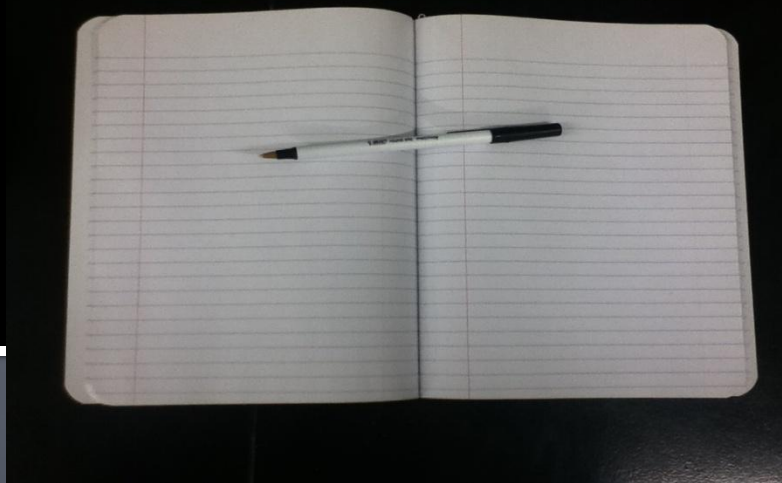


A Field Comparison of Data Collection Efficiency Using the iPod Touch and Paper-Based Systems



VS.
→



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Presented By: Jon Cambron

Introduction

- Problems with paper-based data collection
 - Cumbersome
 - Multiple pieces of equipment (writing implements, notebook, camera etc.)
 - Sometimes disorganized, illegible
 - Time required to digitize data
- Does iPod Touch offer a superior alternative?



Methods

- Four participants
- Four treatments
 - Paper
 - Office²
 - HanDbase
 - Google Docs
- Two experiments
 - Field
 - Lab
- Latin square design for each experiment



Three Programs Tested

Office²

iPod 2:31 PM

Close **Trees** Sheet1

A1 Enter value

	A	B	C	D
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				

Navigation icons: Home, App Store, Safari, Mail, Calculator

© Google Docs

iPod 10:55 AM

Trees - Google Docs

spreadsheets.google... Google

Google Docs All Docs

Trees : Sheet1 Rows per page: 250 Go

Hide colors

Row ▲	Timestamp	Date	User Name
(All)	(All)	(All)	

Add new

Submit Cancel

Hide colors - Rows per page: 250

Powered by Google Docs - Report Abuse

Navigation icons: Back, Forward, Home, Bookmarks, Copy

HanDBase[®]

iPod 5:22 PM


Cancel **Edit Record** Save

19

Distance (in)

8

Photo



Navigation icons: New, Delete, Next, Tools

1 2 3 4 5 6 7 8 9 0

- / : ; () \$ & @ "

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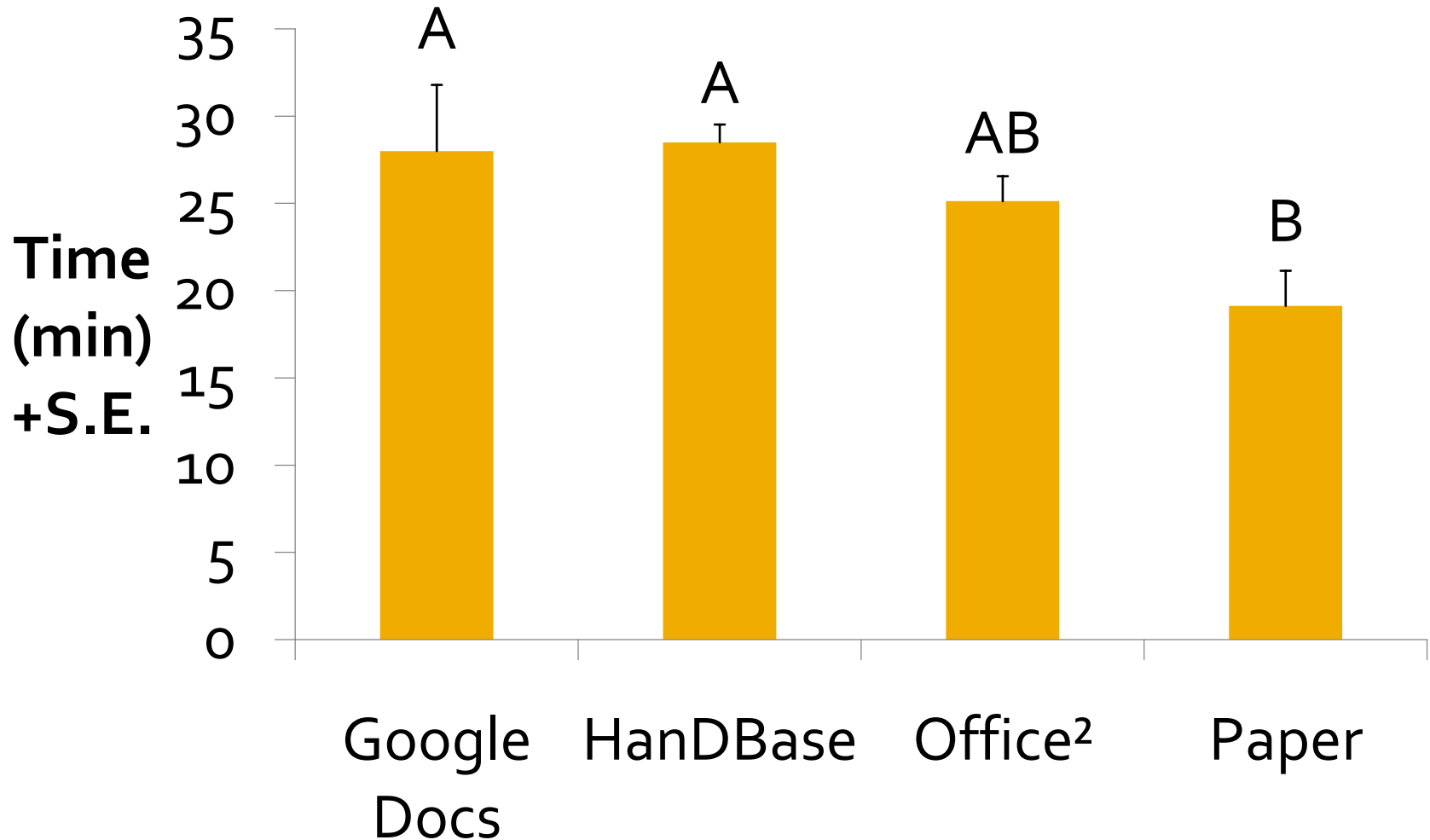
ABC space Done

Methods (cont.)

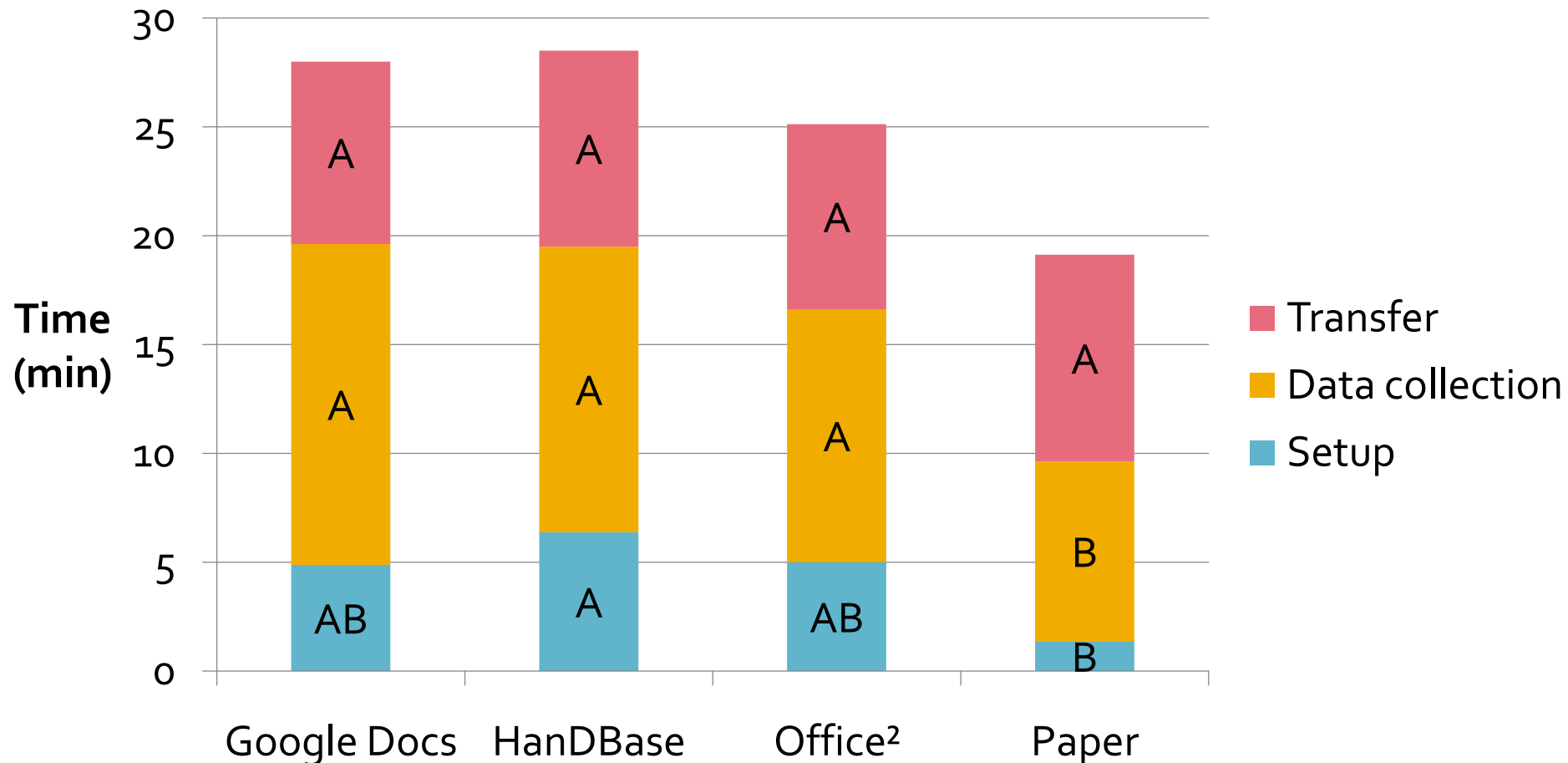
- Timed tasks
 - Setup fillable form
 - Collect and record data
 - Transfer data to spreadsheet file on desktop computer
- Field study
 - Participants photographed 5 trees and recorded diameter of each, and distance between each
- Lab study
 - Participants photographed 3 liquid samples and recorded temperature and pH each



Results: Total time



Results: Components of total time



Values labeled with the same letter within a component are not significantly different

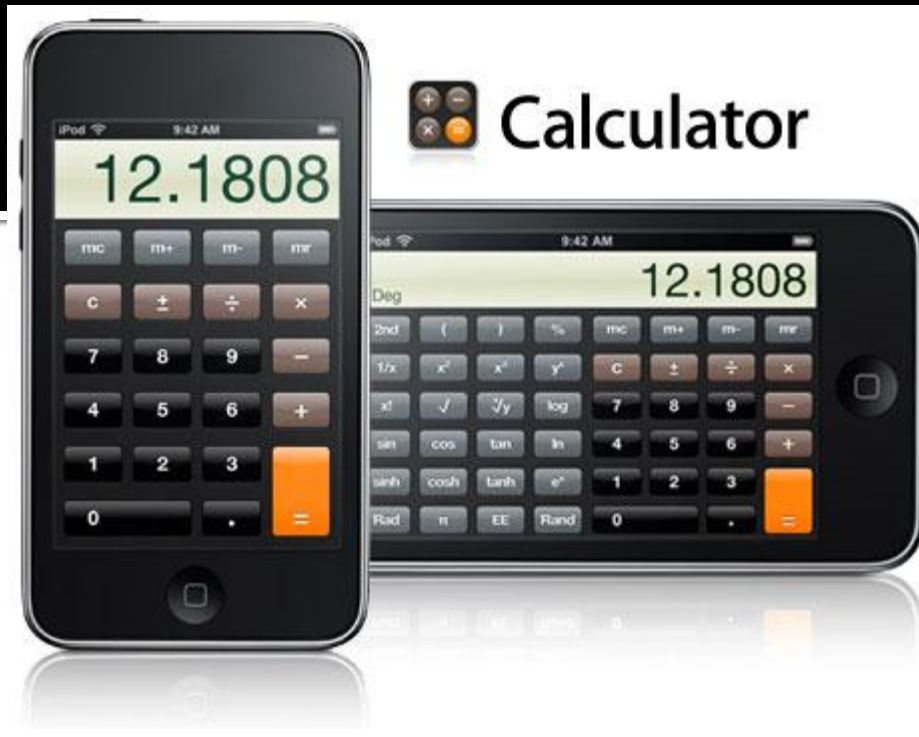
Problems encountered with iPods

- Transfer of photographs accounted for bulk of data transfer time
 - HandBase incorporates images into database, but doesn't transfer images into downloaded spreadsheet
 - Photographs cannot be incorporated into other platforms, so must be transferred separately
- Poor quality of wireless signal increased time required for data collection and transfer
 - Google Docs cannot be used without wireless signal
 - Repeated requests for wireless password slowed process
- Easy to mis-type on small screen
- Screen shattered after one iPod was dropped



iPod advantages

- Wide range of iPod applications are useful in field and lab settings
 - Camera
 - Calculator
 - Stopwatch
 - Unit conversion tools
- Users appeared to become more efficient with repeated use of each program
 - Paper had advantage of familiarity and flexibility
- Rigidity of HanDbase slowed process but enforced consistency and uniformity



Conclusion

- Paper-based data collection was faster than HanDbase or Google Docs software
- Office² spreadsheet was not significantly different from other treatments
- No difference in data transfer speed between methods



Future study needs

- Test after users are familiar with each platform
- Test with strong wireless signal
- Re-design test to better reflect field conditions
 - More data collection than data entry
 - Less emphasis on photographs

