

# Lost Sales

**Topic:** Two-sample comparisons

**Context:**

Our firm started a certain business service in the early 1990's. The concept was a success, and several other firms were established in the mid 1990's offering similar services. Some of them were apparently not very serious, and many customers felt that they did not get what they paid for. Complaints from customers came to the attention of the consumer organization and the media. One business magazine frequently ran stories that may have left the impression that the whole business was unsound, and this was basis for its mentioning on prime time TV. Our firm felt that the magazine was running a campaign that harmed a perfectly legal and useful business, and since they had a name that was close to the business concept itself, they were probably harmed more than the unserious firms. The firm planned to sue the magazine in order to get a disclaimer and also get compensation for lost sales.

The service product was mainly marketed by telephone, giving the customers who signed up for the service, the possibility to withdraw within a given time limit. The service is a subscription for one year at a time, and can be cancelled at the maturity next year. During the period of bad publicity the firm experiences an increase in the number of withdrawals and non payments for the new subscriptions. The period of bad publicity started November 11 1995. However, the average time from a sale to payment is close to two months. Consequently, the sales at least from early September on may be affected by the bad publicity, maybe also from late August. The firm felt that "the campaign" went on during the winter and spring, but faded off in late April.

The firm had monthly data from January 1994 to October 1996. The data may be split in three periods: 20 months prior to the period affected by bad publicity (Jan. 1994 to Aug 1995), 8 months believed to be affected by bad publicity (Sept. 1995 to April 1996), and 6 months after this period (May 1996 to October 1996). Data stored in file Lost\_Sales.XLS are as follows (currency NOK):

1. Sales in current month.
2. Paid amount in current month or later for sales in current month
3. Cancelled amount in current month or later for sales in current month
4. Average number of days until payment and average number of days until cancellation for sales in each month.
5. Number of salesmen employed in each month.

Note that Paid and Cancelled do not necessarily sum up to Sale, since some sales were never paid or cancelled. They also had a record on paid and cancelled amounts in each month, irrespective when the sales were made.

**Task:**

Bring forward the evidence of lost sales due to the bad publicity and estimate the amount lost. Imagine that your analysis will be used as evidence in the court case against the magazine, where the defence may challenge your analysis.

Advice: If you make your analysis too sophisticated, it may easily be dismissed by the court. Preferably it should be understood by the laymen (and the judge).