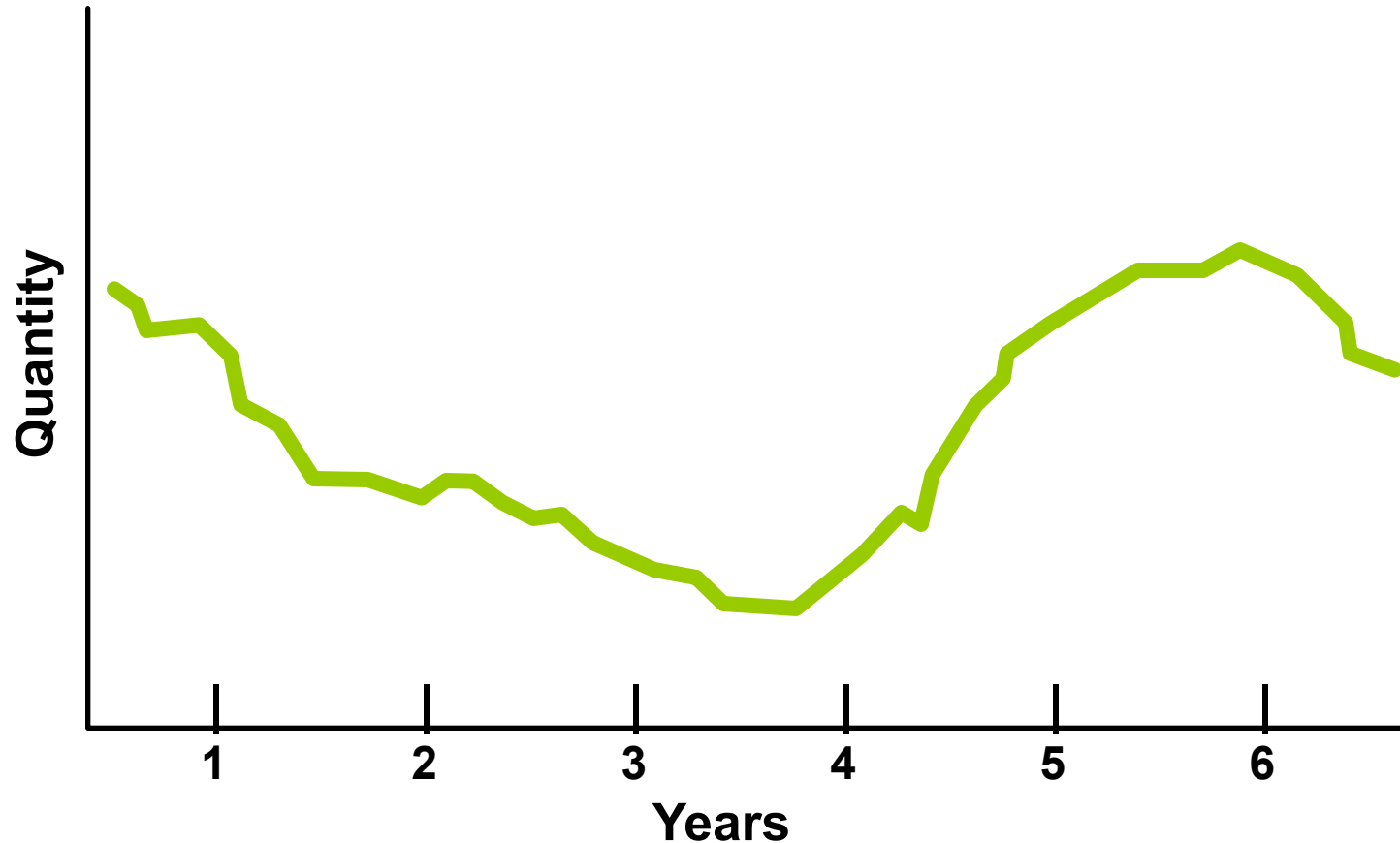
(c) Seasonal: Data consistently show peaks and valleys.

Patterns of Demand



(c) Seasonal: Data consistently show peaks and valleys.

Patterns of Demand



(c) Cyclical: Data reveal gradual increases and decreases over extended periods.