

Recorded Workouts Time Series Data Analysis

SCMA 677

Quality Management

Bryce Bowles

12/02/2021



Data Sample & Operational Definitions

- **Average Heart Rate:** Average beats/minute in duration of workout
- **Active Energy** (calories): These are the calories you burn by being active. Calculated using personal information such as height, weight, gender, and age.
- **Traditional Strength Training:** Lifting weights (Chest, back, shoulders, legs, arms etc.)

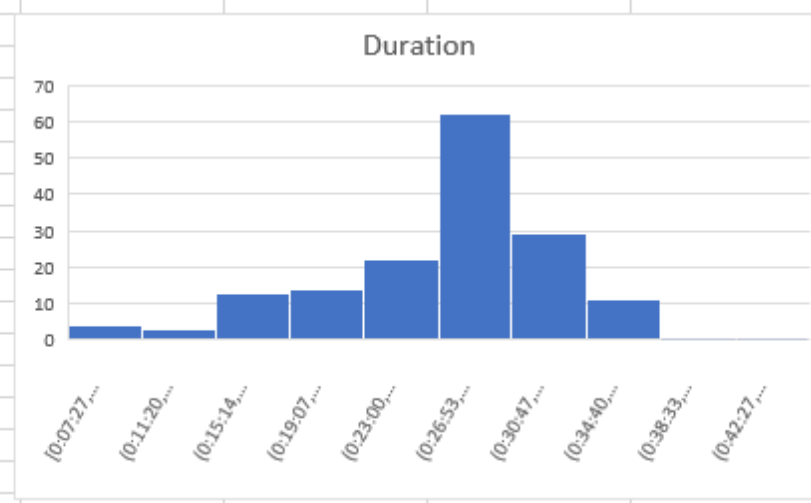
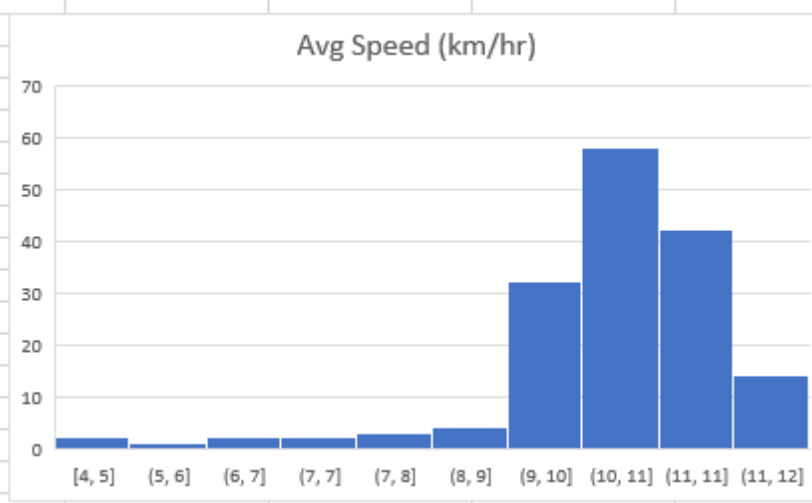
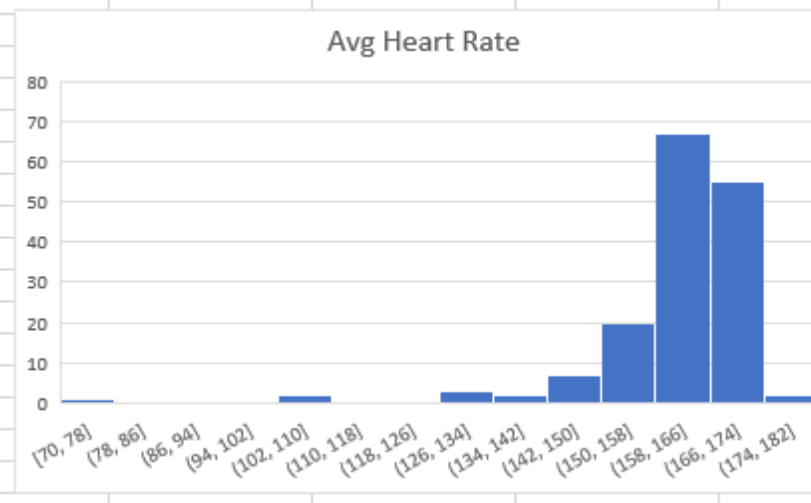
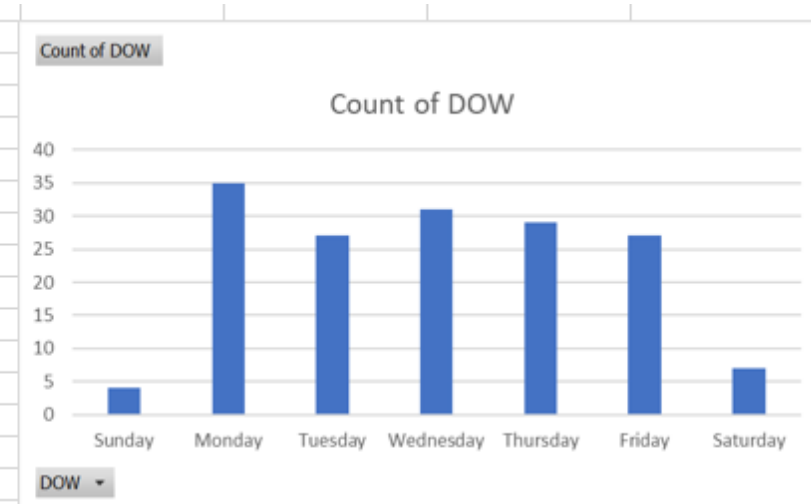
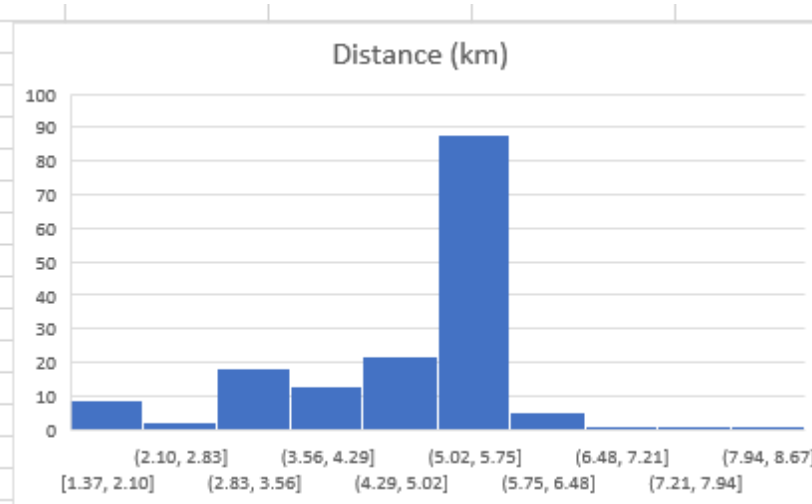
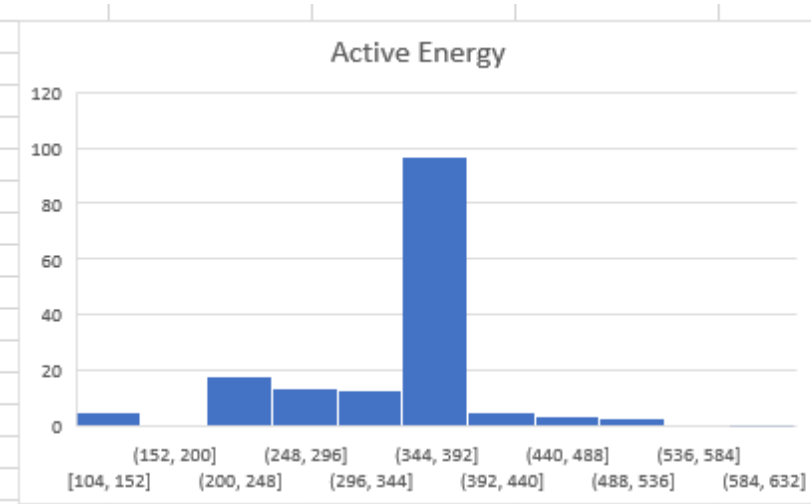
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R
1	PK	Type	Date	DOW	Start	End	Duration	Distance (km)	Avg Heart Rate	Max Heart Rate	Avg Pace	Avg Speed (km/hr)	Avg Cadence	Active Energy	Total Energy	Elevation Ascended	Weather Temp (°C)	Weather Humidity
2	1	Traditional Strength Training	11/26/2021	Friday	11/26/2021 11:02	11/26/2021 11:36	0:34:20		89	153				186	239		12	36
3	2	Traditional Strength Training	11/19/2021	Friday	11/19/2021 12:21	11/19/2021 12:57	0:35:36		95	144				211	288			
4	3	Outdoor Running	11/17/2021	Wednesday	11/17/2021 16:15	11/17/2021 16:46	0:30:27	4.85	158	176	0:06:16	10	247	342	393			
5	4	Indoor Cycling	11/16/2021	Tuesday	11/16/2021 12:14	11/16/2021 12:26	0:12:10		138	160				104	146			
6	5	Traditional Strength Training	11/16/2021	Tuesday	11/16/2021 11:45	11/16/2021 12:14	0:28:20		67	100				133	176			
7	6	Traditional Strength Training	11/15/2021	Monday	11/15/2021 12:02	11/15/2021 13:00	0:58:53		103	163				373	487			
8	7	Soccer	11/14/2021	Sunday	11/14/2021 19:31	11/14/2021 20:22	0:51:21	2.19	136	187	0:23:30	3		444	545		10	52
9	8	Outdoor Running	11/11/2021	Thursday	11/11/2021 11:47	11/11/2021 12:37	0:38:32	6.56	151	179	0:05:52	10	237	467	549			
10	9	Traditional Strength Training	11/10/2021	Wednesday	11/10/2021 11:58	11/10/2021 12:39	0:41:19		81	124				179	249			
11	10	Rowing	11/9/2021	Tuesday	11/9/2021 12:52	11/9/2021 13:07	0:14:53		144	171				101	148		23	30
12	11	Traditional Strength Training	11/9/2021	Tuesday	11/9/2021 12:19	11/9/2021 12:52	0:32:50		123	157				237	290		23	31
13	12	Traditional Strength Training	11/8/2021	Monday	11/8/2021 11:38	11/8/2021 12:20	0:41:54		96	155				255	340		18	39
14	13	Traditional Strength Training	11/3/2021	Wednesday	11/3/2021 16:25	11/3/2021 17:10	0:45:19		101	162				256	351			
15	14	Traditional Strength Training	11/2/2021	Tuesday	11/2/2021 9:53	11/2/2021 10:17	0:24:09		125	156				194	253			
16	15	Soccer	11/1/2021	Monday	11/1/2021 20:16	11/1/2021 21:12	0:55:51	3.01	137	190	0:18:32	3		511	601			
17	16	Indoor Cycling	10/29/2021	Friday	10/29/2021 12:40	10/29/2021 12:50	0:10:01		147	163				107	146			
18	17	Traditional Strength Training	10/29/2021	Friday	10/29/2021 12:11	10/29/2021 12:40	0:28:50		107	147				198	245			
19	18	Soccer	10/26/2021	Tuesday	10/26/2021 21:34	10/26/2021 22:12	0:37:26	0.73	123	181	0:51:23	1		259	320			
20	19	Traditional Strength Training	10/26/2021	Tuesday	10/26/2021 12:28	10/26/2021 12:55	0:27:05		82	126				123	188		19	57
21	20	Outdoor Running	10/25/2021	Monday	10/25/2021 12:07	10/25/2021 12:43	0:35:09	6.05	169	182	0:05:48	10	249	431	491			
22	21	Traditional Strength Training	10/22/2021	Friday	10/22/2021 9:20	10/22/2021 9:45	0:25:17		113	143				168	225		18	88
23	22	Traditional Strength Training	10/20/2021	Wednesday	10/20/2021 11:46	10/20/2021 12:30	0:43:48		73	111				188	278		22	44
24	23	Rowing	10/19/2021	Tuesday	10/19/2021 16:59	10/19/2021 17:10	0:10:45		134	157				78	116		23	31
25	24	Traditional Strength Training	10/18/2021	Monday	10/18/2021 12:21	10/18/2021 12:47	0:26:31		81	134				117	179		18	34
26	25	Soccer	10/17/2021	Sunday	10/17/2021 9:01	10/17/2021 10:47	1:45:16	9.78	163	183	0:10:45	6		1316	1513		11	65
27	26	Traditional Strength Training	10/15/2021	Friday	10/15/2021 12:03	10/15/2021 13:14	1:10:55		91	130				359	494		25	56
28	27	Outdoor Running	10/14/2021	Thursday	10/14/2021 16:01	10/14/2021 16:39	0:36:41	5.91	158	177	0:06:12	10	247	428	492			
29	28	Rowing	10/13/2021	Wednesday	10/13/2021 17:09	10/13/2021 17:20	0:10:53		133	146				85	104			
30	29	Traditional Strength Training	10/13/2021	Wednesday	10/13/2021 16:39	10/13/2021 17:09	0:29:43		107	136				157	206		24	68
31	30	Traditional Strength Training	10/12/2021	Tuesday	10/12/2021 17:45	10/12/2021 18:08	0:23:13		118	142				168	230		21	88

Data Scope / Descriptive Statistics (January 2020 – Present)

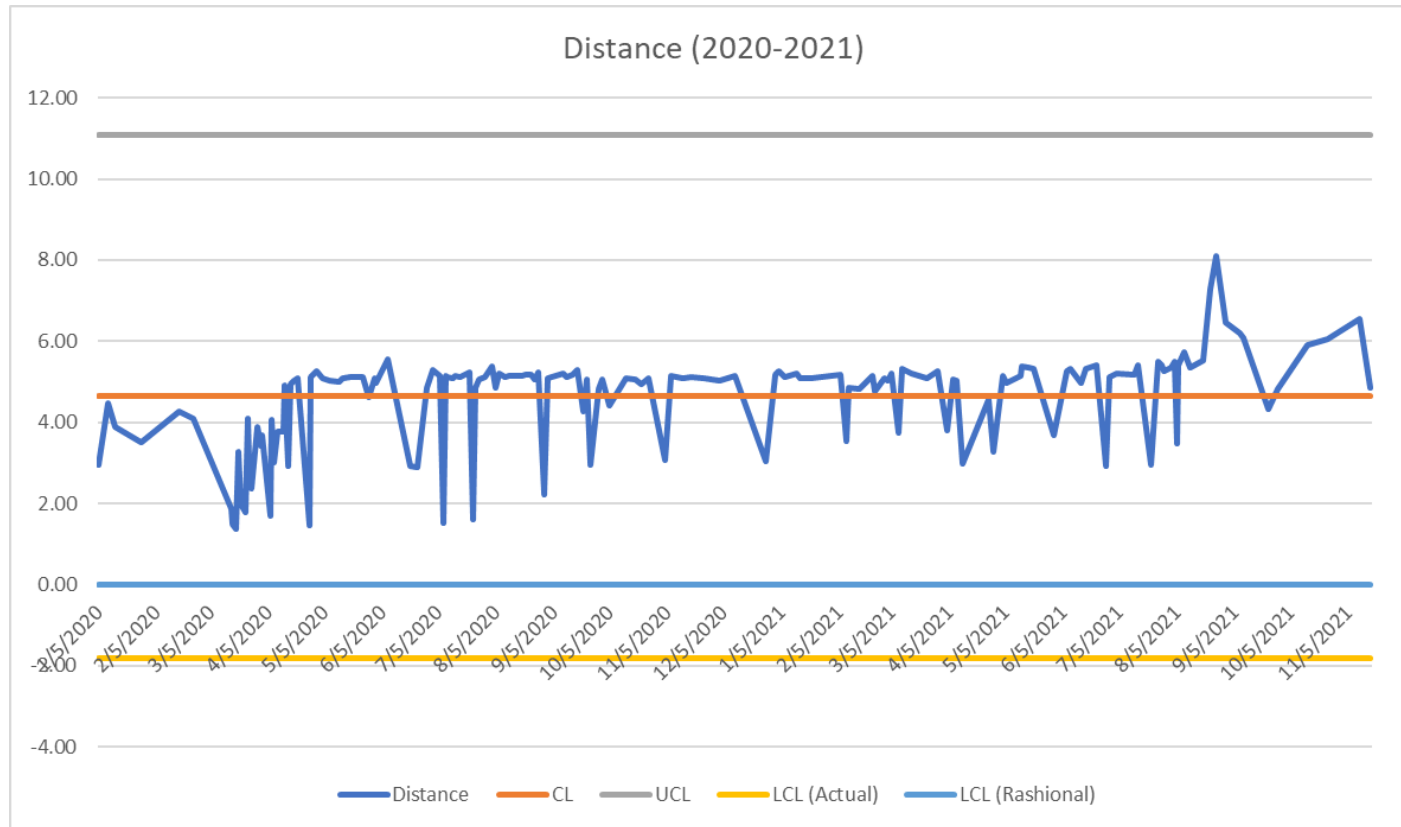
- Outdoor Running > # Workouts
 - Tuesdays > # Workouts
 - Thursdays > Average Distance
 - Running > Average Heart Rate
 - Soccer > Average Active Energy (calories)
- *Weather Temperature and Humidity not always recorded

Count of Type		Count of PK		Average of Distance	
Row Labels		Row Labels		Row Labels	
Outdoor Running	160	Tuesday	72	Thursday	4.8
Traditional Strength Training	105	Wednesday	69	Wednesday	4.7
High Intensity Interval Training	41	Monday	63	Friday	4.7
Indoor Cycling	14	Friday	51	Tuesday	4.6
Outdoor Cycling	12	Thursday	47	Monday	4.5
Soccer	7	Sunday	23	Saturday	4.3
Rowing	5	Saturday	19	Sunday	4.2
Grand Total	344	Grand Total	344	Grand Total	4.6
Average of Average Heart Rate		Average of Active Energy		Count of Weather Temperature	
Row Labels		Row Labels		Row Labels	Count of Weather Humidity
Outdoor Running	161	Soccer	824	Traditional Strength Training	82
Soccer	147	Outdoor Running	338	High Intensity Interval Training	41
Rowing	135	Outdoor Cycling	283	Outdoor Cycling	12
Indoor Cycling	133	Traditional Strength Training	241	Indoor Cycling	10
Outdoor Cycling	132	High Intensity Interval Training	194	Outdoor Running	6
High Intensity Interval Training	102	Indoor Cycling	135	Soccer	4
Traditional Strength Training	102	Rowing	92	Rowing	3
Grand Total	133	Grand Total	287	Grand Total	158

Histograms: Outside Running Variables

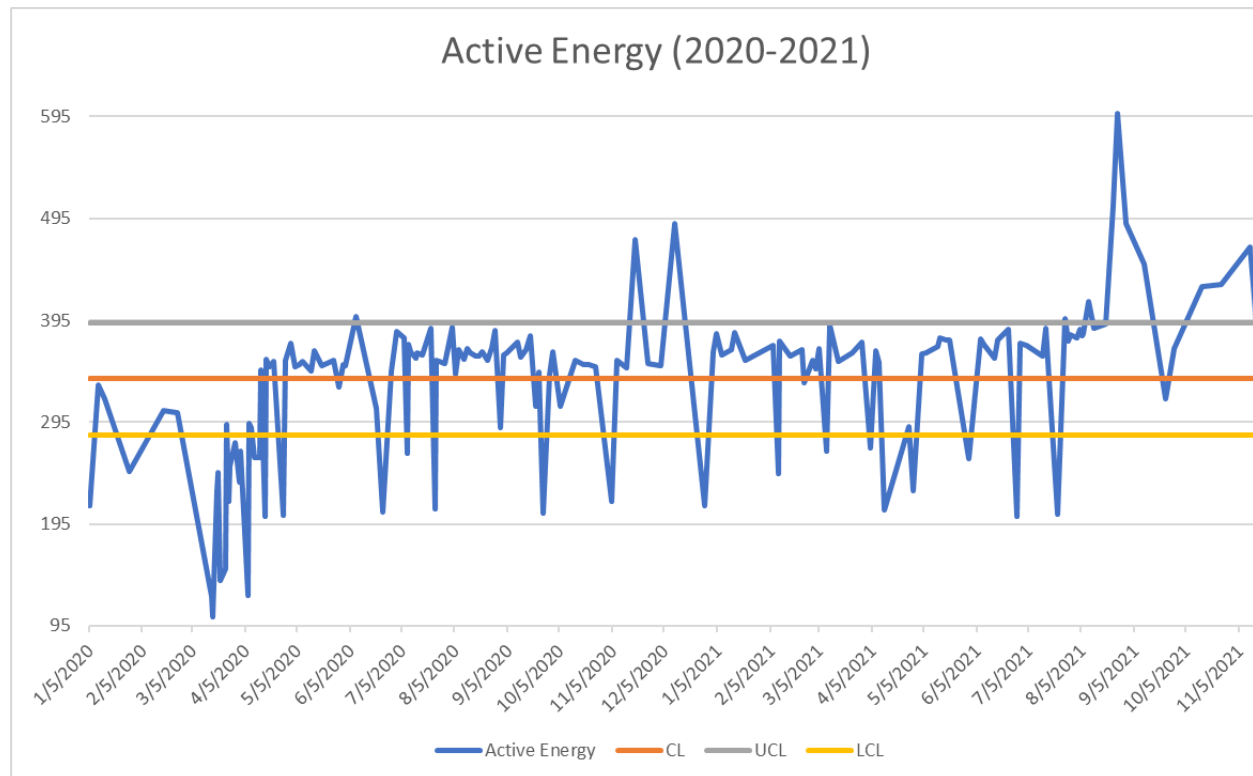


Outside Running: C Chart – Distance (km)



- In Control
- Consistent but frequently run shorter distances than greater

Outside Running: C Chart - Active Energy (calories)



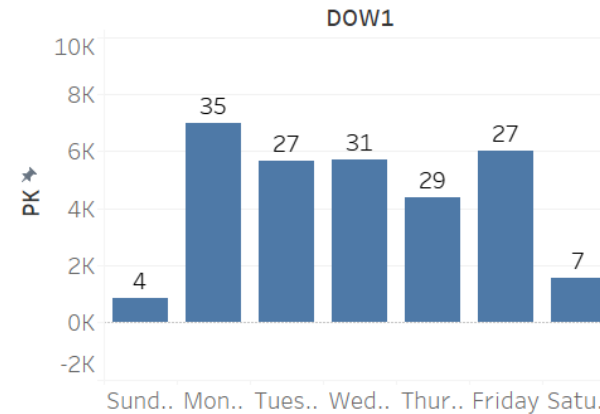
- Clearly, some runs are out of control
- Many are Under Control: due to me being rushed on time/not feeling well
- Few Over Control – could overexert myself too much

*It's ideal to increasingly push limits of upper control

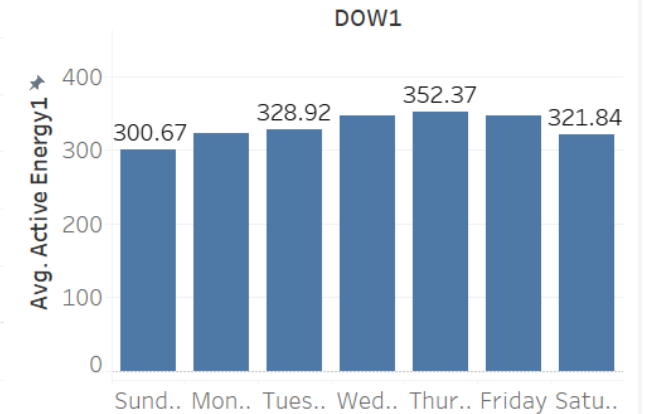
Outside Running: Day of Week

- Few Runs on weekends
- More motivated at the end of the week
 - (active energy and distance increase)

DOW_Runs_Count



DOWAcEnrgy

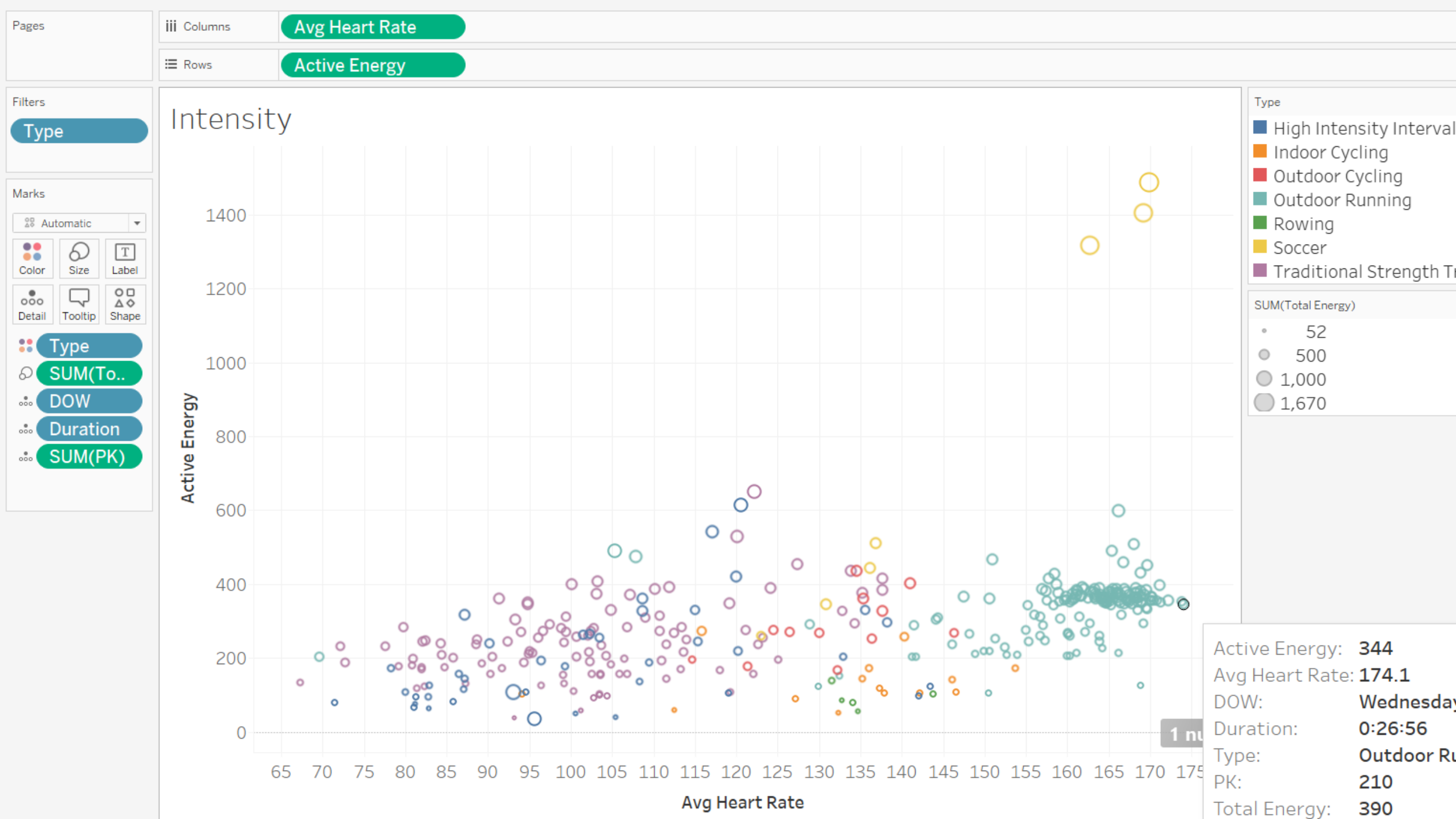


DOWAvgSpeed

DOW1	
Sunday	10.3793
Monday	10.2253
Tuesday	10.2959
Wednesday	10.1878
Thursday	9.8806
Friday	10.2232
Saturday	9.7290

DOW_Dist

DOW1	
Sunday	4.2436
Monday	4.4966
Tuesday	4.5875
Wednesday	4.7310
Thursday	4.8010
Friday	4.7112
Saturday	4.3353



Pages

Filters

Type

Marks

Automatic

Color

Size

Label

Detail

Tooltip

Shape

Type

Avg Heart Rate

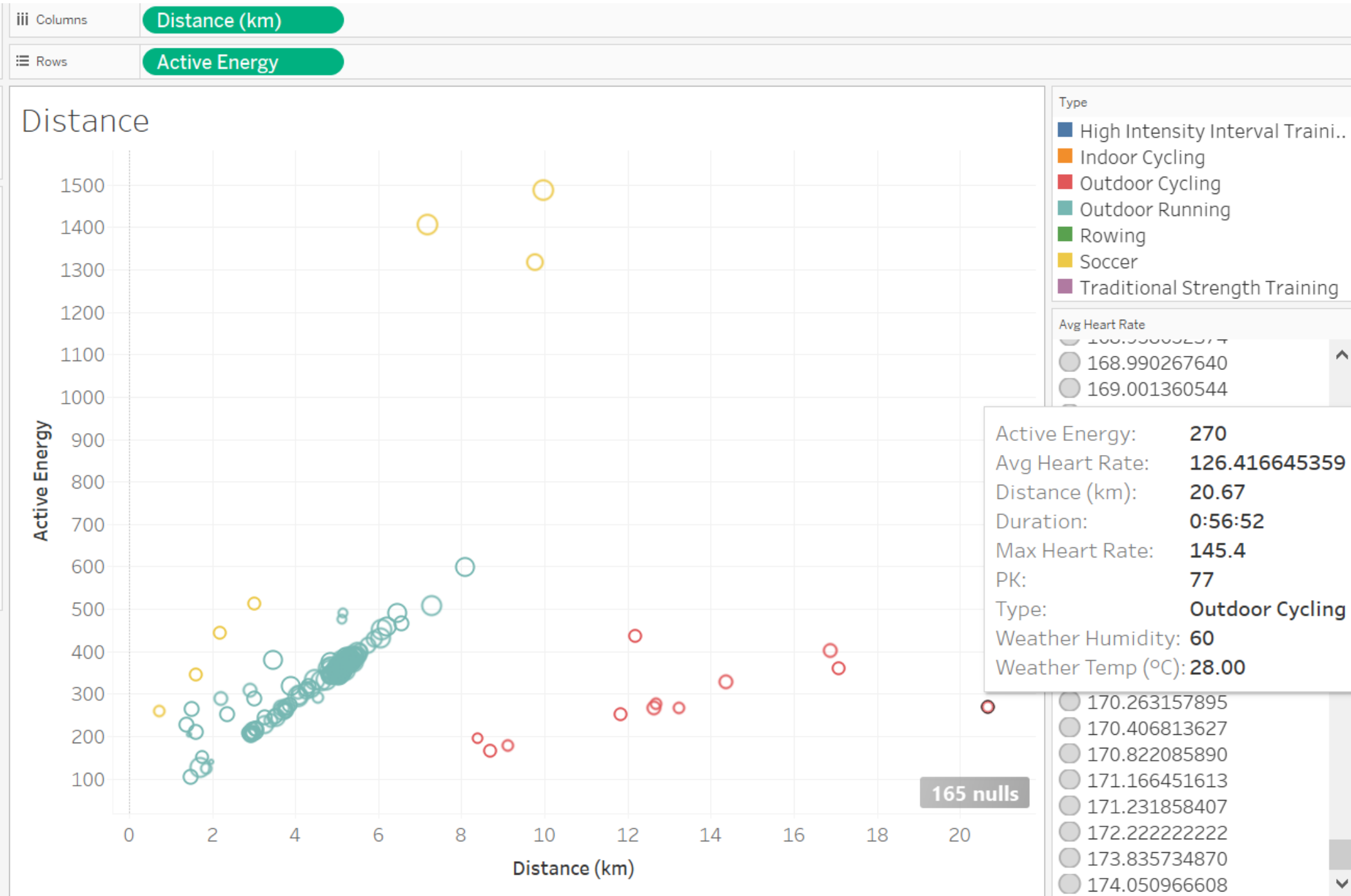
PK

Duration

Weather Humidity

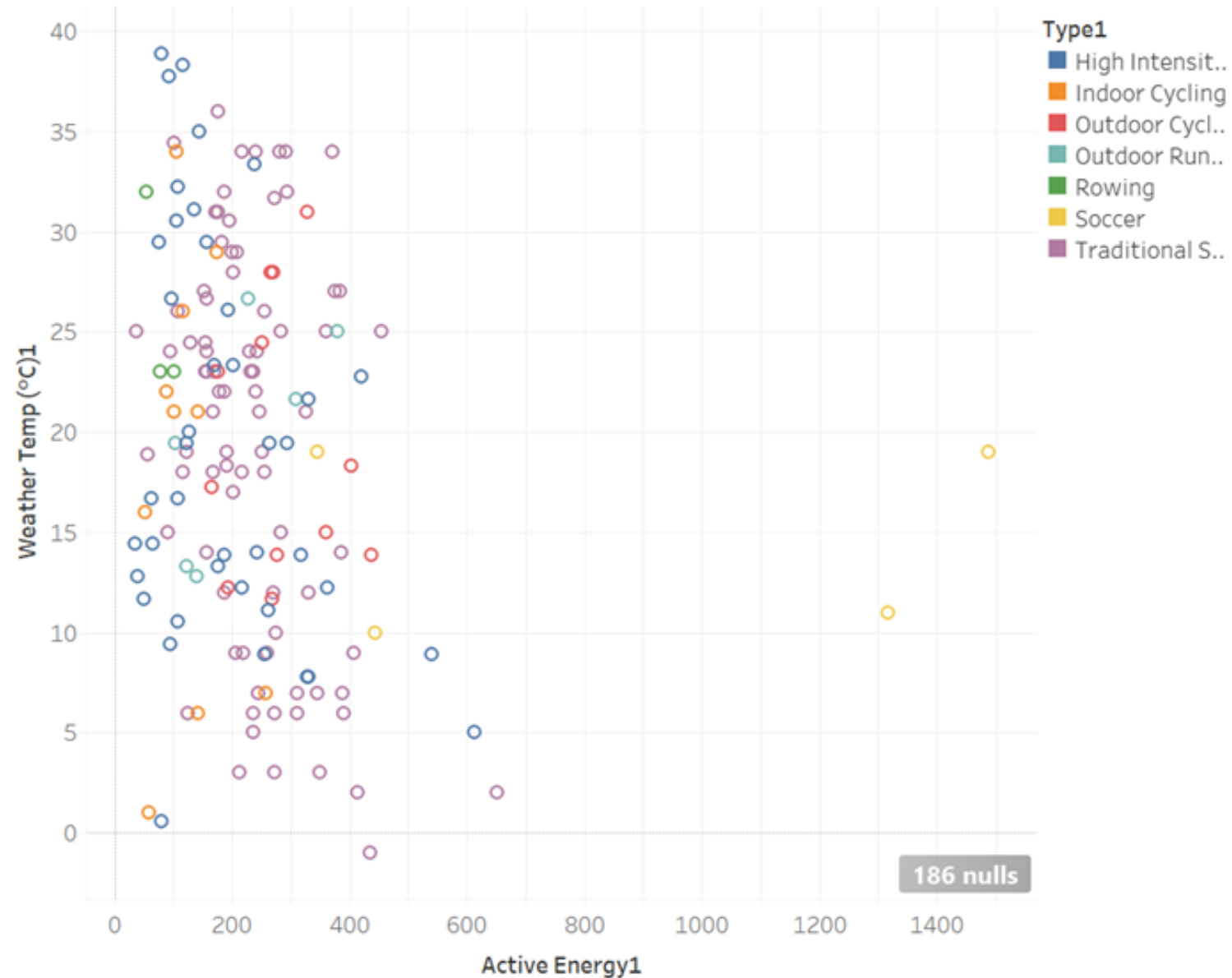
Weather Temp (°C)

Max Heart Rate

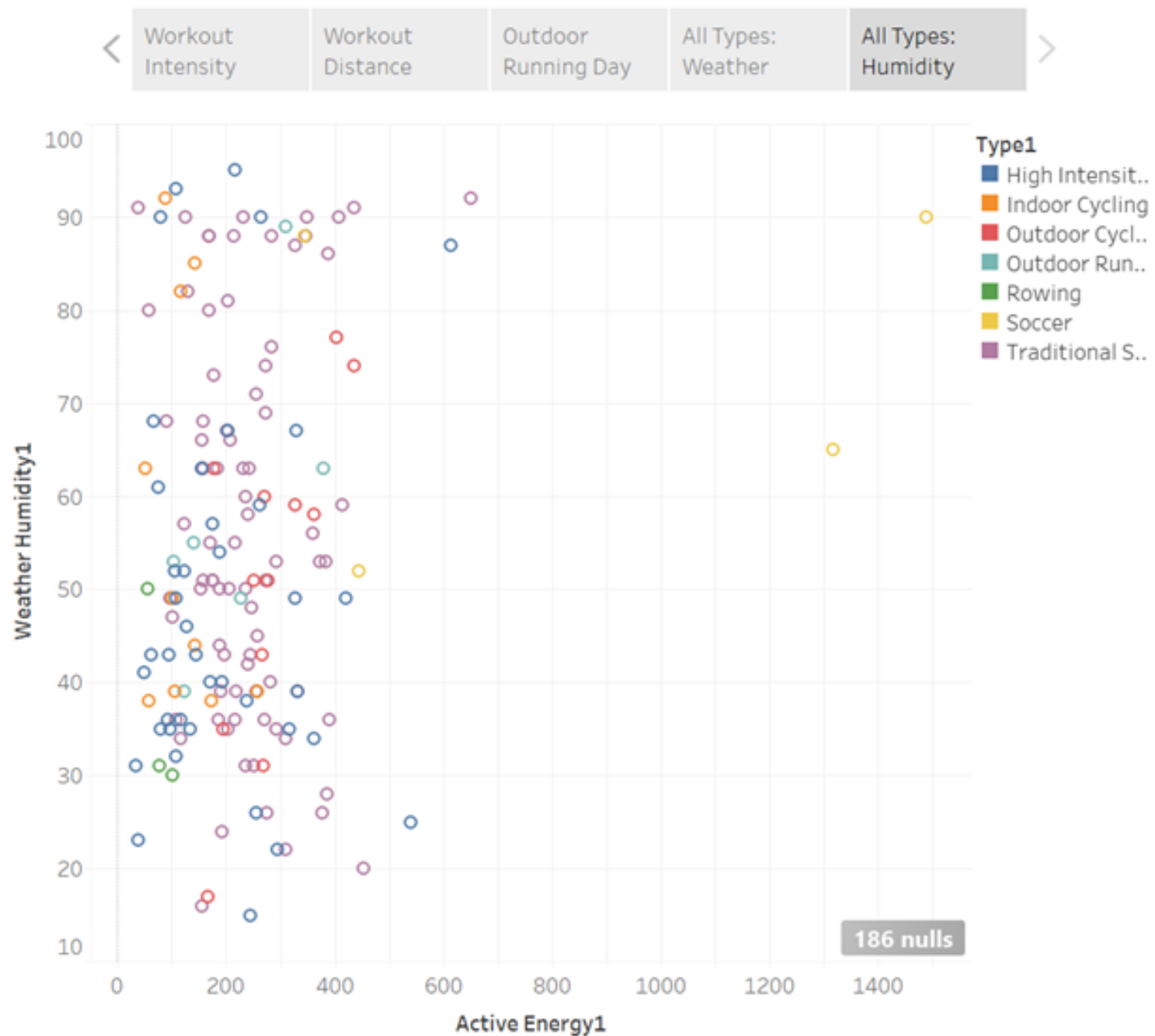


Time Series Story

< Workout Intensity Workout Distance Outdoor Running Day All Types: Weather All Types: Humidity >



Time Series Story



Questions?

- [Report File Link](#)
- [Excel File Link](#)
- [Tableau File Link](#)