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 CITS4220 Software Quality and Management
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PROJECT 2B REPORT

Introduction

This document describes my experimental assessment of the procedure created for Project 2A.

Hypothesis

That table-lookup Procedure A will be faster and more accurate than calculated Procedure B.

Speed is measured as elapsed minutes using reported start and finish times.

Accuracy is measured as standard deviation from "correct" figure for each procedure (\$644.40 and \$644.81 respectively - they differ because of the limited precision of the table lookup in Procedure A).

Method

Participants were invited to take part via three websites¹. 29 participants responded.

Participants visited a website² with instructions, a download link and a questionnaire to be filled in.

When participants clicked the download link, the web server would randomly select one of the two procedures and send it to the participant.

Participants undertook the procedures and reported their experiences using the questionnaire.

Results

Procedure	Average Time to Complete	Standard Deviation of Calculations
Procedure A	3 minutes, 24 seconds	\$9.22
Procedure B	5 minutes	\$0.20

Discussion

The basic results partly confirm and partly refute my hypothesis. Procedure A was *quicker* but *less accurate* on average than Procedure B. It could be surmised that Procedure A allows error to enter during the lookup process. Further study would be required to confirm or refute this possibility.

¹ [Club Troppo](#), [Andrew Norton](#) and [skepticalawyer](#)

² [Mortgage Procedure Experiment](#)

Problems With Experiment Design

The experiment was problematic in execution. Three key problems occurred:

- **Unclear instructions.** Early participants took the instructions to mean that they were to compute figures for their own mortgages, rather than the preset amount specified in the assignment description. This led to two serious outliers in the data. These outliers were specifically removed when calculating standard deviations of payments.
- **Poor procedure quality.** Procedure B was hastily compiled. Initially it contained a mistake in the formula and did not include the Interest and Terms for participants.
- **Data collection uncertainty.** Far more participants report using Procedure A than a purely random 50/50 allocation by the webserver would predict. The questionnaire form defaulted to set Procedure A as the procedure received. If participants did not consciously select the correct procedure, Procedure B participants could be recorded as Procedure A participants.

Confounding Factor: Unusual Population

As part of the experiment I asked participants to report their highest level of education and self-described level of financial literacy. The results describe a set of participants with high education and high self-assurance about their financial literacy:

Education Level	Percent of Participants
Highschool	12%
Undergraduate Degree	28%
Post-Graduate Degree	60%

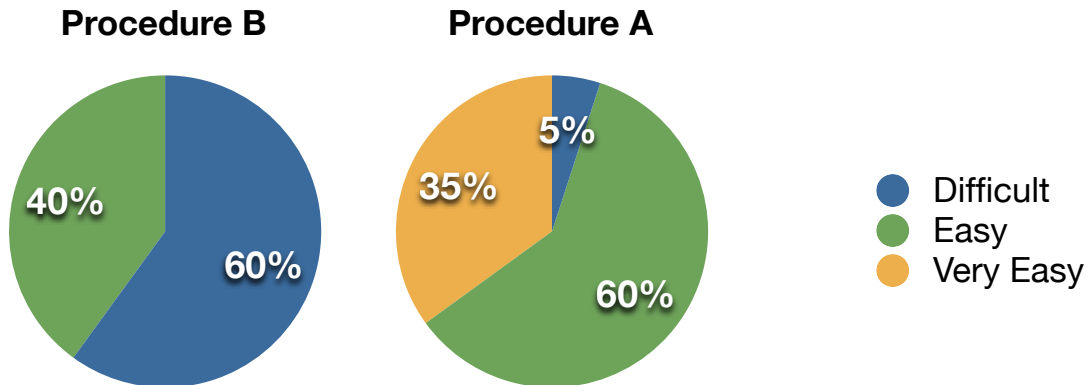
Financially Literacy	Percent of Participants
Not Literate	0%
Somewhat Literate	36%
Very Literate	64%

Ease and Confidence

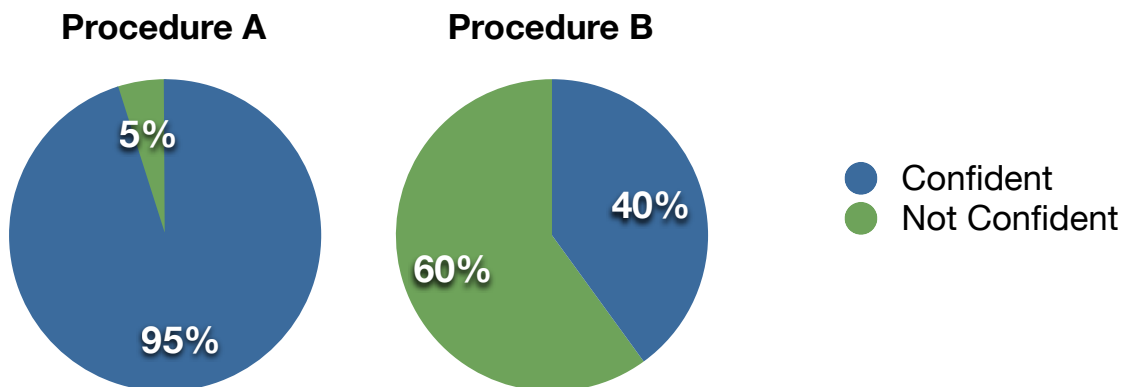
Although my hypothesis dealt exclusively with two objective measures of procedure quality (time and accuracy), I also chose to collect data on subjective participant measures - ease and confidence. I asked participants to describe how easy they found their procedure, and how confident with their conclusions.

The results fairly dramatically favour Procedure A:

Easiness to Follow



Confidence with Result



Conclusion

I only partly demonstrated my hypothesis that table-lookup Procedure A would be faster and more accurate than calculator-based Procedure B.

A further study, requiring participants to record the intermediate steps of their calculations, could help to examine the possibility of whether the act of table-lookup is the source of erroneous results in that procedure.