Incident reporting in the Swedish Consumer Price Index

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**Abstract**

For the last years Statistics Sweden has been working with a new quality management (QM) system in the production of CPI and HICP where we have made a great effort to reduce the risk in the production process. The QM-system also focuses on the process of continuous improvements where incident reports give a valuable input to future development of processes. Before there was a similar system for reporting errors in the statistics, but then the question was raised – Why wait for an error to occur when similar information could be gathered from mere incidents? By having a simple method for reporting incidents, weaknesses in tools, processes and methods are discovered before the result is an error or has a severe impact on the quality of the statistics. The input from these reports and a well-defined method of making use of the conclusions gives valuable input for future work. Staff members are encouraged to ask the question “why” in a repeated manner in order to get to the root cause of the incident, and to generalize to get the solution valid for a broader area. Incidents are now spoken about as “candy for process development”.

**Keywords: CPI, Quality management, Incident reports, Continuous improvements**

## Background

At Statistics Sweden a routine for handling and reporting errors is in place since a few years. The reason is that Statistics Sweden shall have an overall view of the errors made and use this information to develop its processes. The statistical products must analyze and find the root cause of errors made – not only correct the current error. At the unit for price statistics another routine, to report incidents, was implemented in 2011. The reason for this is to take advantage and use the information when an error almost occurred, usually there is as much to learn as from an error. By definition we call something an incident when we find an error in time (i.e. before results are published) but it happened by chance, or in a control that is not an adopted part of our routines. We also count those cases that do not lead to pure errors in data, but where additional resources were required (example: an automated procedure does not work and a task has to be performed in a more manual manner). To learn from incidents each time they occur a report (using a template) should be compiled describing the incident, how it was discovered, how it was handled in the short run, an analysis of the root cause and a description as to which process it occurred, additional actions to be taken, mapping of possible subsequent errors and consequences on the reliability of the statistics and recourses used to solve the problem. The implemented routine comes with the appeal to ask the question *why* as many times needed to find the root cause, hence not end up in a situation where we just put out the current fire.

We find this incident reporting a valuable fact-based tool for working with continuous improvements. In fact, we call them “candy for process development”!

## Defining “Incident”

At Statistics Sweden there is a general evaluation method for errors in the published statistics. The definition is that the error should have reached the user – if so it is classified as an error. When such an error occurs there are many lessons to be learned if the information is collected carefully.

At the unit for price statistics we came to realize that there are many potential errors that also contain the same amount of information about the processes. So we decided to implement a routine for handling what we defined as incidents. The definition is that an incident is something that could potentially cause an error but was discovered before reaching the user.

It could also be an error that is too small to affect the user (then it is not classified as an error by the error reporting procedure), but as with large errors something still obviously went wrong and next time we can’t count on to be so lucky that the error is small. We also count those cases that do not lead to pure errors in data, but where additional resources were required (example: an automated procedure does not work and a task has to be performed in a more manual manner).

Sometimes it is hard to draw the line what is an error and what should be called an incident, but the main point is not the classification of the event but to take care of the possibility to analyze and improve our processes. And at the lower end of the scale there is no limit what is small enough to be an incident – the more cases we analyze the more we learn. Therefor we decided that nothing is too small to analyze and it is never “wrong” to analyze an incident and hence all staff members are empowered to define something as an incident and write a report without asking for permission.

However, if a potential error is discovered in an implemented routine for validating the data it is not defined as an incident as the current process obviously was enough to discover such errors.

## The routine

### *Identifying the incident and initiating the report*

* In cases regarding statistical results, taking care of the incident should be prioritized before writing the report (i.e. correcting the results)
* Any staff member could identify and define what should be assessed as an incident
* There is never need to ask for permission to write a report
* All incidents should be discussed with the product manager as a first step
* The product manager informs the quality manager that a report will be drafted and which staff member is responsible for compiling it (this for the quality manager to be able to follow up on the progress and to support)
* The quality manager decides on a deadline for the report together with the staff member assigned for the task
* The product manager and/or the head of unit could also initiate a report and assign someone to write it in cases where they become aware of an incident but no one takes this initiative

### *Writing the report (generalizing the incident and finding the root cause)*

The reports are written according to a simple template:

* Description of the incident
* How was the incident discovered?
* How was the incident managed (actions taken)?
* Assessment of the root cause and where in the process the incident arose
* Further actions that need to be taken (possible errors that could follow are mapped and eliminated)
* Potential impact on the quality of the statistics and/or the amount of resources needed to manage the incident

Usually the report is written by the staff member that discovered the incident, or someone responsible for the subject area. During the analyzing and writing process the quality manager at the unit assists if needed (the quality manager is the manager of the quality function at the unit, a function consisting of 3-4 staff members assigning 25-30 percent of their time for maintaining and improving the quality assuring system at the unit).

Finding the *root cause* and *generalizing* about the incident are the main purposes of the report. One is encouraged to ask the question why as many times needed to find the root cause. For example the root cause is never “lack of time”, it is always possible to ask “why was there lack of time?”. It is also encouraged to generalize, in that way we do not have to invent the wheel too many times. For example if some formula error is discovered in one file, one should ask the question if there are any similar calculations where the same error could occur. Always ask – where else could this be a problem?

### *Approval of the report*

* When the report is finalized it is sent to the product manager, the quality manager and the head of unit
* The writer is provided feedback by the above (and the process is repeated until we all agree on the report)
* When the report is approved it is stored in the quality assurance system

### *Follow-up routines*

* The product manager is responsible for that the product specific findings of the report is taken care of within the product (in practice by taking the *“Further actions that need to be taken”* from the report and putting it in the activity list of the product)
* The head of unit as well as the quality function is responsible for that more general findings of the report is taken care of within the unit
* The quality function is responsible for a semiannual follow-up of more general character, and to give feedback on the actions taken as a consequence of the findings in the reports

## Results in practice

The routine was introduced at the unit (not only for the CPI and related indices but also for other price statistics) in June 2011. Since then 24 incidents were reported for the CPI and related indices.

2011: 2 (June – December)

2012: 9

2013: 11

2014: 2 (January to April)

By looking at the reports from these incidents we conclude (roughly grouped) that the most common root causes are insufficient documentation in the work descriptions (17 cases), lack of or insufficient routines (17 cases), insufficient planning (5 cases) and one case hard to classify.

From these root causes and other findings in the reports the following results are documented (also them roughly grouped):

* Updated work descriptions (19 cases)
* Enhanced routines, amongst other by automating processes (16 cases)
* Training course (1 case)
* Only correction made and no long term actions taken (3 cases)

Some findings about the effects for the CPI, that are less quantifiable:

* We have avoided errors even if it is hard to measure, by training, education and other activities where knowledge is shared
* Enhanced quality as a result of improved routines, which in some cases led to increased workload while in other cases to a reduced or unchanged amount of work.
* Saving resources by automating (usually and preferred by implementing more tasks into the standardized production system instead of manual activities)
* Less stress by automating and documenting
* Taken steps towards better planning, especially for the most intense period of work (January and February)

The resources taken for implementing the long term actions have not been tracked. However the resources demanded for the short term actions (i.e. correcting the incident), analyzing and compiling the reports are on average 4 hours. The reports are on average 2 pages.

## Future work

We know for sure that there were at least as many unreported incidents during the period that could have given valuable contributions to the work on continuous improvements. The reasons they were not reported according to the routine differ. Therefor our ambitions for the future are amongst other:

* We encourage staff members to lower the limit for what they view as an incident
* Increase the willingness to report incidents by showing that the conclusions of the reports are taken care of, and that incident reporting is a possibility for staff members to influence the work at the unit
* Simplifying the reporting, especially when the burden of work is high (we know that these reports have been down prioritized in periods with high workload)
* Give better support to team members in finding the root causes of the incidents (for example by senior staff members or members of the quality function)