How Does Neuroscouting Differ From VMI? **Continued from previous article. . .**

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The Visual Memory Index is created from the variability of the air density as it affects pitch movement. As there are approximately 13 significant temperature jumps X approximately 4 distinctly different barometric pressure ranges X 3 substantial humidity increments at game time, this creates a huge range of air densities across the daily MLB schedule. It is no wonder players struggle to maintain consistency in hitting when the same pitch is moving quite differently in each. The combinations of these three ingredients to resistance factors are almost countless. These three (all being in flux simultaneously) change the amount of pitch movement at the end of the pitch, and the resulting pitch track tends to confound the hitter.</P><P>

For those of you who did not read the articles from last year--pitchers tend to get the blame for the amount of movement on their pitches. However, the truth is the pitcher is always at the mercy of the air resistance available to him at game time. The air resistance changes due to the factors which create air density: altitude air pressure, temperature and humidity. When considering these factors, "up" is always bad for the pitcher; high altitude, high temperature and high humidity reduce the amount of movement for the pitcher. Air resistance factors vary the pitch track to the plate from that which players are used to seeing. Players settle into the amount of movement an environment provides within one series, so extreme differences in environments create a longer re-adjustment period. Baseball VMI tracks every player and every game and records the air resistance factors and the production within each--and can therefore predict future performance within a limited framework. </P><P>

The countless air resistance factors go a long way to explain the variability among players with incredible skill. From the least movement allowed by air density (ADI) on a fastball (at 38 ADI) to the most movement available to the pitcher (at 74 ADI), there is over 4" of hop (or lift) differential and 5" to 7" of tail-off differential depending on the arm angle (see www.baseballvmi.com). </P><P>

While it is probably a good concept to recognize the pitch-type earlier than other hitters, if possible, it would also be wise to work on recognition of the amount of movement at the end of the pitch. Most older baseball people would shrug and say 'it can't be done'—but, if it's not the pitcher, but the air resistance, then it can be done and is being done. </P><P>

When one looks at each hitter's performance, there is a striking similarity among hitters in each category. Below are a few player examples selected from the top 50 in overall batting averages for 2015, so far: </P><P>

The first is Detroit Tigers' Miguel Cabrera thru the first two months of 2015: Notice that each player's overall batting average consists of the sum of his average against each type of pitch. Also, his number of at bats does not exclude walks and sacrifices, etc. (for the purpose of showing all his opportunities to get a hit). For the purposes of comparing which pitch the player has gotten a hit on, all hits are spread across his average to determine his effectiveness within the VMI range. Notice that within the VMI range of minus 5 to minus 10, he has not gotten a hit against a 4-seam fastball where his hitting eye (Visual Memory & Muscle Memory) is set approximately 1" to 1-1/2" below the center of the ball. </P><P>

Miguel Cabrera

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VMI	At Bats	Tot Hits	Tot Avg	Four Seam		Slider		Two Seam		Change Up		Curve		Cutter		Splitter		Knuckle		Sinker	
				Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg
Range 0 to 5	40	14	.350	3	.075	2	.050	6	.150	3	.075	0	.000	0	.000	0	.000	0	.000	0	.000
Range 0 to -5	37	11	.297	3	.081	2	.054	0	.000	1	.027	0	.000	1	.027	0	.000	0	.000	4	.108
Range -5 to -10	22	6	.273	0	.000	1	.045	2	.091	0	.000	2	.091	0	.000	0	.000	0	.000	1	.045
Total	99	31	.313	6	.061	5	.051	8	.081	4	.040	2	.020	1	.010	0	.000	0	.000	5	.051

Away

VMI	At Bats	Tot Hits	Tot Avg	Four Seam		Slider		Two Seam		Change Up		Curve		Cutter		Splitter		Knuckle		Sinker	
				Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg
Range -5 to -10	4	0	.000	0	.000	0	.000	0	.000	0	.000	0	.000	0	.000	0	.000	0	.000	0	.000
Range 0 to -5	24	7	.292	3	.125	0	.000	0	.000	2	.083	0	.000	1	.042	0	.000	0	.000	1	.042
Range 0 to 5	59	21	.356	8	.136	4	.068	2	.034	4	.068	0	.000	2	.034	0	.000	0	.000	1	.017
Range 5 to 10	8	4	.500	2	.250	0	.000	1	.125	0	.000	0	.000	0	.000	0	.000	0	.000	1	.125
Total	95	32	.337	13	.137	4	.042	3	.032	6	.063	0	.000	3	.032	0	.000	0	.000	3	.032

Below is St. Louis Cardinals' outfielder Matt Holliday's numbers thru the first two months of 2015. None of his hits in the same (minus 5 to minus 10) range have been off of a 4-seamer.

Matt Holliday

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VMI	At Bats	Tot Hits	Tot Avg	Four Seam		Slider		Two Seam		Change Up		Curve		Cutter		Splitter		Knuckle		Sinker	
				Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg
Range 5 to 10	5	1	.200	0	.000	0	.000	0	.000	0	.000	1	.200	0	.000	0	.000	0	.000	0	.000
Range 0 to 5	56	19	.339	5	.089	2	.036	7	.125	0	.000	1	.018	1	.018	0	.000	0	.000	3	.054
Range 0 to -5	24	8	.333	2	.083	0	.000	2	.083	1	.042	1	.042	2	.083	0	.000	0	.000	0	.000
Total	85	28	.329	7	.082	2	.024	9	.106	1	.012	3	.035	3	.035	0	.000	0	.000	3	.035

Away

VMI	At Bats	Tot Hits	Tot Avg	Four Seam		Slider		Two Seam		Change Up		Curve		Cutter		Splitter		Knuckle		Sinker	
				Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg
Range -5 to -10	11	3	.273	0	.000	1	.091	1	.091	1	.091	0	.000	0	.000	0	.000	0	.000	0	.000
Range 0 to -5	28	11	.393	2	.071	3	.107	4	.143	1	.036	0	.000	1	.036	0	.000	0	.000	0	.000
Range 0 to 5	36	8	.222	2	.056	3	.083	1	.028	0	.000	1	.028	0	.000	0	.000	0	.000	1	.028
Total	75	22	.293	4	.053	7	.093	6	.080	2	.027	1	.013	1	.013	0	.000	0	.000	1	.013

Another is Colorado Rockies' 2nd Baseman, D.J. LeMahieu. Notice how many different ranges he must perform within:

DJ LeMahieu

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				Four Seam		Slider		Two Seam		Change Up		Curve		Cutter		Splitter		Knuckle		Sinker	
VMI	At Bats	Tot Hits	Tot Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg
Range 20 to 25	3	1	.333	1	.333	0	.000	0	.000	0	.000	0	.000	0	.000	0	.000	0	.000	0	.000
Range 15 to 20	13	6	.462	2	.154	0	.000	2	.154	0	.000	0	.000	2	.154	0	.000	0	.000	0	.000
Range 10 to 15	16	6	.375	0	.000	3	.188	1	.062	0	.000	2	.125	0	.000	0	.000	0	.000	0	.000
Range 5 to 10	17	4	.235	1	.059	0	.000	1	.059	2	.118	0	.000	0	.000	0	.000	0	.000	0	.000
Range 0 to 5	25	10	.400	0	.000	0	.000	2	.080	2	.080	2	.080	1	.040	0	.000	0	.000	3	.120
Range 0 to -5	6	0	.000	0	.000	0	.000	0	.000	0	.000	0	.000	0	.000	0	.000	0	.000	0	.000
Total	80	27	.338	4	.050	3	.037	6	.075	4	.050	4	.050	3	.037	0	.000	0	.000	3	.037

Away

				Four Seam		Slider		Two Seam		Change Up		Curve		Cutter		Splitter		Knuckle		Sinker	
VMI	At Bats	Tot Hits	Tot Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg	Hits	Avg
Range -20 to -25	4	3	.750	0	.000	0	.000	0	.000	0	.000	1	.250	1	.250	0	.000	0	.000	1	.250
Range -15 to -20	14	5	.357	0	.000	2	.143	0	.000	0	.000	0	.000	0	.000	0	.000	0	.000	3	.214
Range -10 to -15	7	1	.143	0	.000	0	.000	0	.000	1	.143	0	.000	0	.000	0	.000	0	.000	0	.000
Range -5 to -10	38	13	.342	3	.079	1	.026	0	.000	3	.079	1	.026	2	.053	0	.000	0	.000	3	.079
Range 0 to -5	43	15	.349	2	.047	2	.047	2	.047	4	.093	1	.023	0	.000	0	.000	0	.000	4	.093
Range 0 to 5	12	2	.167	1	.083	1	.083	0	.000	0	.000	0	.000	0	.000	0	.000	0	.000	0	.000
Total	118	39	.331	6	.051	6	.051	2	.017	8	.068	3	.025	3	.025	0	.000	0	.000	11	.093

These examples are good representations of the entire league. All of MLB participants show a similar pattern within the same ranges of VMI. By the 2016 season, BaseballVMI.Com plans to provide members with access to these numbers on an individual player basis. As you can imagine, with 700+ daily players seeing nearly 4500 pitches per day in all these VMI ranges, it is difficult to keep up with. We will continue to strive to provide information within this topic, which is actually not new—it is older than baseball. First came the air, then came baseball, then winning, then fans paid money to help buy better talent; then came new teams.

The examples above are only three among all the MLB everyday players, but all the others show similar results. If you would like to see this same chart on a particular player; feel free to make a special request to admin@baseballvmi.com --I will try to honor such a (one-time please) request.