

What is Statistical Significance?

In statistics, “significant” does not mean important. It means “probably true.”



Throughout this report, when we say that a difference between two rates or percentages is significant, we mean that we are at least 95% certain this difference is not due to chance alone.

What is a confidence interval?

The confidence interval (CI) shows the lowest and highest boundaries between which we would expect the true rate to fall. A rate is considered a better estimate when it is based on a large number of cases and the confidence interval is narrow. It is common practice to put a 95% confidence interval around a rate.

Important things to remember

Just because two rates appear different, it doesn't mean that the difference is worth talking about.

- A difference of 5 deaths per 100,000 may look impressive, but we do not expect this difference to be exactly the same every year. We expect small ups and downs.

- A statistically significant difference is a difference that is greater than would be expected through normal fluctuations.
- A difference is considered statistically significant when the confidence intervals for two rates do not overlap.

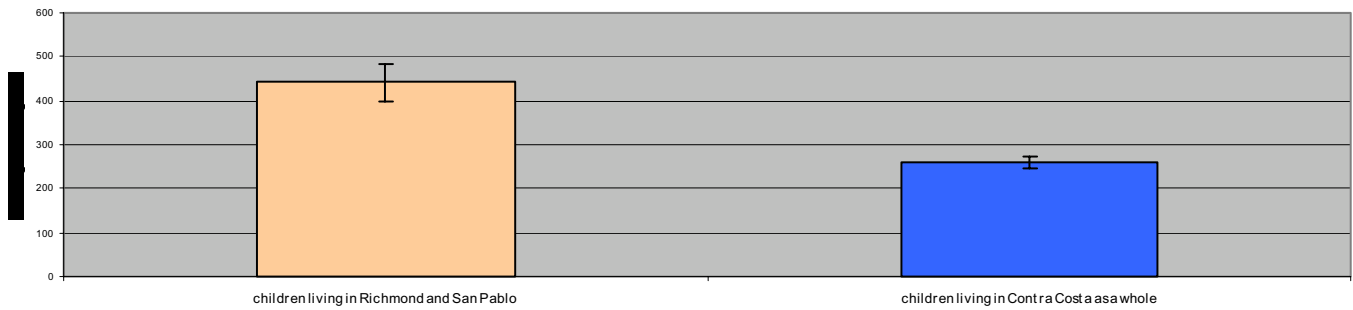
Local example:

When looking at our local data, it appears that the crude rate of hospital treatment for asthma is higher among children living in **Richmond** and **San Pablo** (441.6 per 100,000) than among children living in the county as a whole (259.8 per 100,000).

Comparing the confidence intervals

We compare the confidence intervals (Figure 21, page 160) to see if the upper and lower boundaries for children living in **Richmond** and **San Pablo** overlap with the boundaries for children living in Contra Costa as a whole.

Figure 21.



As shown in Figure 21, the lower and upper boundaries of the 95% confidence interval are shown by "I-Bars." The "I-Bars" show that the lower boundary for children living in Richmond and San Pablo (399.6) is higher than the upper boundary for children living in Contra Costa as a whole (272.3).

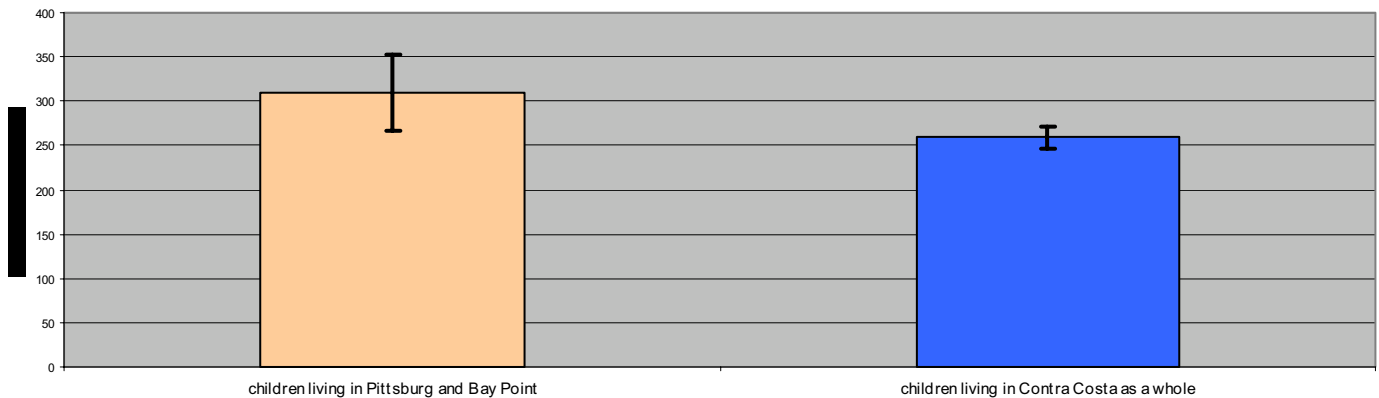
This is a statistically significant difference.

Therefore, we can say that the crude rate of hospital treatment for asthma is significantly higher among children living in Richmond and San Pablo compared to children living in Contra Costa as a whole

The confidence intervals do not overlap.

Another local example:

Figure 22.



It appears that the crude rate of hospital treatments for asthma is higher among children living in **Pittsburg** and **Bay Point** (310.2 per 100,000) than among children living in the county as a whole (259.8 per 100,000).

When looking at Figure 22, we notice that the lower boundary for children living in Pittsburg and Bay Point (267.3) is lower than the upper boundary for children living in the county as a whole (279.8). The confidence intervals overlap. **This is NOT a statistically significant difference.**

Comparing the confidence intervals

Again, we look at the confidence intervals to see if this is a statistically significant difference.