

Scale Presentations in Online Surveys

AAPOR May 2023

Striving to Understand Scale Types

Introduction to the Problem

Problem

- With the use of mobile devices increasing for online survey takers, it is important to consider how questions are displayed on all device types
 - About 62% of respondents took this survey on a mobile device
- Grid questions are one of the most common types of question in online surveys and grids look different on different devices
- There are several different types of grids that can be used in online surveys

Background

- Previous research has shown that accordion grids are promising alternatives to traditional grids (Barlas et.al, 2017)
- Looking at standard grid, accordion grids, and banked grid across device type to determine which grid type performs the most similar as a whole, and across mobile and desktops



Survey Design

Methods

We interviewed 8,524 US adults age 18+ across ten different online opt-in sample provider blends from August 16, 2022, through August 30, 2022.

The sample sizes for each ranged from n=850 to n=858.

Data were RIM weighted in groups by scale and device type to population proportions from the Current Population Survey (CPS) 2021 for:

- Education
- Age by Gender
- Race/Ethnicity
- Region
- Household Income
- Household Size
- Marital Status

Individual weights were capped at 5 and 0.2.

Respondents self-selected device type.

- In this survey respondents took the survey via mobile device, desktop, or tablet. Tablet users were excluded from analysis due to insufficient base sizes.

Respondents were randomly assigned to one of three grid types, sample sizes for each grid ranged from n=2824 to n=2856

The statements were randomized at each grid.



Standard Grid Display on Mobile Versus Desktop

How much do you agree or disagree with the following statements about your neighborhood?

	Definitely disagree	Somewhat disagree	Somewhat agree	Definitely agree
People in my neighborhood can be trusted.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
People in my neighborhood help each other out.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
There are people I can count on in my neighborhood.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



How much do you agree or disagree with the following statements about your neighborhood?

There are people I can count on in my neighborhood.

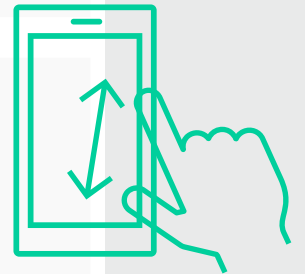
- Definitely disagree
- Somewhat disagree
- Somewhat agree
- Definitely agree

People in my neighborhood help each other out.

- Definitely disagree
- Somewhat disagree
- Somewhat agree
- Definitely agree

People in my neighborhood can be trusted.

- Definitely disagree
- Somewhat disagree
- Somewhat agree
- Definitely agree



Accordion Grid Display on Mobile Versus Desktop

How much do you agree or disagree with the following statements about your neighborhood?

▶ There are people I can count on in my neighborhood.
✓ *Somewhat agree*

▼ People in my neighborhood can be trusted.

Definitely disagree

Somewhat disagree

Somewhat agree

Definitely agree

▶ People in my neighborhood help each other out.



How much do you agree or disagree with the following statements about your neighborhood?

▶ People in my neighborhood help each other out.
✓ *Somewhat disagree*

▼ People in my neighborhood can be trusted.

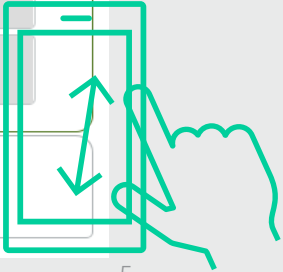
Definitely disagree

Somewhat disagree

Somewhat agree

Definitely agree

▶ There are people I can count on in my neighborhood.



Banked Grid Display on Mobile vs Desktop

How much do you agree or disagree with the following statements about your neighborhood?

People in my neighborhood help each other out.

Definitely disagree Somewhat disagree Somewhat agree Definitely agree

People in my neighborhood can be trusted.

Definitely disagree Somewhat disagree Somewhat agree Definitely agree

There are people I can count on in my neighborhood.

Definitely disagree Somewhat disagree Somewhat agree Definitely agree



How much do you agree or disagree with the following statements about your neighborhood?

People in my neighborhood help each other out.

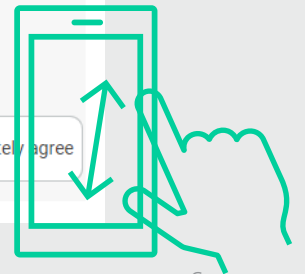
Definitely disagree Somewhat disagree Somewhat agree Definitely agree

People in my neighborhood can be trusted.

Definitely disagree Somewhat disagree Somewhat agree Definitely agree

There are people I can count on in my neighborhood.

Definitely disagree Somewhat disagree Somewhat agree Definitely agree

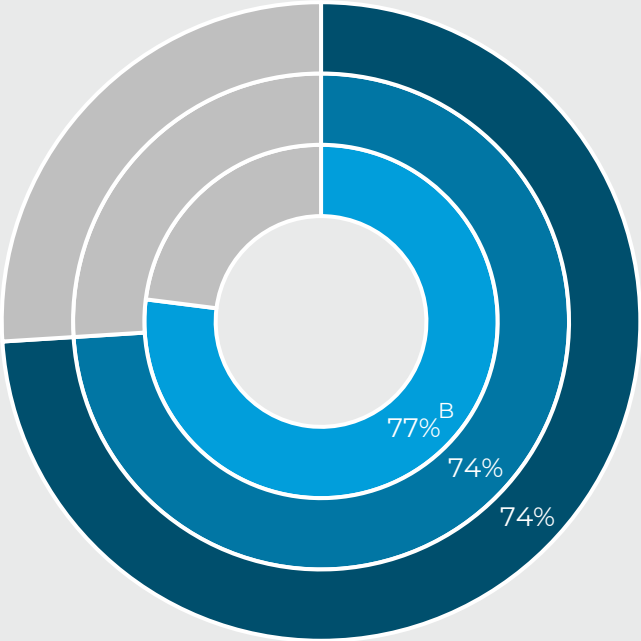


The Data by Scale Type

At two out of the three statements respondents who were assigned banked grids were more likely to agree than those who were assigned accordion grids



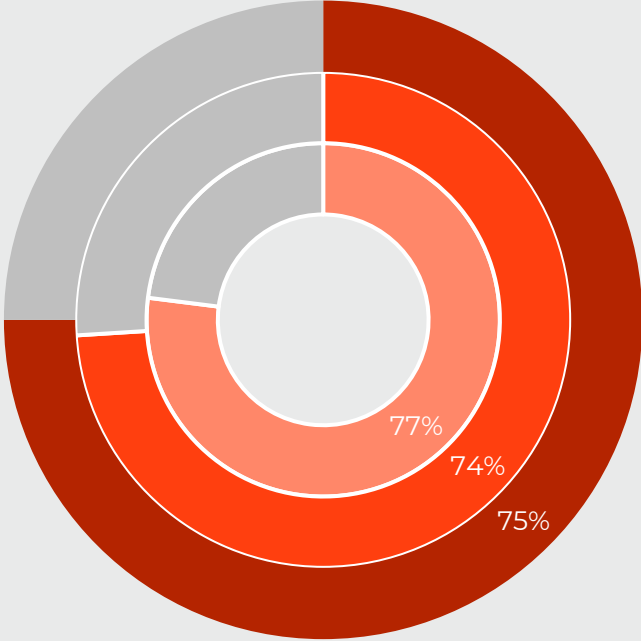
“People in my neighborhood help each other out”



- Agree (Net) - Standard Grid (A)
- Agree (Net) - Accordion Grid (B)
- Agree (Net) - Banked Grid (C)
- Disagree (Net)



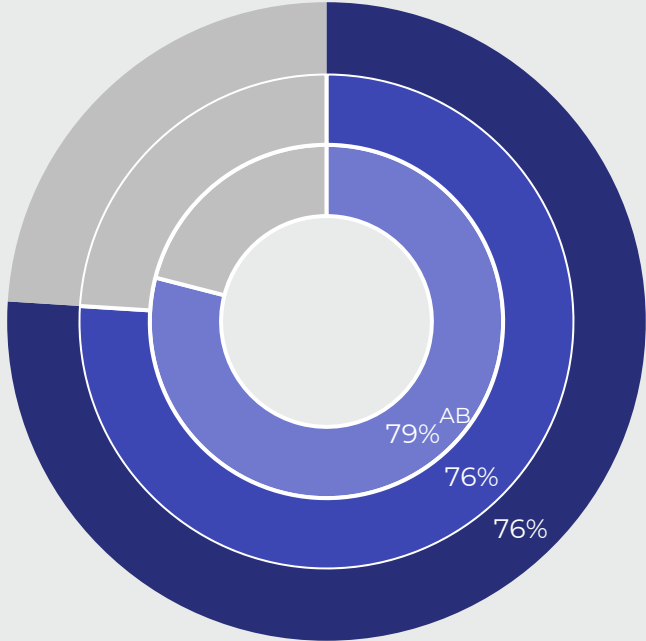
“There are people I can count on in my neighborhood”



- Agree (Net) - Standard Grid (A)
- Agree (Net) - Accordion Grid (B)
- Agree (Net) - Banked Grid (C)
- Disagree (Net)



“People in my neighborhood can be trusted”

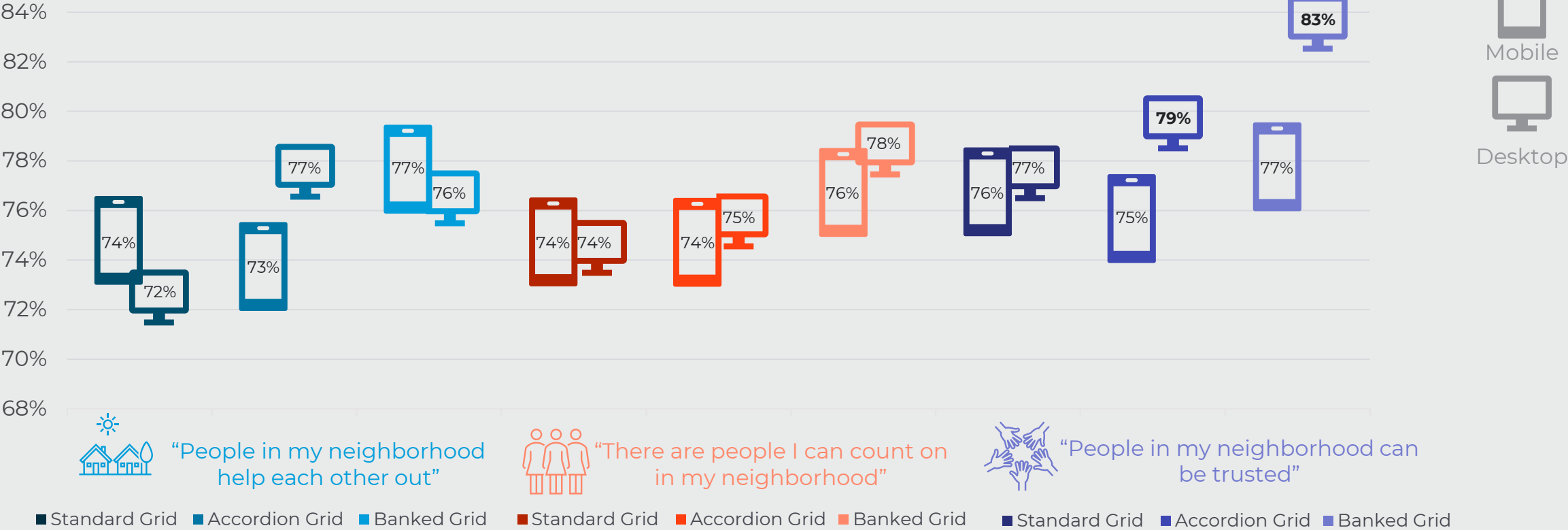


- Agree (Net) - Standard Grid (A)
- Agree (Net) - Accordion Grid (B)
- Agree (Net) - Banked Grid (C)
- Disagree (Net)

The Data by Device and Scale

Overall, the grids perform very similar across mobile and desktops

Agreement with Statement By Device Type



ANOVA with Interaction

Interaction between grid assignment and device type not significant at any statement.



“People in my neighborhood help each other out”



“There are people I can count on in my neighborhood”



“People in my neighborhood can be trusted”

Test of Between-Subjects Effects

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	11.8 ^a	5	2.4	3.2	.007
Intercept	33621.3	1	33621.3	45275.0	<.001
Grid Assignment	8.148	2	4.1	5.5	.004
Device Type	.106	1	.106	.143	.705
Grid Assignment* Device Type	2.136	2	1.068	1.438	.237
Error	6294.293	8476	.743		
Total	43171	8482			
Corrected Total	6306.052	8481			

a. R-squared = .002 (Adjusted R Square = .001)

Test of Between-Subjects Effects

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	4.82 ^a	5	.96	1.2	.329
Intercept	32455.12	1	32455.14	38878.74	<.001
Grid Assignment	2.701	2	1.4	1.6	.198
Device Type	1.01	1	1.010	1.21	.271
Grid Assignment* Device Type	1.036	2	.518	.620	.538
Error	7075.583	8476	.835		
Total	42742	8482			
Corrected Total	7080.4	8481			

a. R Squared = .001 (Adjusted R Squared = .000)

Test of Between-Subjects Effects

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	11.123 ^a	5	2.225	3.301	.006
Intercept	32589.65	1	32589.65	48359.17	<.001
Grid Assignment	4.218	2	2.109	3.13	.044
Device Type	5.994	1	5.994	8.894	.003
Grid Assignment* Device Type	1.268	2	.634	.941	.390
Error	5712.048	8476	.674		
Total	41693	8482			
Corrected Total	5723.171	8481			

a. R Squared = .002 (Adjusted R Squared = .001)

ANOVA with Interaction

Estimated Marginal Means



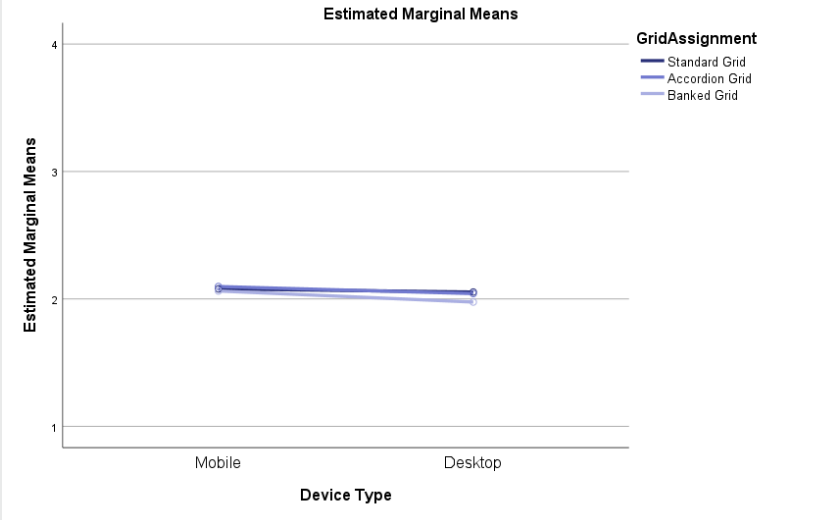
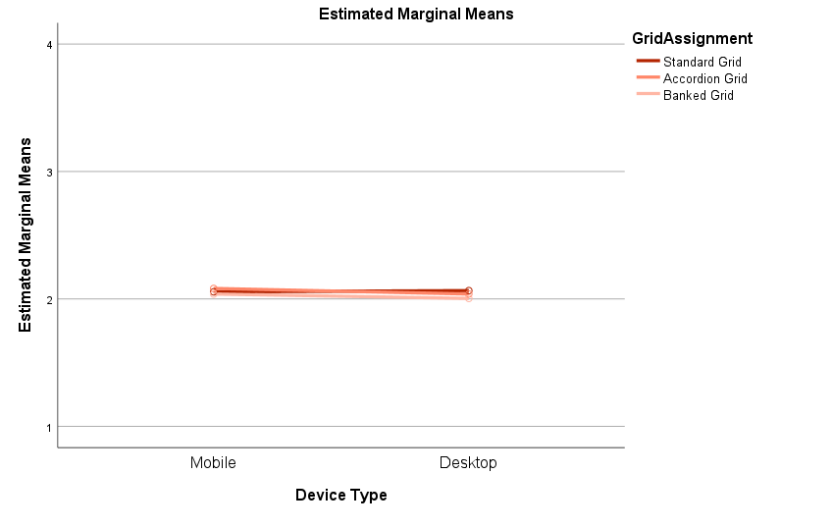
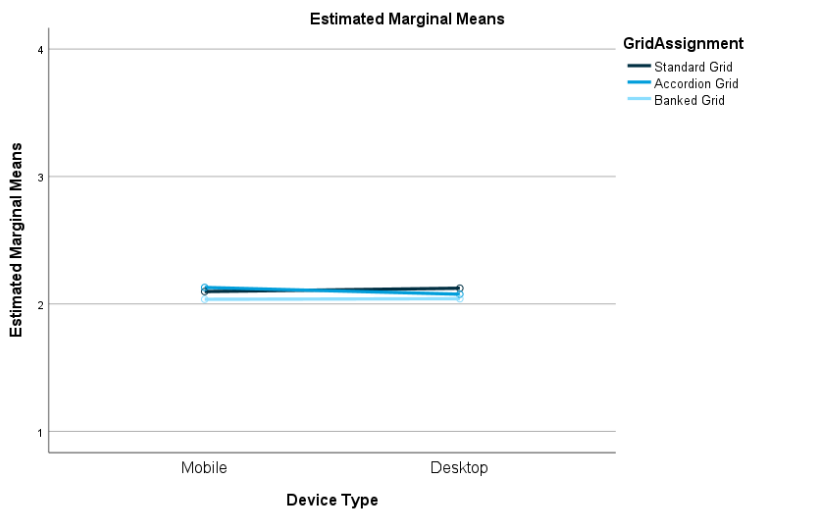
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“There are people I can count on in my neighborhood”



“People in my neighborhood can be trusted”



ANOVA without Interaction

Grid Assignment and Device Type Significant at One statement



“People in my neighborhood help each other out”



“There are people I can count on in my neighborhood”



“People in my neighborhood can be trusted”

Test of Between-Subjects Effects					
Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	9.623 ^a	3	3.2	4.3	.005
Intercept	33660.47	1	33621.3	45275.07	<.001
Grid Assignment	9.473	2	4.7	6.4	.002
Device Type	.097	1	.097	.13	.718
Error	6296.429	8478	.743		
Total	43171	8482			
Corrected Total	6306.052	8481			

a. R-squared = .002 (Adjusted R Square = .001)

Test of Between-Subjects Effects					
Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	3.79 ^a	3	1.262	1.511	.209
Intercept	32483.92	1	32483.92	38916.7	<.001
Grid Assignment	2.682	2	1.3	1.6	.201
Device Type	1.017	1	1.017	1.219	.270
Error	7076.618	8478	.835		
Total	42742	8482			
Corrected Total	7080.4	8481			

a. R Squared = .001 (Adjusted R Squared = .000)

Test of Between-Subjects Effects					
Source	Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	9.855 ^a	3	3.285	4.875	.002
Intercept	32610.98	1	32610.98	48391.49	<.001
Grid Assignment	3.529	2	1.764	2.618	.073
Device Type	6.087	1	6.087	9.033	.003
Error	5713.316	8478	.674		
Total	41693	8482			
Corrected Total	5723.171	8481			

a. R Squared = .002 (Adjusted R Squared = .001)

ANOVA without Interaction

Zooming Out



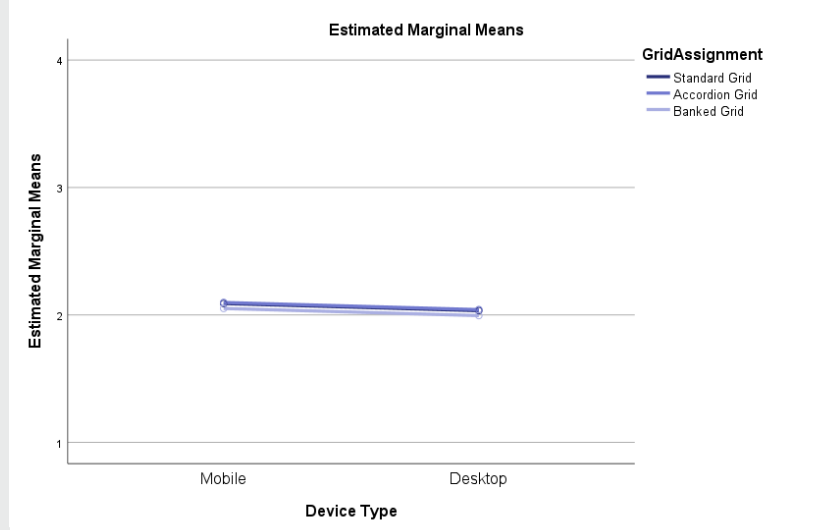
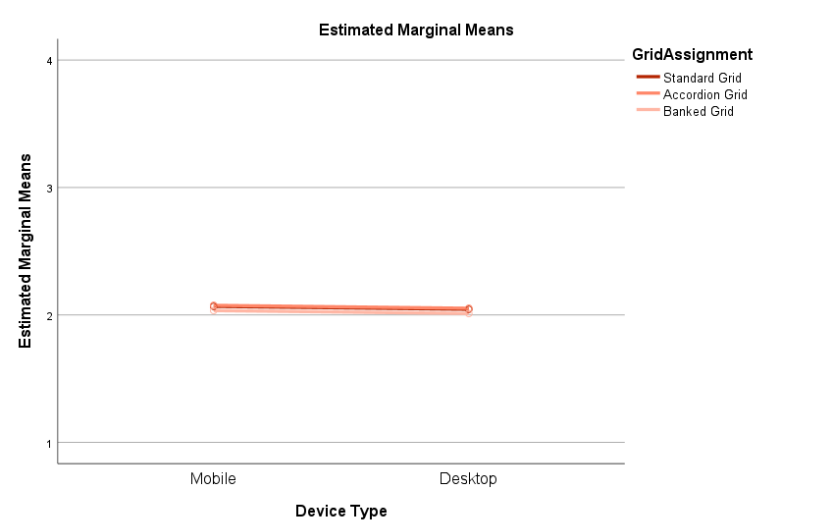
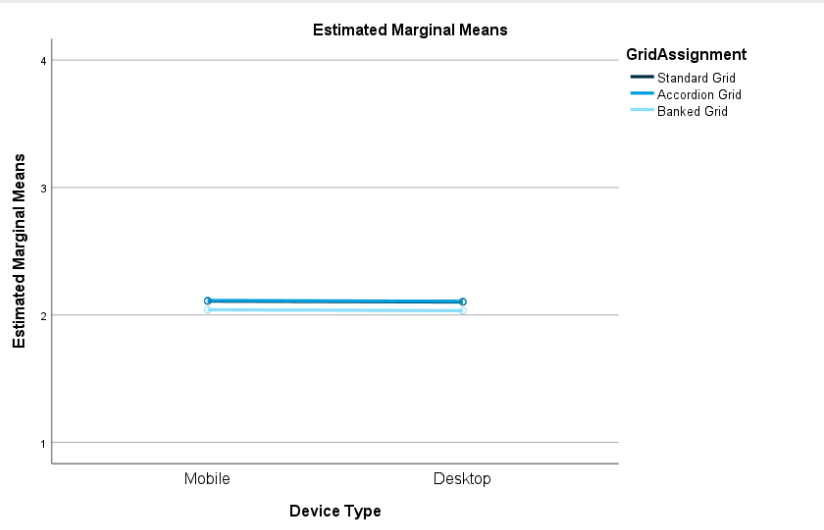
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“People in my neighborhood can be trusted”



Findings and Future Research

Findings

- Accordion and Standard Grids produce very similar results
- Banked Grids had directionally lower means across all three statements (higher agreement)
- Overall, Banked Grids results were at least directionally different than Accordion and Standard Grids
- Regardless of scale type, desktop users had directionally lower estimated marginal means means at all three statements

Future Research

- This research could be extended into a larger scale question as larger scales tend to be more burdensome to the respondents
- More work could be done with different topics or look at the scale questions across subgroups
- This research could also include feedback from respondents to see if there is a preference to which type of scale is easiest to use on different devices

Limitations

- This analysis was only performed on one type of scale (4 category, fully anchored, agreement). Other types of scales (i.e., bipolar, end-anchored, numeric-anchored, slider etc.) as well as number of response categories could have an impact on these results

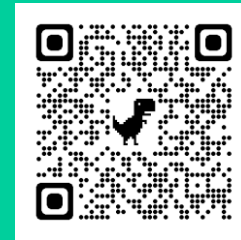


Thank You

For more information, visit

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