

# A comparison of list and scatterplot interfaces for data comparison on mobile devices

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# Outline

- Background
- Research questions
- Methods
- Prototype
- Usability test and Results
- Conclusion
- Questions

# Background

- NST in Tromsø has ongoing research with mobile utilities for people that have diabetes
- The "Few Touch" mobile application has been a success for its simplicity
- Long time users have requested more information about nutritional value in different foods
- Current research investigates usefulness of a food map interface (food circle)

# Background

- This thesis ties into ongoing food map research
- Compares two interfaces for item comparison
- Food items chosen to match the target user group of diabetes patients
- Aims to assess initial usefulness for interfaces

# Research Questions

Main question:

*How does a list interface and a scatterplot interface designed for data comparison on small screens compare to each other?*

# Research Questions

Sub questions:

*Q1: How does the efficiency of the two interfaces compare?*

*Q2: How does the usability of the two interfaces compare?*

*Q3: Is the scatterplot interface satisfactory from a general user perspective?*

# Methods

- Designed and implemented a prototype with list and scatterplot interfaces
- 10 participants tested the prototype conducting a set of tasks using each interface
- Collected and analyzed qualitative and quantitative data from user tests
  - Task completion times and error rates
  - SUS, AttrakDiff and post-test questionnaire

# Prototype

- JavaScript/HTML
- Tiny bit of PHP
- Nearly 200 food items

# Prototype

## List Interface

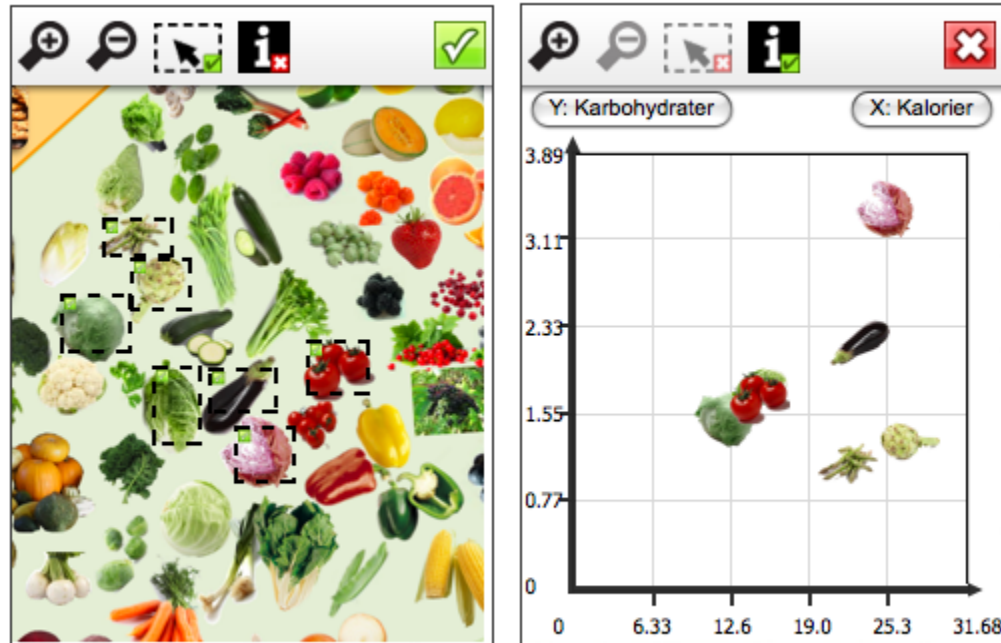
Sammenlikne	
Matvaregrupper	
Melk og melkeprodukter	▶
Fjærfe og kjøtt	▶
Fisk og skalldyr	▶
Kornvarer	▶
Poteter, grønnsaker, frukt og bær	▶
Sukker og søte produkter	▶
Drikke	▶
Diverse retter og produkter	▶

Sammenlikne	
OPP	
Grønnsaker, rå og fryst	
<input type="checkbox"/>	Agurk ▶
<input checked="" type="checkbox"/>	Artisjokk ▶
<input checked="" type="checkbox"/>	Asparges ▶
<input checked="" type="checkbox"/>	Aubergine ▶
<input checked="" type="checkbox"/>	Blomkål ▶
<input type="checkbox"/>	Brokkoli ▶
<input type="checkbox"/>	Cherrytomat ▶
<input type="checkbox"/>	Endivsalat ▶

Lukk		
Matvare (100 g)	Karbohydrater (g)	Kalorier (kcal)
Blomkål	2.3	23
Aubergine	2.2	23
Artisjokk	1.3	27
Asparges	1.1	22

# Prototype

## Scatterplot Interface



# Prototype

Appearance in browser

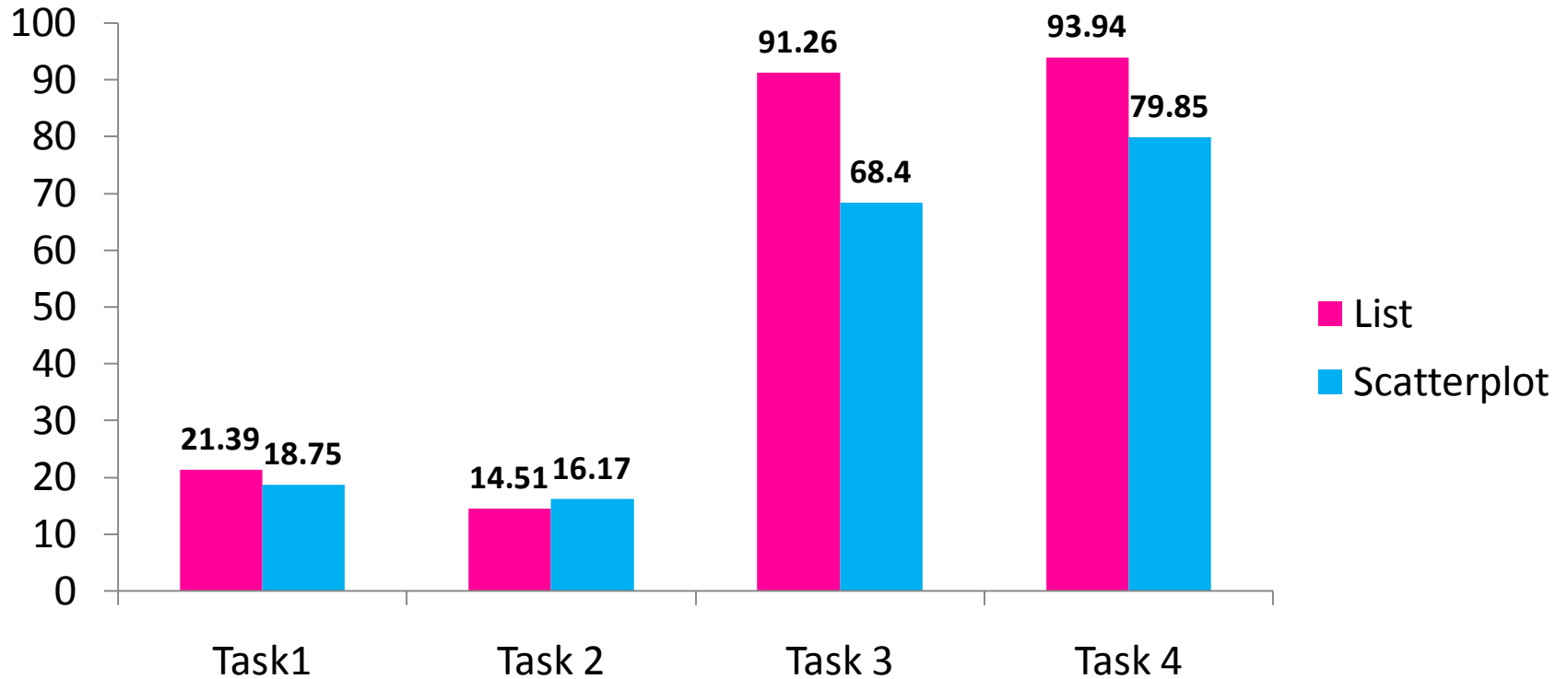


# User test setup

- Tested on desktop browser
- 10 participants, all recruited from NST
- 8 comparison tasks, 4 in each interface
- Different items/values to avoid memory bias
- Starting task set A/B split for equal spread across interfaces
- Audio and browser window captured for each session

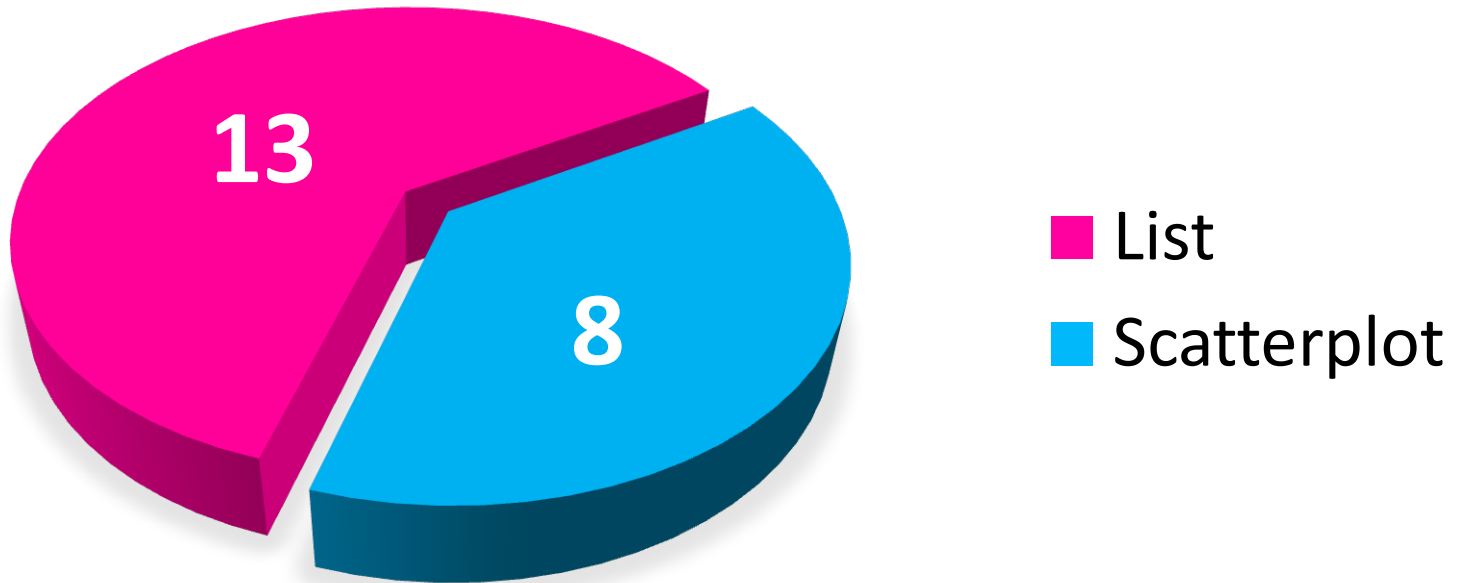
# Results

Average task completion time for each interface



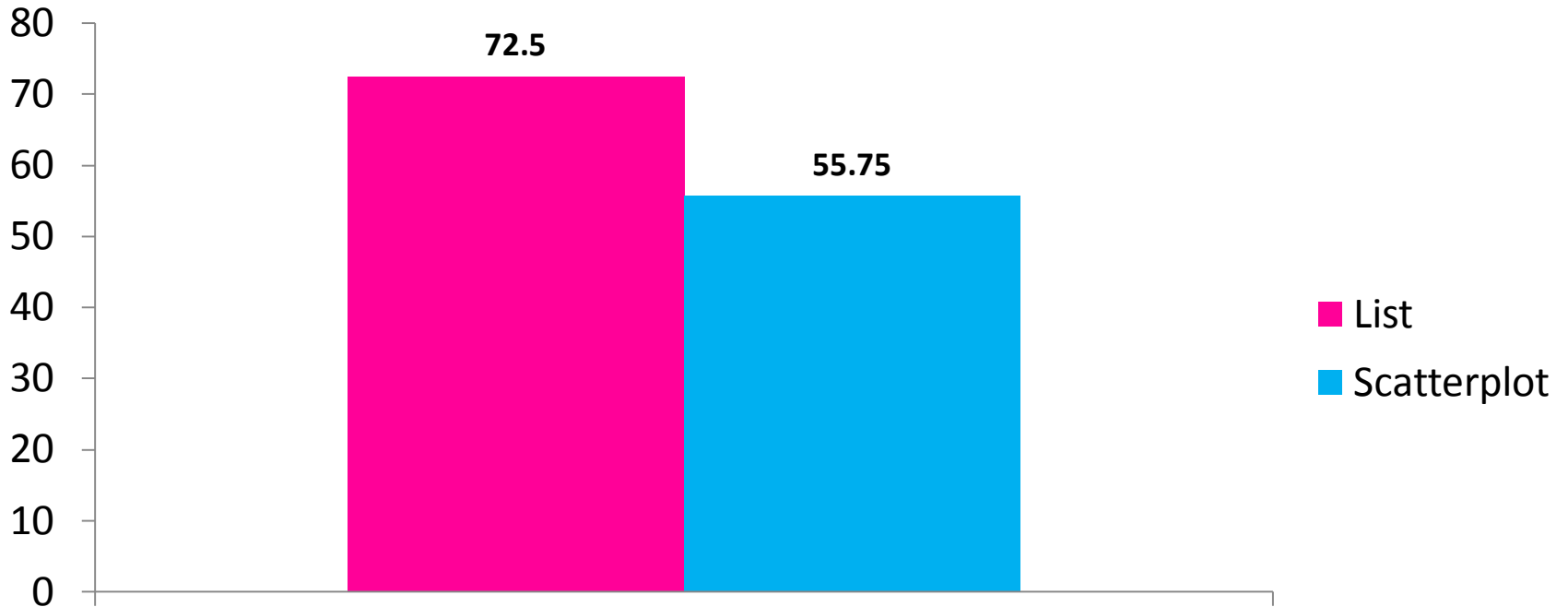
# Results

## Task errors for each interface



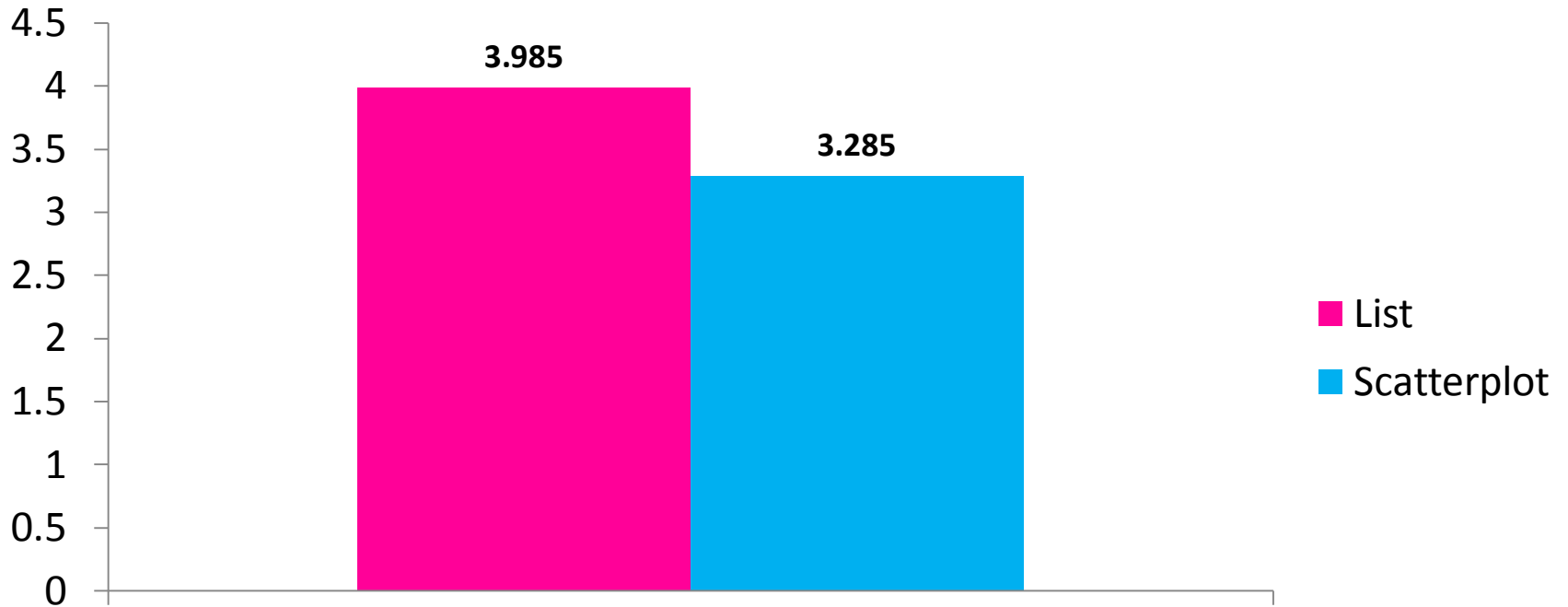
# Results

Mean SUS score for each interface



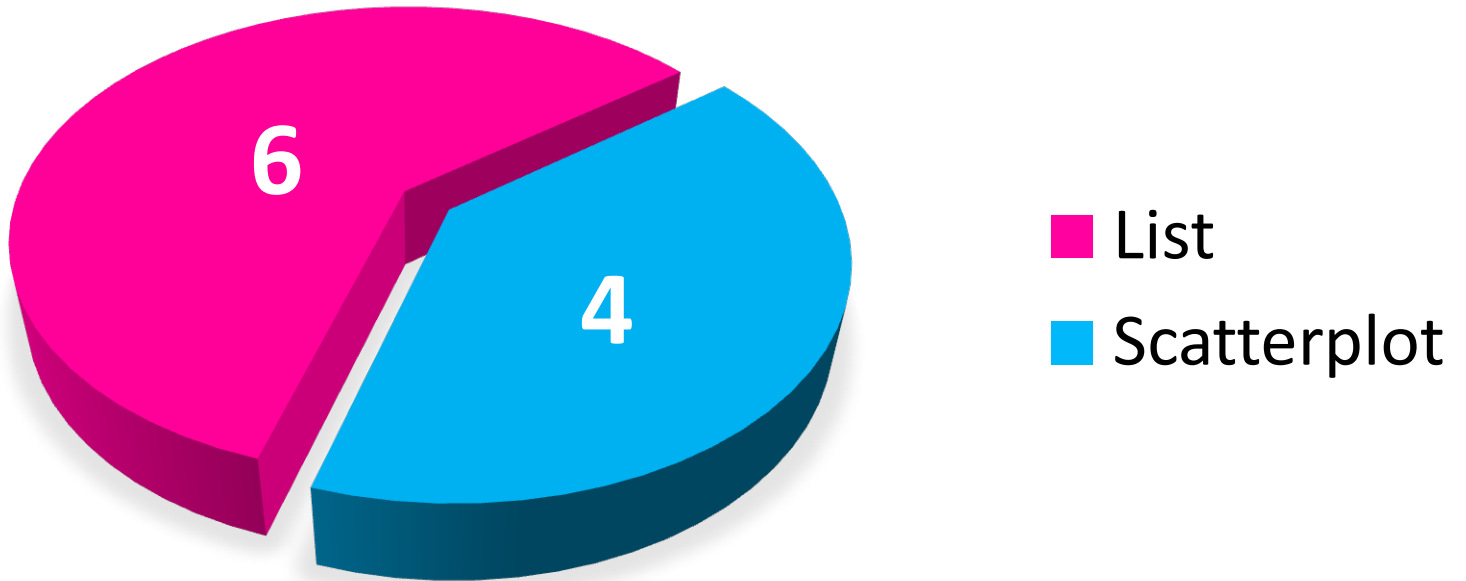
# Results

Mean AttrakDiff score for each interface



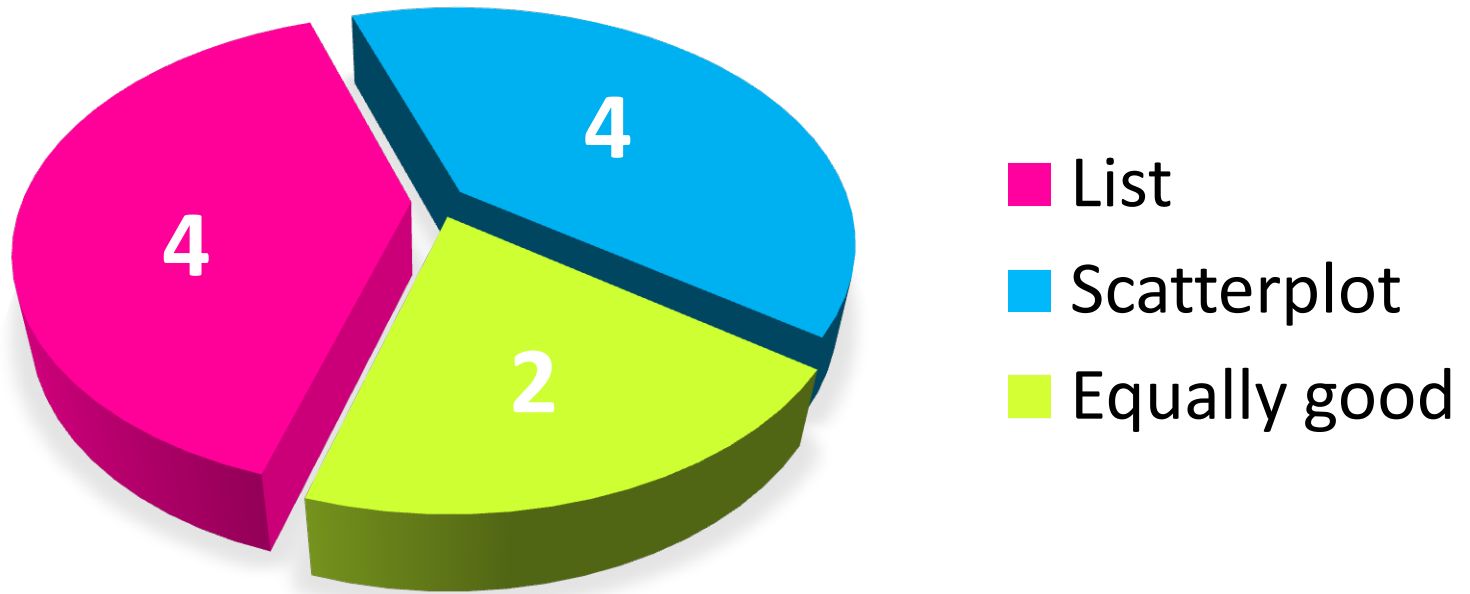
# Results

## Post-test interface preference



# Results

## Post-test interface preference



# Preliminary conclusions

- Both interfaces are viable
  - More errors in the list interface (13 vs 8)
  - Scatterplot interface appears to be faster for "complex" comparison tasks
  - Average usability scores rank list interface higher
  - 6 of 10 still think the scatterplot is equal to or better than the list interface for item comparison
- An initial assessment, more testing needed to reach conclusive results

# Thank you for your attention!

- Questions?