Eurographics Conference on Visualization (EuroVis) 2021
R. Borgo, G. E. Marai, and T. von Landesberger
(Guest Editors)

Volume 40 (2021), Number 3

APPENDIX - ParSetgnostics: Quality Metrics for Parallel Sets

Frederik L. Dennig[1], Maximilian T. Fischer[1], Michael Blumenschein[1], Johannes Fuchs[1], Daniel A. Keim[1], and Evanthia Dimara[1,2]

[1]University of Konstanz, Germany [2]Utrecht University, Netherlands

The table of contents is on the next page.

Contents

1. ParSetgnostics Explorer

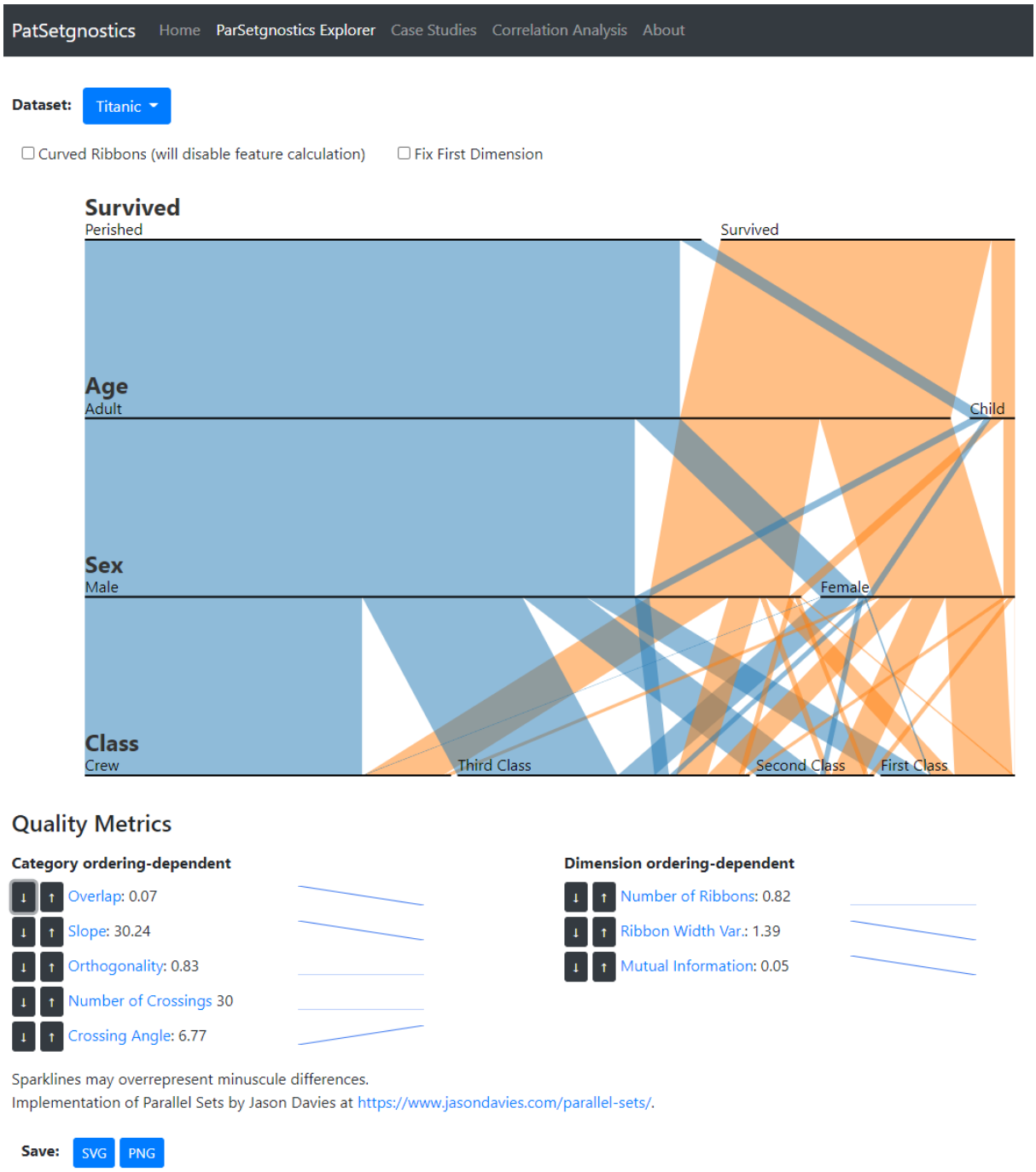

Figure 1: *ParSetgnostics Explorer*

2. Reconstructed Datasets

2.1. Hassan et al.

Dimensions

- Value
- Sensitivity
- Region
- Costs

Item Frequencies

Frequency	Tuple
43	Non Critical, Unknown, EU (Ireland), Moderate
96	Non Critical, Low, EU (Ireland), Moderate
64	Unknown, Unknown, South America (Sao Paulo), Low
20	Unknown, Unknown, Asia Pacific (Sydney), High
12	Unknown, Unknown, US West (Northern California), High
8	Critical, Unknown, Asia Pacific (Sydney), High
98	Critical, Unknown, US West (Northern California), High
115	Critical, High, Asia Pacific (Sydney), High
51	Critical, High, US West (Northern California), High
4	Critical, Unknown, Asia Pacific (Tokyo), Very High
9	Critical, Low, Asia Pacific (Tokyo), Very High
127	Critical, High, Asia Pacific (Tokyo), Very High

Table 1: *Hassan et al. dataset*

2.2. Koh et al.

Dimensions

- Purchaser Currently Living In
- Property Type Purchased
- Location of Purchased Property

Item Frequencies

Frequency	**Tuple**
71	Public Property, Apartment, Central
77	Public Property, Condominium, Central
1	Public Property, Detached, Central
1	Public Property, Exec Condominium, Central
1	Public Property, Semi-Detached, Central
1	Public Property, Terraced House, Central
129	Private Property, Apartment, Central
273	Private Property, Condominium, Central
14	Private Property, Detached, Central
12	Private Property, Semi-Detached, Central
15	Private Property, Terraced House, Central
14	Public Property, Apartment, East
43	Public Property, Condominium, East
1	Public Property, Detached, East
7	Public Property, Exec Condominium, East
3	Public Property, Terraced House, East
26	Private Property, Apartment, East
21	Private Property, Condominium, East
3	Private Property, Detached, East
4	Private Property, Exec Condominium, East
7	Private Property, Semi-Detached, East
16	Private Property, Terraced House, East
7	Public Property, Apartment, North-East
30	Public Property, Condominium, North-East
3	Public Property, Detached, North-East
4	Public Property, Exec Condominium, North-East
4	Public Property, Semi-Detached, North-East
8	Public Property, Terraced House, North-East
9	Private Property, Apartment, North-East
30	Private Property, Condominium, North-East
3	Private Property, Detached, North-East
3	Private Property, Exec Condominium, North-East
9	Private Property, Semi-Detached, North-East
18	Private Property, Terraced House, North-East
33	Public Property, Condominium, North
20	Private Property, Condominium, North
2	Private Property, Detached, North
4	Private Property, Exec Condominium, North
2	Private Property, Semi-Detached, North
4	Private Property, Terraced House, North
6	Public Property, Apartment, North
54	Public Property, Condominium, West
8	Public Property, Exec Condominium, West
3	Public Property, Terraced House, West
5	Private Property, Apartment, West
54	Private Property, Condominium, West
1	Private Property, Detached, West
3	Private Property, Exec Condominium, West
4	Private Property, Semi-Detached, West
6	Private Property, Terraced House, West

Table 2: *Koh et al. dataset*

2.3. Rogers et al. (1)

Dimensions

- Participant
- Origin
- Touch Location

Item Frequencies

Frequency	Tuple
161	A, Prompted, Torso
25	A, Spontaneous, Torso
229	B, Prompted, Torso
10	B, Spontaneous, Torso
190	C, Prompted, Torso
5	C, Spontaneous, Torso
11	A, Prompted, Other
69	A, Spontaneous, Other
27	B, Prompted, Other
13	C, Prompted, Other
14	A, Prompted, Hands
191	A, Spontaneous, Hands
9	B, Prompted, Hands
16	C, Prompted, Hands
43	C, Spontaneous, Hands

Table 3: *Rogers et al. (1) dataset*

2.4. Rogers et al. (2)

Dimensions

- Participant
- Origin
- Touch Location

Item Frequencies

Frequency	Tuple
282	D, Prompted, Torso
401	E, Prompted, Torso
52	D, Prompted, Other
64	E, Prompted, Other
71	D, Prompted, Hands
90	D, Spontaneous, Hands
13	E, Prompted, Hands
39	E, Spontaneous, Hands

Table 4: *Rogers et al. (2) dataset*

2.5. Schätzle et al.

Dimensions

- voice
- word_order

Item Frequencies

Frequency	**Tuple**
243	middle, SVO1
186	active, SVO1
24	..., SVO1
174	middle, VSO1
110	active, VSO1
45	..., VSO1
75	middle, O1VS
128	active, O1VS
21	..., O1VS
15	active, ...

Table 5: *Schätzle et al. dataset*

3. Evaluation Overview

3.1. Hassan et al.

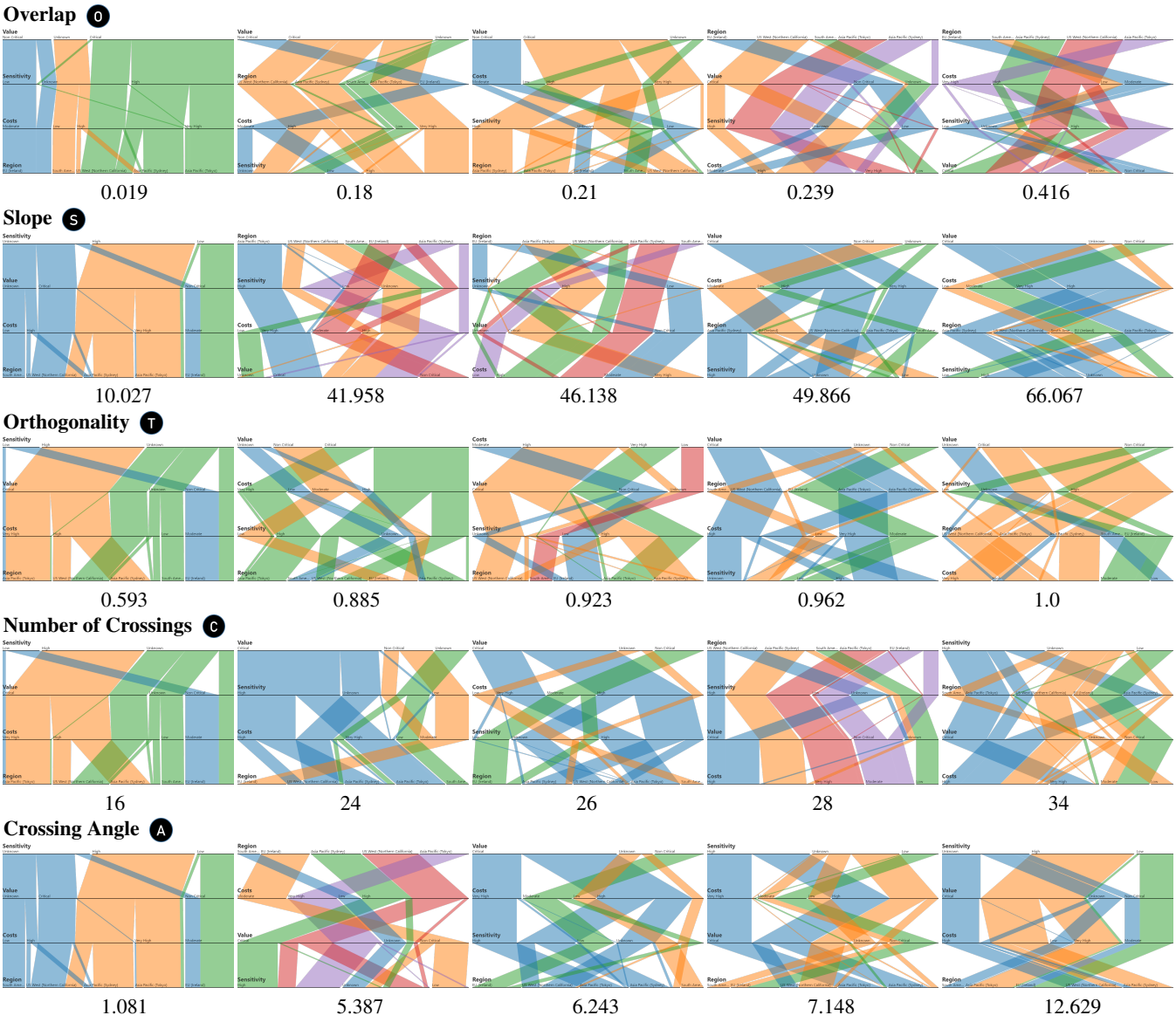

Figure 2: *Hassan et al. - Category ordering-dependent metrics*

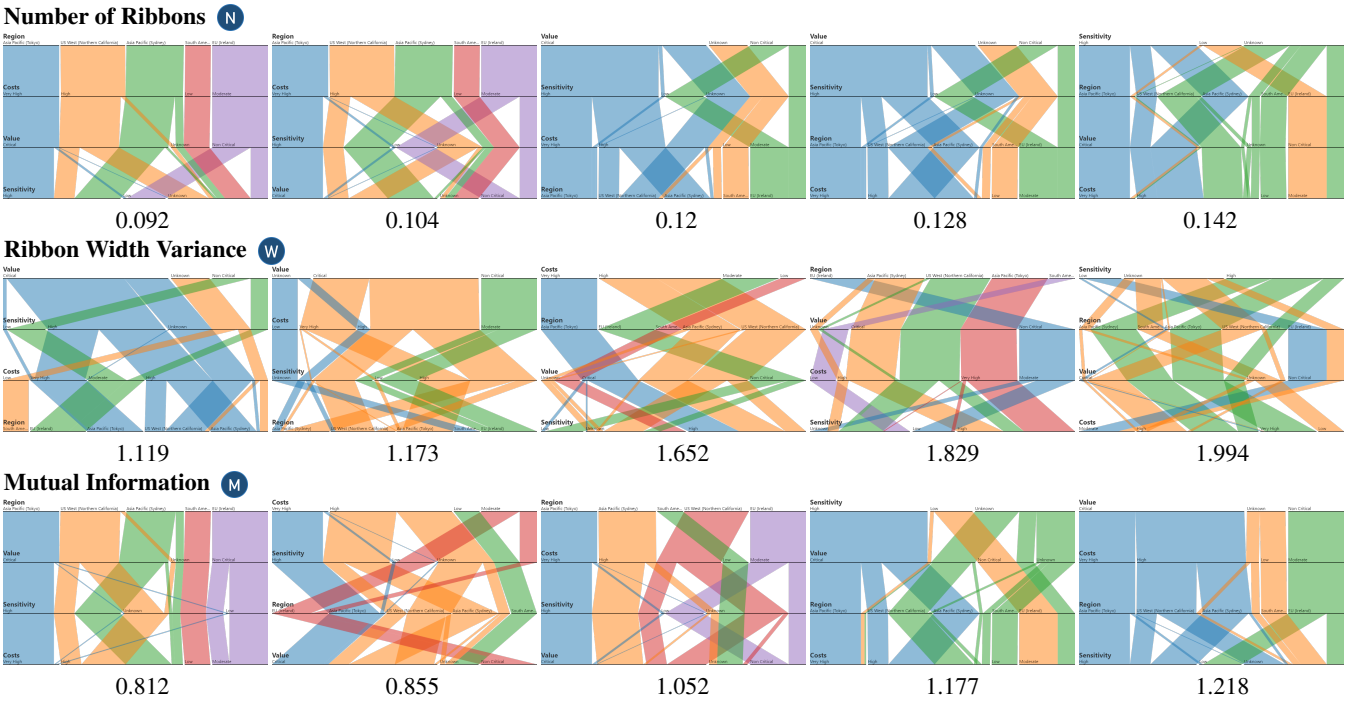

Figure 3: *Hassan et al. - Dimension ordering-dependent metrics*

3.2. Koh et al.

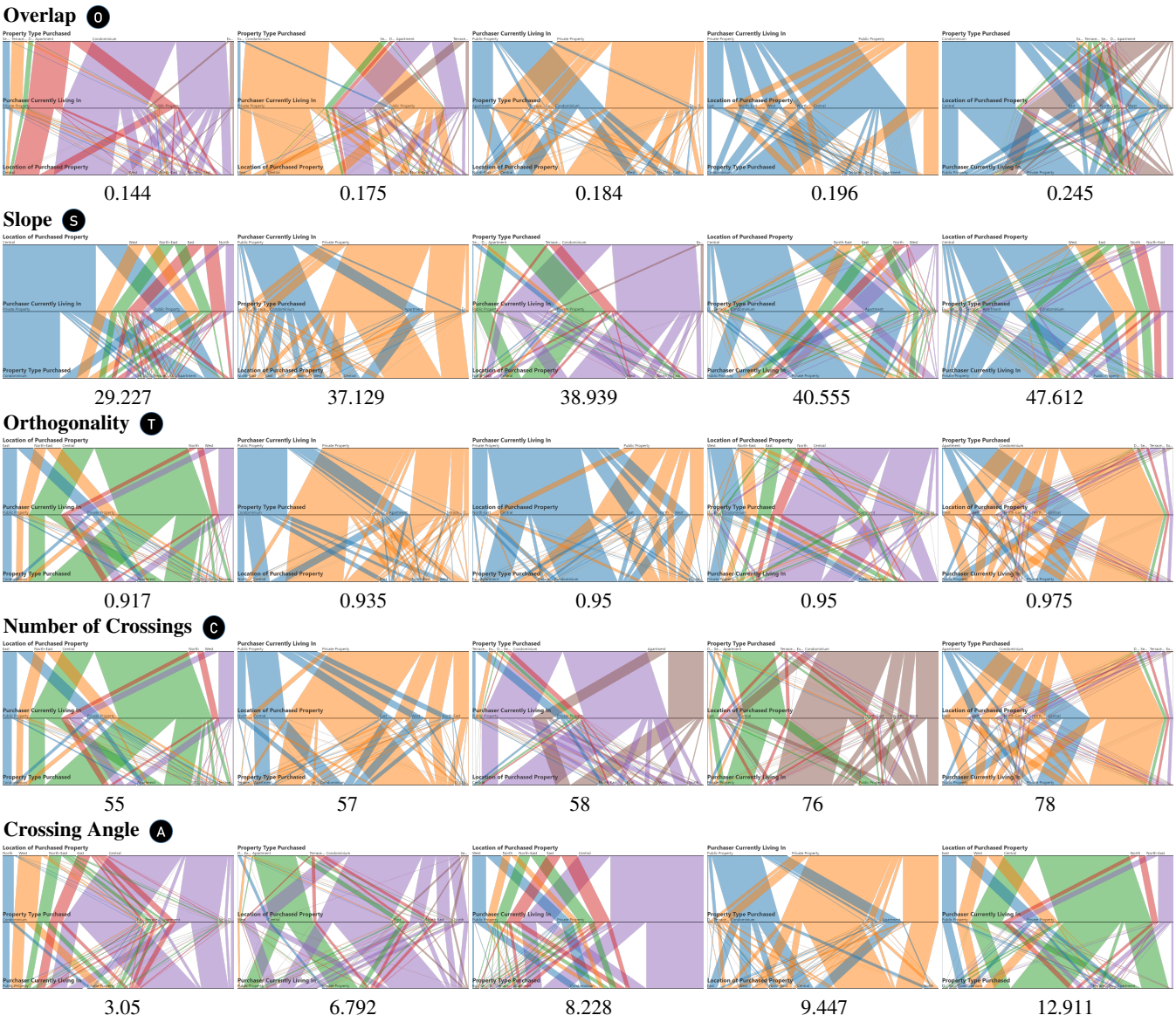

Figure 4: *Koh et al. - Category ordering-dependent metrics*

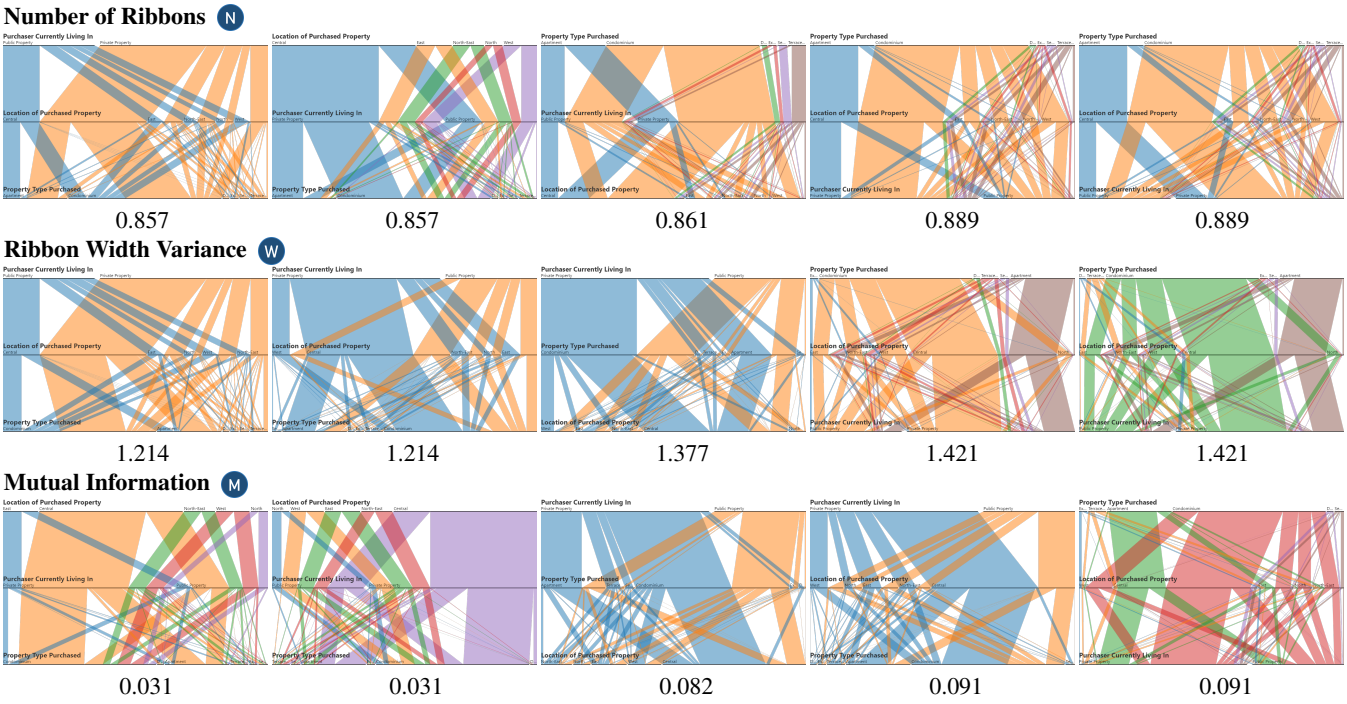

Figure 5: *Koh et al. - Dimension ordering-dependent metrics*

3.3. Kosara et al.

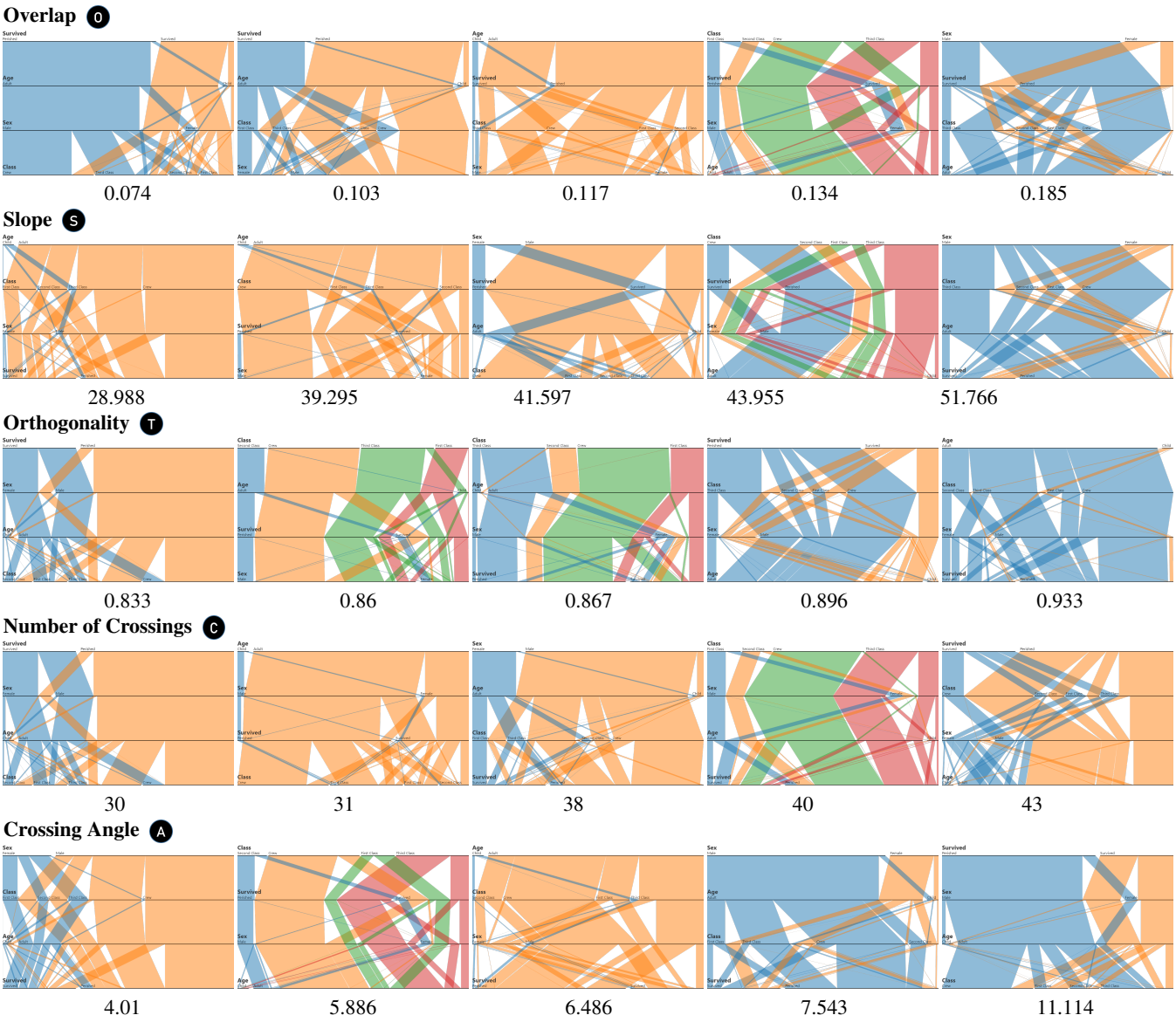

Figure 6: *Kosara et al. - Category ordering-dependent metrics*

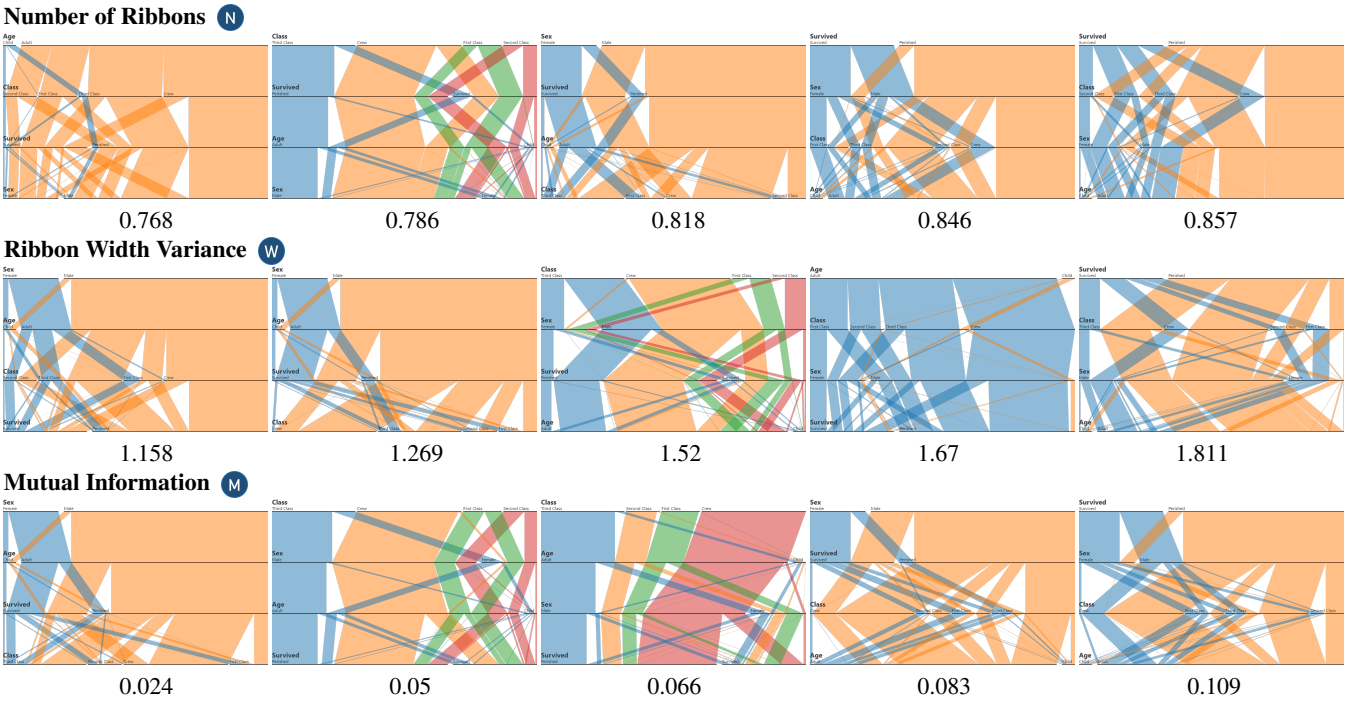

Figure 7: *Kosara et al. - Dimension ordering-dependent metrics*

3.4. Rogers et al. (1)

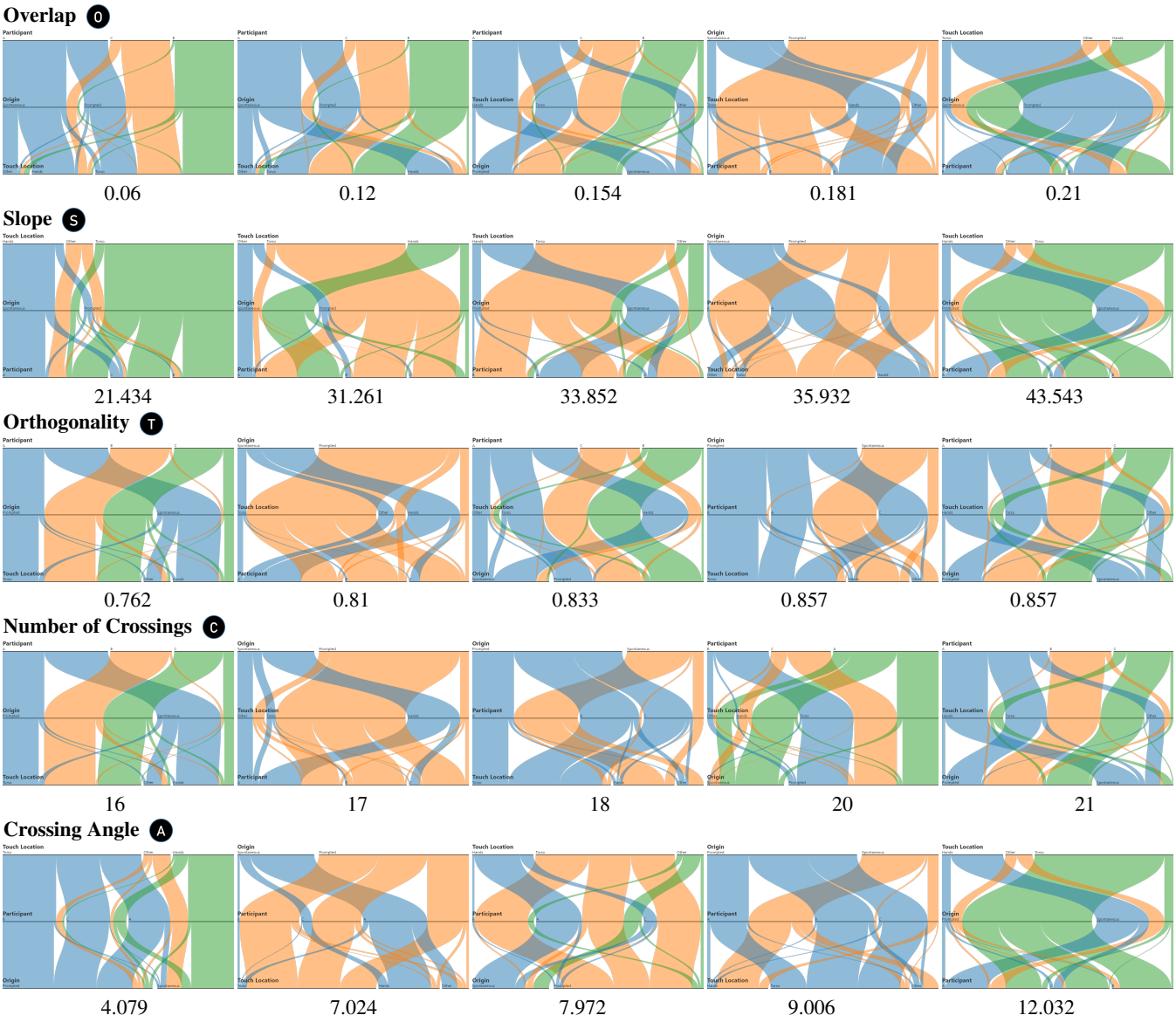

Figure 8: *Rogers et al. (1) - Category ordering-dependent metrics*

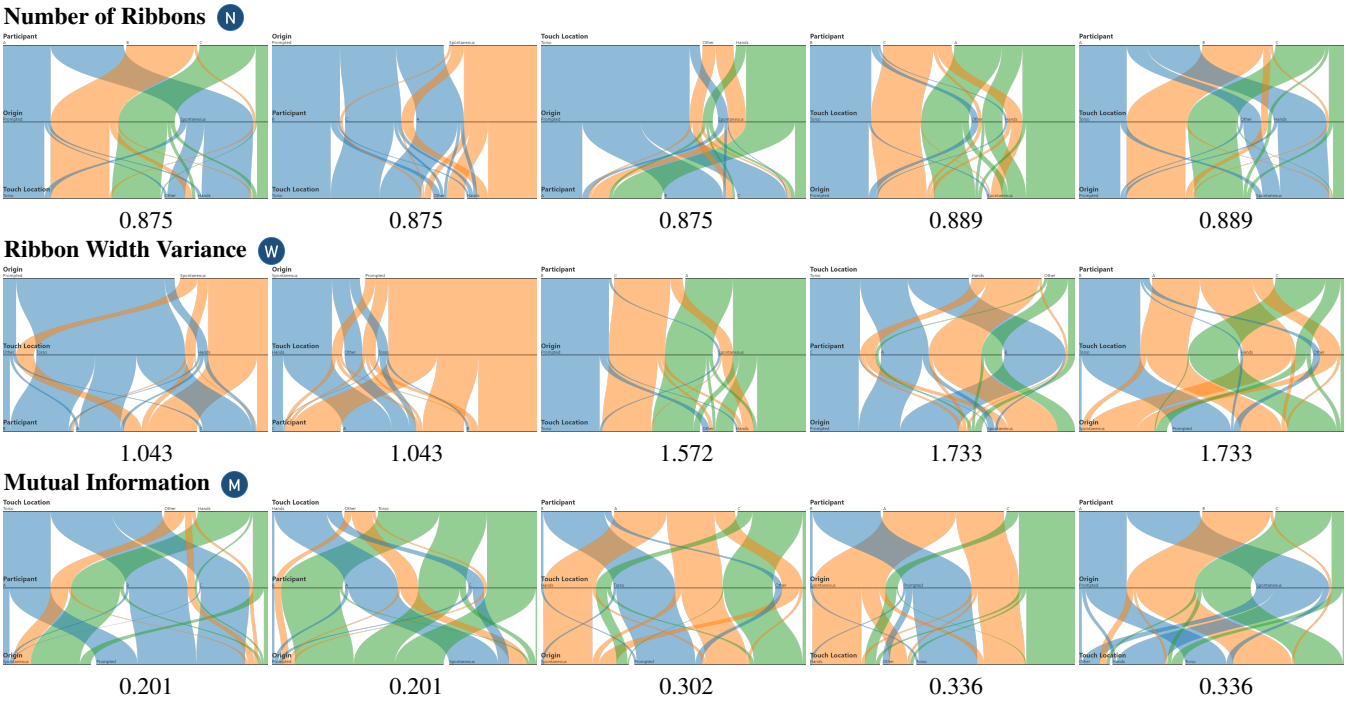

Figure 9: *Rogers et al. (1) - Dimension ordering-dependent metrics*

3.5. Rogers et al. (2)

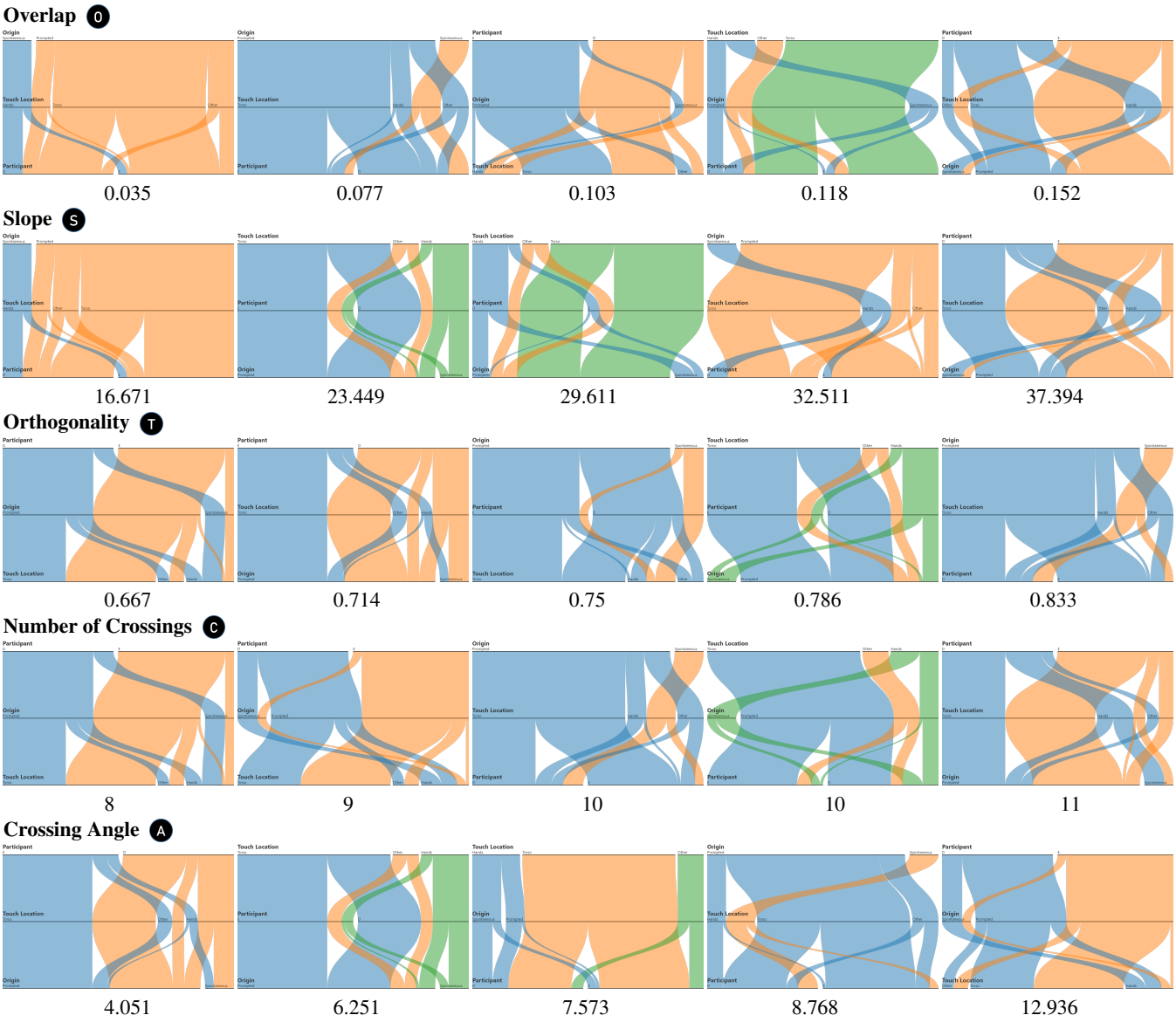

Figure 10: *Rogers et al. (2) - Category ordering-dependent metrics*

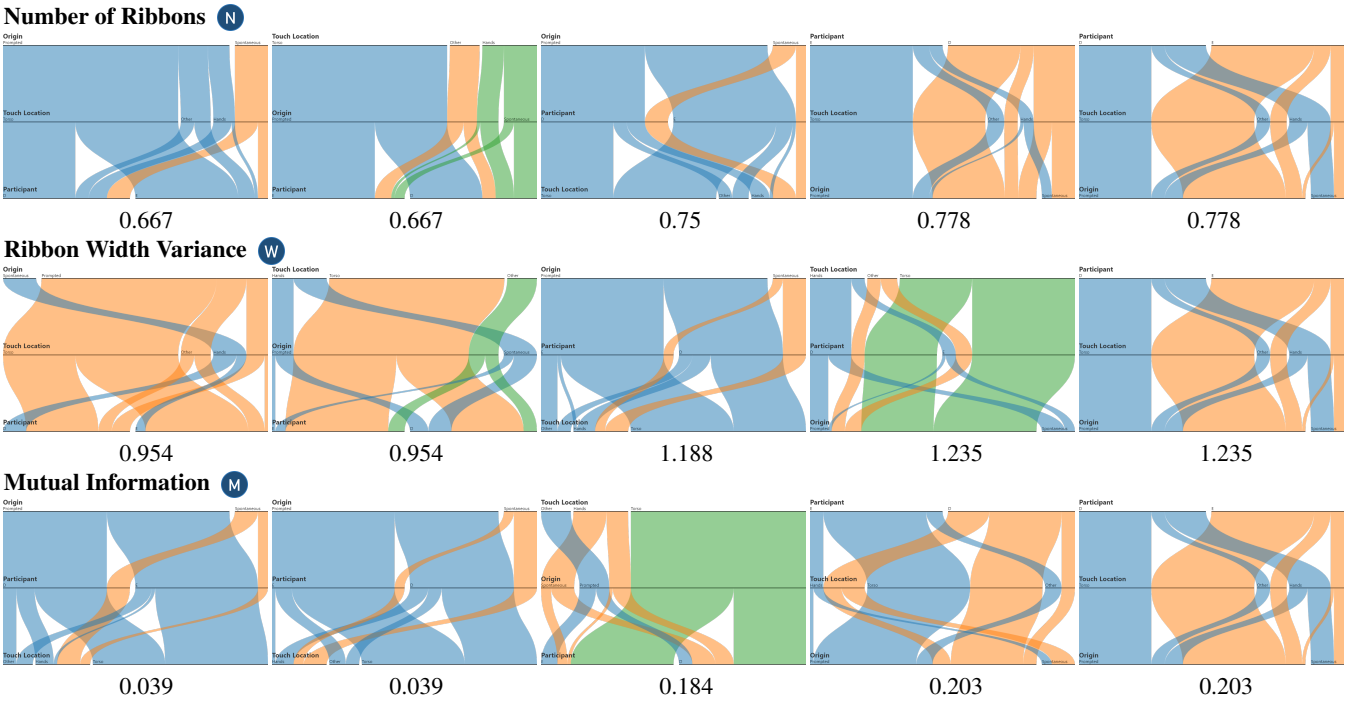

Figure 11: *Rogers et al. (2) - Dimension ordering-dependent metrics*

3.6. Schätzle et al. (2)

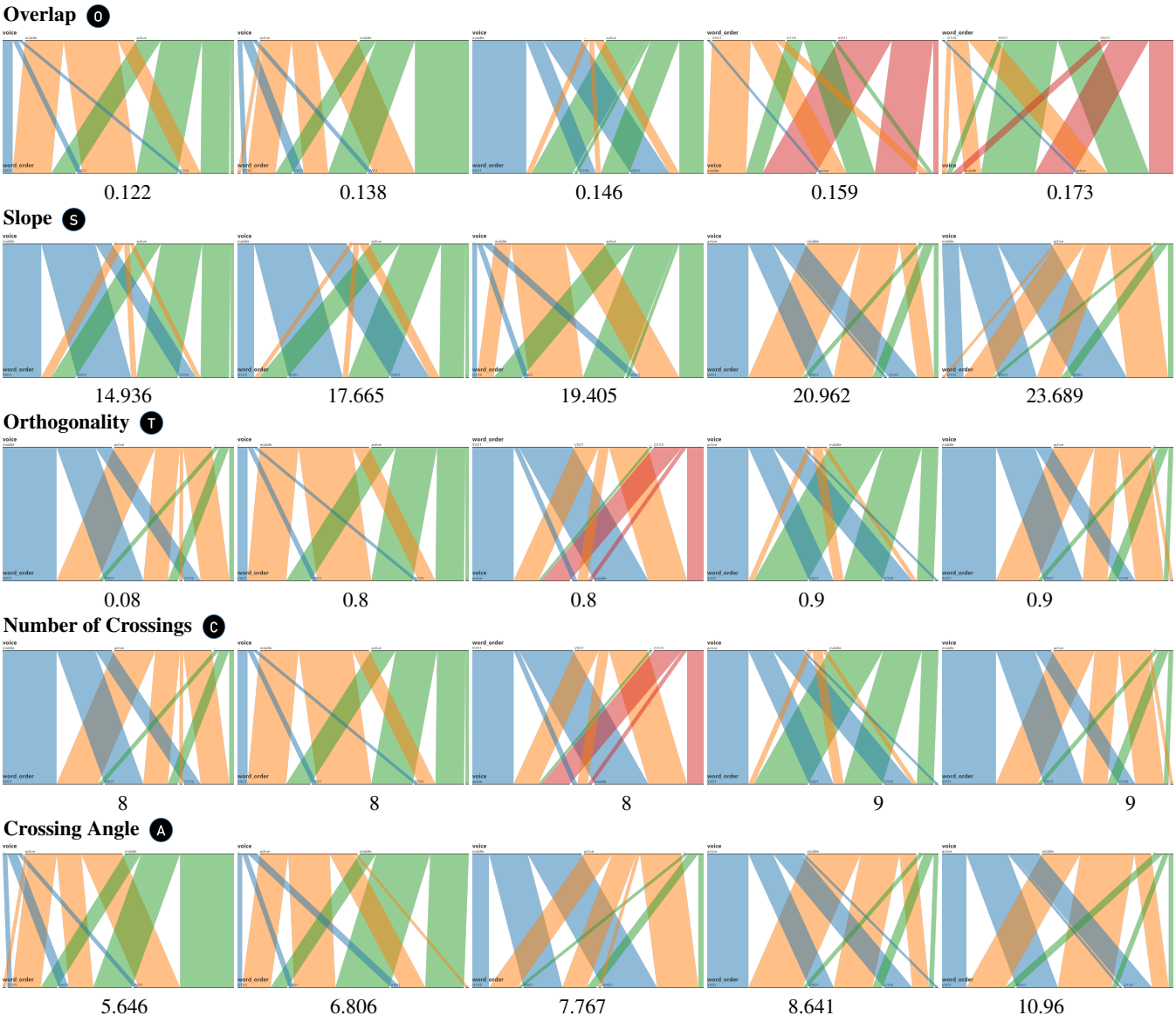

Figure 12: *Rogers et al. (2) - Category ordering-dependent metrics*

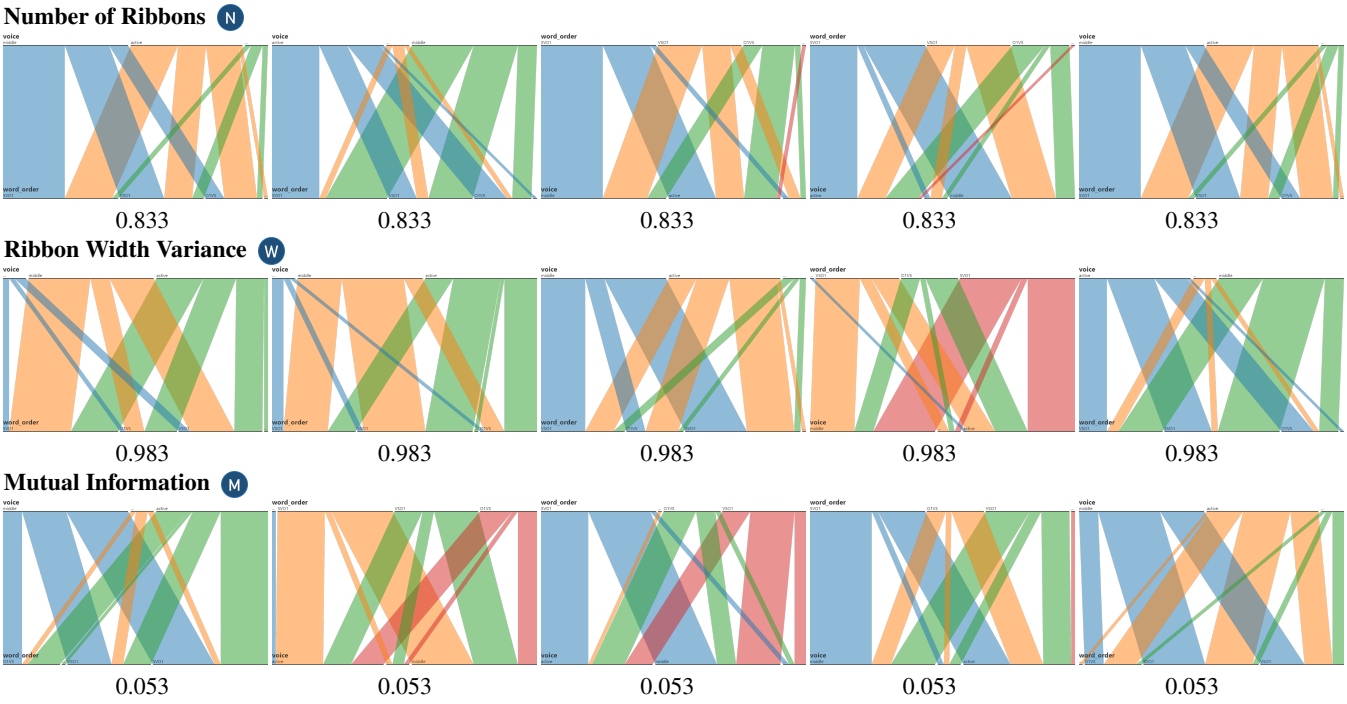

Figure 13: *Rogers et al. (2) - Dimension ordering-dependent metrics - Metric values are identical for different visualization because this dataset only has two dimensions.*

4. Correlation Tables

O Overlap
S Slope
T Orthogonality
C Number of Crossings
A Crossing Angle
N Number of Ribbons
W Ribbon Width Variance
M Mutual Information

4.1. Hassan et al.

	S	N	W	C	A	M	T
O	**0.7**	-0.07	0.12	0.27	0.41	-0.01	0.55
S		-0.06	0.05	0.31	0.66	0	**0.71**
N			0.27	0.77	-0.09	-0.44	-0.12
W				**0.52**	-0.22	-0.24	0.1
C					**-0.06**	-0.34	**0.43**
A						0.15	0.13
M							-0.04

Table 6: *Hassan et al. dataset - Pearson correlation*

	S	N	W	C	A	M	T
O	0.68	-0.07	0.1	0.26	0.4	0.01	0.53
S		-0.06	0.03	0.29	0.65	0.02	0.68
N			0.28	0.77	-0.1	-0.43	-0.07
W				0.48	-0.22	-0.26	0.11
C					-0.05	-0.3	0.43
A						0.13	0.12
M							-0.03

Table 7: *Hassan et al. dataset - Spearman correlation*

4.2. Kosara et al.

	S	N	W	C	A	M	T
O	0.57	0.33	0.17	0.47	-0.08	0.11	0.38
S		0.1	-0.07	0.16	0.29	0.02	0.4
N			0.07	0.28	0	0.27	-0.04
W				**0.56**	-0.51	-0.13	0.35
C					**-0.7**	0.17	**0.74**
A						-0.11	-0.43
M							0.06

Table 8: *Kosara et al. dataset - Pearson correlation*

	S	N	W	C	A	M	T
O	0.56	0.32	0.16	0.46	-0.06	0.11	0.41
S		0.12	-0.06	0.2	0.3	0.02	0.38
N			0.07	0.39	0.01	0.29	0.05
W				**0.59**	-0.54	-0.09	0.37
C					**-0.64**	0.2	**0.77**
A						-0.1	-0.44
M							0.07

Table 9: *Kosara et al. dataset - Spearman correlation*

4.3. Koh et al.

	S	N	W	C	A	M	T
O	**0.18**	0.56	0.28	0.56	-0.3	0.35	0.38
S		0.1	0.04	0.1	-0.07	0.07	0.08
N			0.75	1	-0.68	0.48	0.65
W				0.73	-0.51	0.28	0.49
C					-0.67	0.49	0.69
A						-0.41	-0.35
M							0.32

Table 10: *Koh et al. dataset - Pearson correlation*

	S	N	W	C	A	M	T
O	0.18	0.39	0.4	0.38	-0.29	0.31	0.27
S		0.06	0.05	0.07	-0.05	0.06	0.07
N			0.95	0.96	-0.64	0.28	0.64
W				0.91	-0.59	0.25	0.6
C					-0.58	0.27	0.83
A						-0.32	-0.32
M							0.18

Table 11: *Koh et al. dataset - Spearman correlation*

4.4. Rogers et al. (1)

	S	N	W	C	A	M	T
O	0.89	0.1	0.05	0.15	0.52	-0.11	0.2
S		0.09	0.06	0.18	0.7	-0.15	0.3
N			0.68	0.95	-0.38	-0.35	0.41
W				0.63	-0.23	-0.5	0.25
C					-0.3	-0.35	0.68
A						0.17	0
M							-0.2

Table 12: *Rogers et al. (1) dataset - Pearson correlation*

	S	N	W	C	A	M	T
O	0.85	0.07	-0.02	0.13	0.46	-0.08	0.16
S		0.09	0.03	0.21	0.63	-0.18	0.29
N			0.82	0.87	-0.39	-0.48	0.47
W				0.71	-0.32	-0.54	0.37
C					-0.25	-0.43	0.84
A						0.22	-0.01
M							-0.26

Table 13: *Rogers et al. (1) dataset - Spearman correlation*

4.5. Rogers et al. (2)

	S	N	W	C	A	M	T
O	0.89	0.17	0.14	0.71	0.28	-0.08	0.71
S		0.08	0.07	0.59	0.54	-0.1	0.74
N			1	0.33	-0.02	-0.47	-0.21
W				0.26	0.01	-0.48	-0.24
C					-0.13	-0.03	0.74
A						-0.1	0.03
M							0.16

Table 14: *Rogers et al. (2) dataset - Pearson correlation*

	S	N	W	C	A	M	T
overlap	0.84	0.22	0.19	0.71	0.24	0.03	0.7
S		0.06	0.04	0.54	0.57	-0.01	0.7
N			0.96	0.52	-0.12	-0.22	-0.13
W				0.49	-0.12	-0.2	-0.14
C					-0.14	0.08	0.72
A						-0.12	0.01
M							0.14

Table 15: *Rogers 2 Dataset - Spearman correlation*

4.6. Schätzle et al.

	S	N	W	C	A	M	T
O	0.65	-	0.07	0.19	0.26	-0.03	0.19
S		-	0.1	0.42	0.65	0.01	0.42
N			-	-	-	-	-
W				0.04	0	-0.02	0.04
C					-0.13	0.01	1
A						0.11	-0.13
M							0.01

Table 16: *Schätzle et al. dataset - Pearson correlation*

	S	N	W	C	A	M	T
O	0.66	-	0.1	0.18	0.28	-0.07	0.18
S		-	0.11	0.42	0.68	-0.01	0.42
N			-	-	-	-	-
W				0.07	-0.03	-0.16	0.07
C					-0.09	0.02	1
A						0.08	-0.09
M							0.02

Table 17: *Schätzle et al. dataset - Spearman correlation*