INSTITUTE OF ACTUARIAL & QUANTITATIVE STUDIES

Class: TY BSc

Subject : Model Documentation Analysis & Reporting

Subject Code: PUSASQF503

Chapter: Unit 3

Chapter Name: Methods and model output

Today's Agenda

1. Project Summary
    1. Content of the project summary
    2. Guidelines for project summary

1 Project Summary

The project summary serves as a briefing document for the actuary managing the project. It should include the information that they would need when discussing any aspect of the project with the client or organisation that has requested the work

It should also give the manager confidence that the approach we've taken to the calculations is appropriate and that we've applied sufficient checks to the data and the calculations that the results of the model can be relied upon.

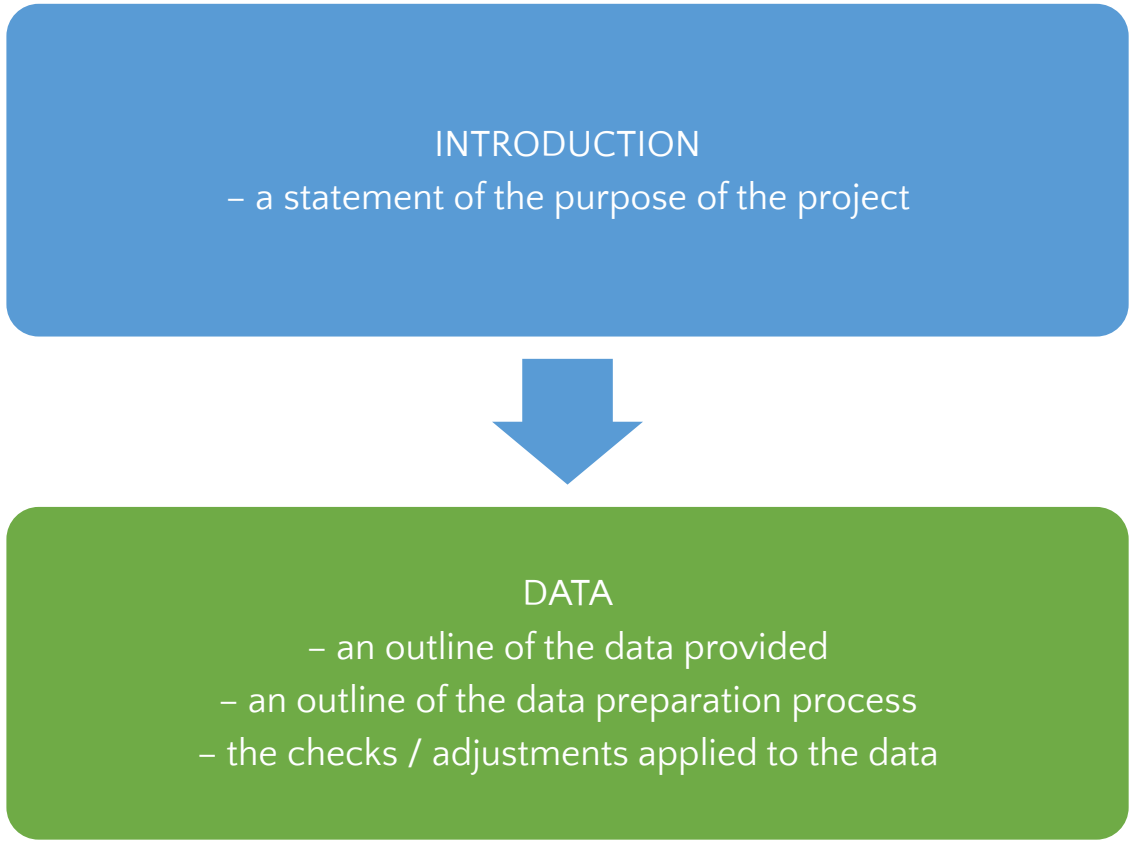
The project summary should include:

- a description of the data and the data preparation process
- a description of the approach used to derive the results
- a list of assumptions on which the results are based
- a presentation of the results of the project
- your conclusions, observations and comments based on the results
- a suggested list of next steps for further work on the project.

Ideally the actuary should be able to read the project summary as an independent document and be fully informed about all the issues involved.

1.1 Content of the Project Summary

What should I include in the summary?
The diagram below outlines the items you should include in your summary



APPROACH / ASSUMPTIONS

– the approach used

– a description of the model

– the steps applied to derive the results

– the assumptions underlying the model

RESULTS / CONCLUSIONS

– the calculations / tables / graphs / comparisons requested

– your observations and comments on the results

– the conclusions you have derived from the results

NEXT STEPS

– any additional data / clarification you would like to obtain

– any assumptions you would like to investigate

– any alternative models you would like to consider

– any other investigations you would like to pursue

1.2 Guidelines for Summary

A good project summary should:

- provide a summary of the entire project
- start with a clear statement of the purpose of the project
- describe the data analysis, the model, the assumptions you made and the analyses you
- carried out
- state your observations, conclusions and recommended next steps
- mention the types of checks you applied, including reasonableness checks
- include a clear visual presentation of your results
- present the relevant information in a clear and structured way
- include any extra items that were specifically asked for
- be kept as simple as possible and not include irrelevant details
- be written in good English, using appropriate language.

Question

Have a look at the page below, which is an extract taken from a student's summary for a project that involved comparing the past performance of an investment index with one of the component assets in the index. Identify at least 6 ways in which it could be improved.

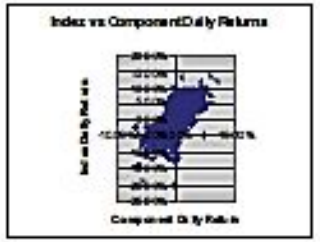
Page 2

Index + Component – Stats for the Geo. Returns

Mean	0.0301	0.05	
Standard deviation	1.14%	2.61%	
Variance	0.000130	0.000683	
Skew.	–0.24417926	–0.26499358	
Kurt.	4	4	

Both means were close to zero since daily returns over a long period and both finish close to start point. Average return higher for component.

I found that the standard deviation or variance was much higher for component, as indicated on the graph below:



The skewness was negative for both.

Solution

The heading ‘Page 2’ is not very informative.

In the table:

- The two columns of numerical information should be labelled clearly.
- Abbreviations that aren’t obvious should be avoided (*eg* ‘geo’ and ‘kurt’).
- The values for the standard deviations should be aligned with the other columns.
- The units for the mean should be stated. (Is the first figure 3.01% or 0.0301%?)
- Consistent numbers of decimals should be given for the two means.
- Fewer significant figures should be shown for the skewness. (This is spurious accuracy.)
- More significant figures should be shown for the kurtosis. (Which was bigger?)

Solution

In the text:

- The paragraphs of text contain a lot of information that is not presented in a structured way. Bullet points would be better here.
- The text is not written in clear English. There are some words missing, which makes it difficult to understand.
- The student has made several observations in the text whose significance has not been explained. *Why was the variance higher for the component? Would you expect the skewness to be negative?*
- The kurtosis is shown in the table, but no comment has been made about it in the text. *What does it measure? Is a value close to 4 reasonable?*

In the graph:

- The graph is far too small to be of any use.

Solution

For comparison, we've given a 'correct' version below.

Summary Statistics

Statistics for the Geometric Returns of the Index and Component

	Index	Component
Mean	0.03%	0.05%
Standard deviation	1.14%	2.61%
Variance	1.30%%	6.83%%
Skewness	–0.244	–0.265
Kurtosis	4.104	4.314

Comments:

- Both means are close to zero since we are considering daily returns over a long period and both indices finish close to their starting point.
- The average return is higher for the component.
- The standard deviation (or variance) is much higher for the component, as indicated on the earlier graph.
- The negative skewness indicates a disproportionate number of large falls.
- The kurtosis is high (cf 0 for a normal distribution), indicating thick tails and a peaked centre for the geometric returns.

Tip

When you are preparing your summary, try to remember the purpose of the project. Don't allow yourself to become so engrossed in the calculations and other details that you miss the 'big picture' of what it's all about.