

## Basics

Numbers are everywhere! Not everyone enjoys working with numbers, but even if you are not a mathematician, you probably read and write numbers almost every day. In an academic setting, when you analyze or interpret numbers in order to make an argument, you are using statistics. One part of statistics is being able to **Interpret tables, charts and graphs (1) and (2)**. Another important part, covered here, is being able to use numbers in your writing.

## The academic context

Statistics is used in a wide range of academic disciplines. In most scientific subjects, being able to write about statistical data is a key skill. But it is important in the humanities, too. For example, statistics can be used to talk about a historical event, analyze a piece of music, or argue that a law should be changed. Statistics is one of the most important tools you have for making or strengthening an argument in academic writing.

## Key features

Read the example paragraph. The key features are numbered and discussed in the table below. These types of word are especially important in writing about statistics.

### Imprisonment in the USA 2005–10

In<sup>1</sup> 2005, 0.74% of<sup>1</sup> the United States population was imprisoned – the highest<sup>5</sup> imprisonment rate in<sup>1</sup> the last 100 years. Between<sup>1</sup> 2005 and 2010, this decreased<sup>2</sup> slightly<sup>3</sup> to<sup>1</sup> 0.73%. However, this was still substantially<sup>3</sup> higher<sup>4</sup> than the imprisonment rate of<sup>1</sup> any other country in<sup>1</sup> the world.

Word type	Examples	Explanation
<b>1 Prepositions</b>	<i>in, of, between, to, by, from, since, until</i>	<ul style="list-style-type: none"> <li>Prepositions are often used to refer to times or dates:  <b>between</b> the years 1665 and 1670  <b>since</b> January 1995  <b>until</b> two hours after the explosion  <b>by</b> the fourth millisecond</li> <li>Of is used with percentages and fractions:            three-quarters <b>of</b> students            65.8% <b>of</b> women</li> <li>Between can be used to give a range of numbers, dates or times:  <b>between</b> 15 and 20 cm  <b>between</b> two and four hours  <b>between</b> 1905 and 1907</li> </ul>
<b>2 Verbs for discussing change</b>	<i>increase/decrease rise/fall double/triple/halve accelerate/decelerate</i>	<ul style="list-style-type: none"> <li>Verbs like these are used to discuss statistical changes (trends):            The number of tigers in the wild <b>decreased</b>.            The rate of climate change has <b>doubled</b>.</li> </ul>
<b>3 Adverbs</b>	<i>slightly, moderately, consistently, approximately, steadily, dramatically, substantially, somewhat, much, about</i>	<ul style="list-style-type: none"> <li>The adverbs ending in ~ly are used with verbs to describe trends:            rise <b>dramatically</b>            decrease <b>steadily</b></li> <li>Somewhat and much are often used with comparatives:  <b>somewhat</b> greater  <b>much</b> lower</li> <li>About is used to give an approximate figure:  <b>about</b> 2,000 people  <b>about</b> ten seconds</li> </ul>

<b>4 Comparatives</b>	<i>higher/lower more/less greater/fewer bigger/smaller faster/slower</i>	<ul style="list-style-type: none"> <li>Comparatives are used to compare numbers. They are often used with <i>than</i>: <b>more</b> than 10,000 cases <b>less</b> than 0.01%</li> </ul>
<b>5 Superlatives</b>	<i>highest/lowest most/least greatest/fewest biggest/smallest fastest/slowest</i>	<ul style="list-style-type: none"> <li>Superlatives are used for numbers that are the most or least in some way. Usually this is within defined parameters: <i>the <b>least</b> rainfall in a year</i> <i>the <b>highest</b> population density in Europe</i> <i>the <b>greatest</b> death toll of any war</i></li> </ul>

## Challenges / difficulties

Statistical information is sometimes very complex and difficult to put into words. You might need to use some technical language to describe the patterns you can see. Your maths needs to be good, too!

Sometimes it is very difficult to see a pattern – but that's OK. Don't say there is a pattern if you can't find one. Instead, try to make an argument for why it's difficult to draw a conclusion.

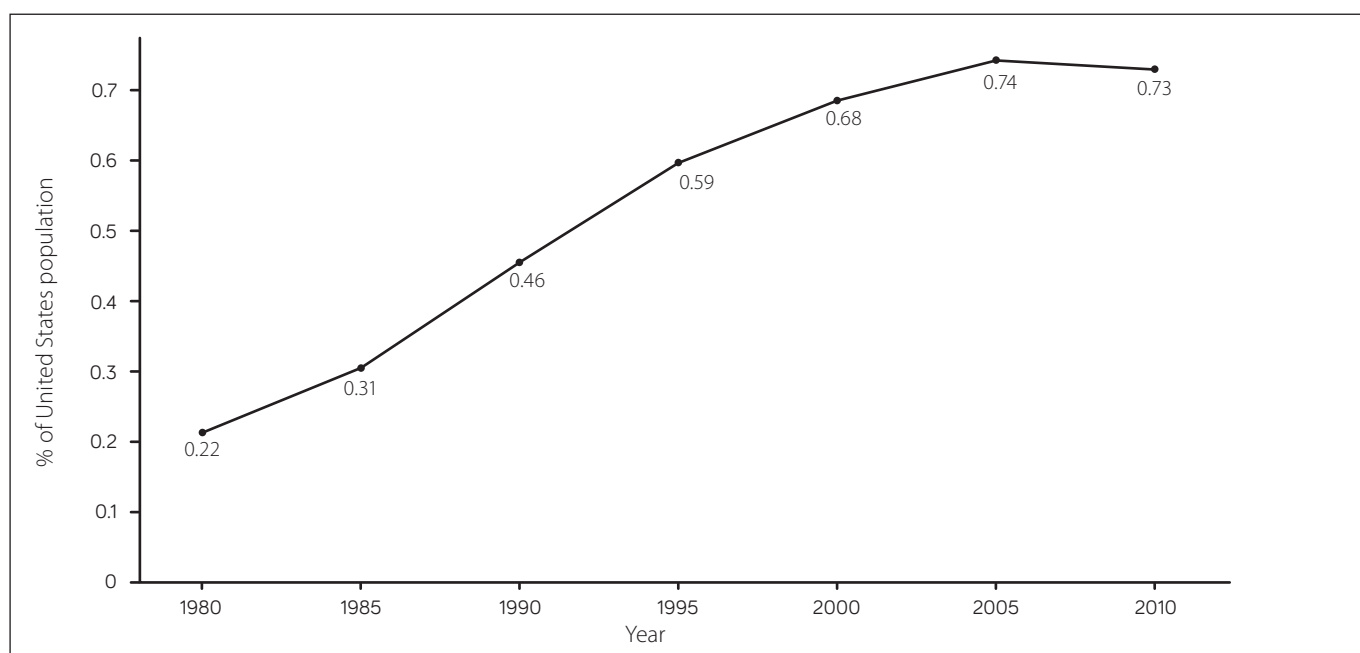
## How can I develop this skill?

When you are reading – for your course, or generally – look out for numbers and see if you can represent them graphically in a simple bar chart, pie chart or line graph. Then work with a partner or a small group and try to understand each other's work. Take turns to explain each other's graphs.

## Learning outcome

When you have mastered this skill, you will be able to write analytically about statistical data shown in graphs and tables. You will be confident using different kinds of numbers, including percentages and decimals.

## Theory to practice



**Figure 1:** Percentage of United States population in prison, 1980–2010

**Source:** World Prison Brief, Institute for Criminal Policy Research (figures rounded)

Look at Figure 1 and read the paragraph below. Fill in each gap using one word or number from the box. Use each word/number once.

0.74%	2.2 million	2010	30	between	dramatically	greater
highest	doubled	in	increased	of	slightly	slower
						ten

### Imprisonment in the USA 1980–2010

Over a period of \_\_\_\_\_<sup>1</sup> years, the number of people in prison \_\_\_\_\_<sup>2</sup> the USA increased \_\_\_\_\_<sup>3</sup>. In 1980, 0.22% \_\_\_\_\_<sup>4</sup> the population was in prison. In the next \_\_\_\_\_<sup>5</sup> years, between 1980 and 1990, this figure approximately \_\_\_\_\_<sup>6</sup>. Between 1990 and 2000, it \_\_\_\_\_<sup>7</sup> substantially again. There was a \_\_\_\_\_<sup>8</sup> rate of increase \_\_\_\_\_<sup>9</sup> 2000 and 2005. Nevertheless, by 2005, \_\_\_\_\_<sup>10</sup> of the population was in prison – about \_\_\_\_\_<sup>11</sup> people. Between 2005 and \_\_\_\_\_<sup>12</sup>, the percentage of people in prison decreased \_\_\_\_\_<sup>13</sup> to 0.73%. This figure is still \_\_\_\_\_<sup>14</sup> than the imprisonment rate in every other country, and today the USA has the \_\_\_\_\_<sup>15</sup> prison population in the world.

### Ways to get more practice

Look for graphs, tables or other statistical displays in books and newspapers or on websites – for example, opinion polls or weather maps. Collect a few examples and write a description of each one. Challenge a partner to match the descriptions to the graphs.