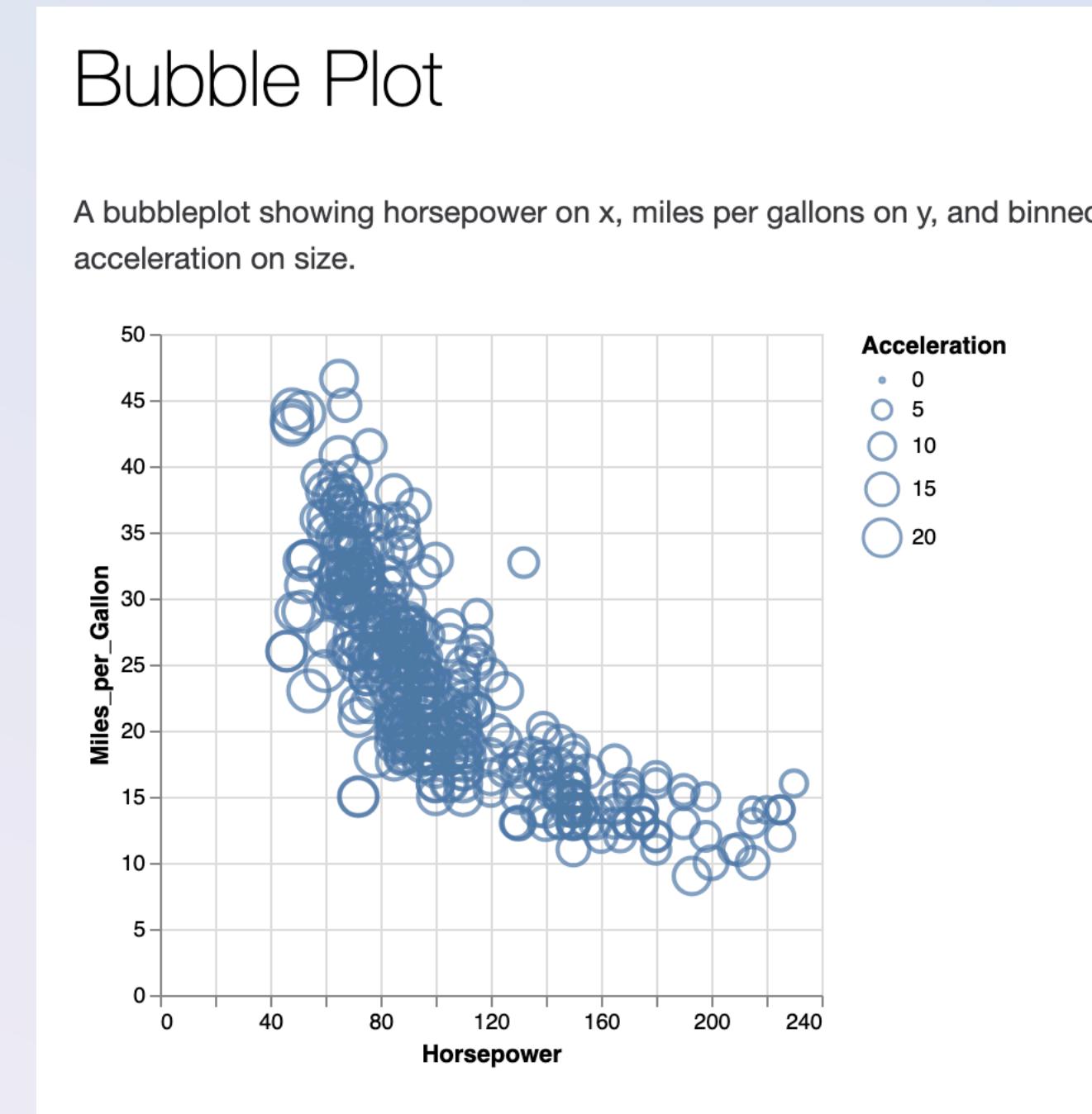


Chapter 3, Episode 3: Assistive barriers

Assistive

Does the user have ways to reduce tedium as-needed, without losing informational fidelity, data signal, and ground truth?

Reducing tedium (for your users, not just you)



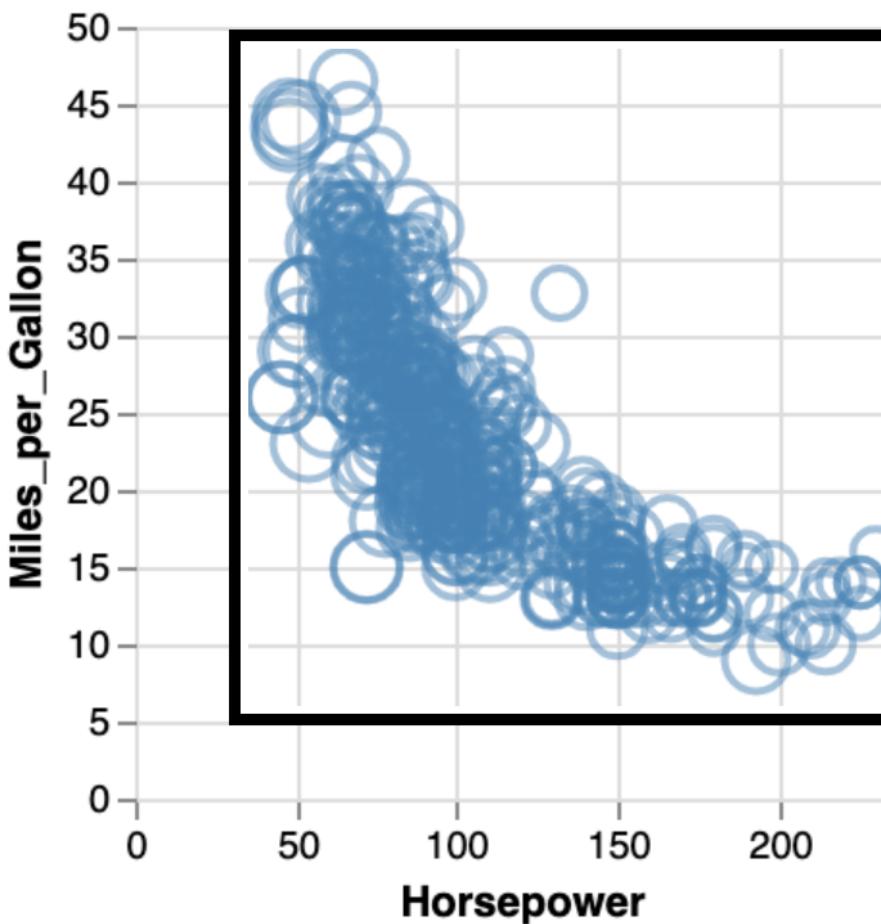
Source: [Vega-lite, bubble plot](#)

Smarter navigation: *skip-ability*

Data Navigator Vega-Lite Examples

Hi! Welcome to our testing area :)

Enter navigation area



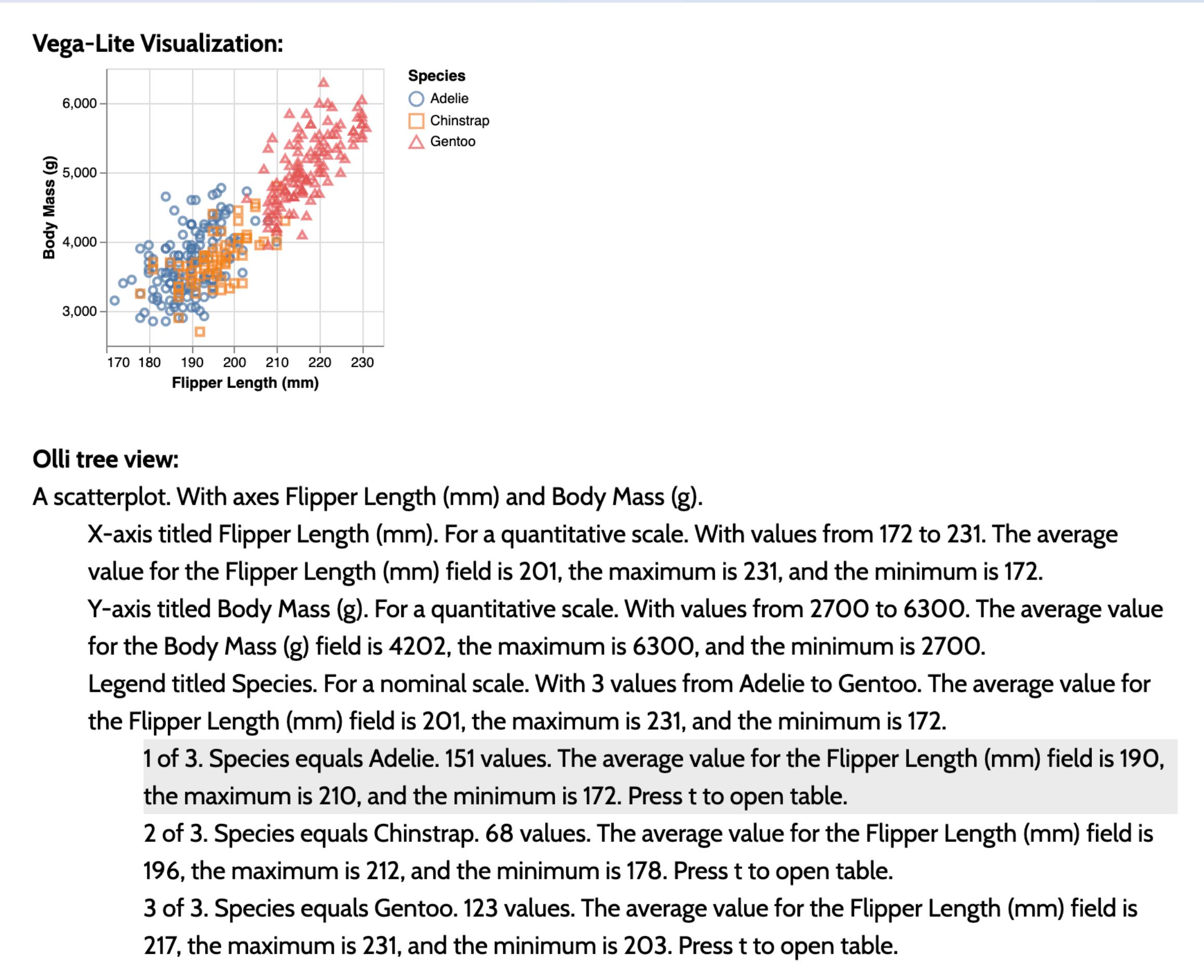
Acceleration

- 0
- 5
- 10
- 15
- 20

× 392 navigable data elements. Group. Enter using Enter Key., figure

Source: [Data Navigator](#), by Elavsky et al

Adding statistical summaries



Source: [Olli](#), by Blanco et al

Adding *rich* sonification

```
1  {
2    "description": "A histogram of Miles_per_Gallon",
3    "data": {
4      "url": "../data/cars.json"
5    },
6    "tone": {
7      "continued": false
8    },
9    "encoding": {
10      "time": {
11        "field": "Miles_per_Gallon",
12        "type": "quantitative",
13        "bin": true,
14        "scale": {
15          "length": 4.5
16        },
17        "tick": {
18          "interval": 0.5,
19          "playAtTime0": true
20        }
21      },
22      "pitch": {
23        "aggregate": "count",
```

Audio Graph Player

Play Stop Play scales Stop playing scales

Audio queue list (at 10)

9. tone series Play this only Play from this

#	time	duration	timbre	pitch	detune	loudness	pan	postReverb	sp
0	0	0.5	default	207.65	-	-	-	0	-
1	0.5	0.5	default	939.71	-	-	-	0	-
2	1	0.5	default	1600	-	-	-	0	-
3	1.5	0.5	default	1312.92	-	-	-	0	-
4	2	0.5	default	1298.56	-	-	-	0	-
5	2.5	0.5	default	997.13	-	-	-	0	-
6	3	0.5	default	580.86	-	-	-	0	-
7	3.5	0.5	default	308.13	-	-	-	0	-
8	4	0.5	default	207.65	-	-	-	0	-

10. text Play this only Play from this

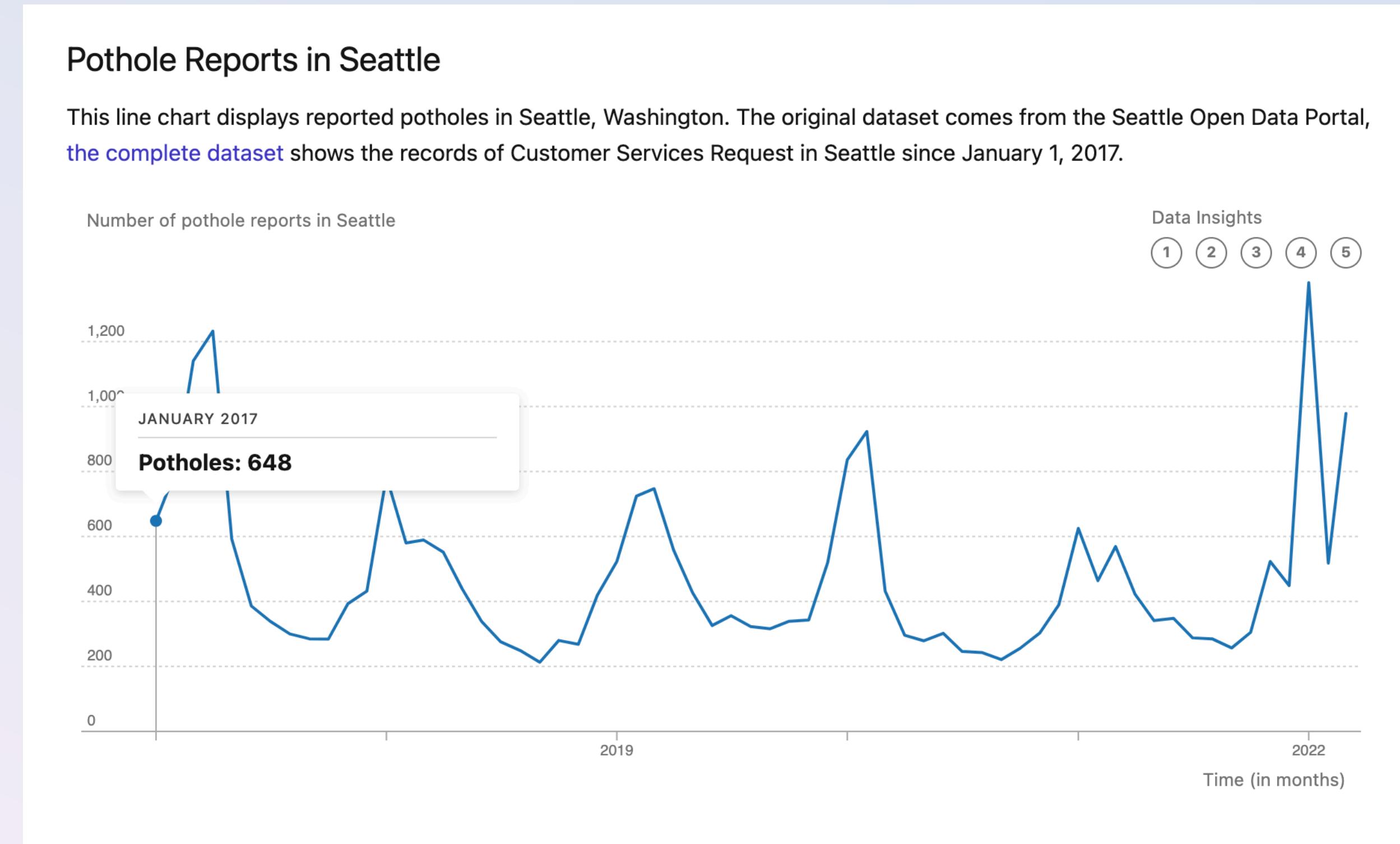
Count

Miles_per_Gallon (bin)

100
80
60
40
20
0
10 20 30 40 50
Miles_per_Gallon (bin)
Count

Source: [Erie, a sonification grammar, by Kim et al](#)

Skip-ability, summarization, and sonification



Source: [Chart Reader, by John Thompson](#)

Assistive Evaluation Toolkit:

1. Are you reducing *tedium*?

1. Are you reducing tedium *for your user* or just for yourself?
2. Add helpful navigation (eg [Data Navigator](#))
3. Add descriptive statistics (eg [Olli](#))
4. Add sonification (eg [Erie](#))

2. Is your **assistive access** also *compromising*? (Have you provided multiple ways to gain assistance? (eg [Chart Reader](#))