### MatStats Episode 27 Wednesday December 20<sup>th</sup>, 2023, 3PM EST

Merry Christmas, Season Greetings, & Happy New Years from the MatStats gang!!

#### Rock 'N' Roll High School (Part 2)

Episode 27-1

The boys at MatStats analyze the surveys Dr Paquette & her staff at the NWCA sent to state HS coalitions. The bottom line is the high school numbers are rock 'n' rollin'.



#### NWCA MatStats - The Moneyball of Wrestling

#### I Feel Like A Number

Episode 27-2

To the fans I'm just a drone

To my wireless service I'm just another phone
I'm just a statistic on a bout sheet

To the teachers I'm just another child

To the IRS I'm just another file
I'm just a correlation on the stat sheet

I feel like a number
I feel like a number
I'm not a number, I'm not a number

Jenny, Jenny had perhaps the most famous phone number in American history.

#### 867-5309

Episode 27-3

MatStats, MatStats, who can I turn to?
You give me something I could hold on to
I know you think I'm like the others before
Who saw your name and number on the wall.

867-5309

**Mat-Stats** 

**Mat-Stats** 

The Opinions Expressed on this show do not necessarily reflect any policies or opinions of the NWCA. Also, the MatStats guys do not always agree on all things discussed on their shows.

- MatStats is a subsidiary of the NWCA but is a separate entity that voices its own opinions on its statistical analysis.
  - MatStats three hosts, Gormley, Bryant, and Hazard are all equally responsible for all the good outcomes. Gormley for the bad feedback.
- Gormley writes the Power Points and selects the topics. Gormley uses the term MatStats often, but many times it is Gormley's opinion alone.
- Gormley does the stats work and then the three hosts & occasionally guests brainstorm about Gormley's findings and ideas.
  - MatStats is designed to have educated thoughts and opinions to help the world's oldest and greatest sport.
- Wrestling is all about settling disagreements. The hosts are too old to settle these disagreements on the mat.
- Sometimes we agree, sometimes we disagree. It makes the world go round.

#### MatStats is based on numbers, stats, and analyzing them. It starts with facts not opinions.

- MatStats is a numbers show.
- Thus, the name MatStats. Not MatOpinions.
- Gorms was remiss not explaining this from the get-go.
   Gorms lives in a numbers world and is starting to get the feeling not everyone does lol.
- Feedback from the Tribe alumni during this show has made Gorms realize he needs to address this and try to educate people with numbers. Thank you, Dr. Powell, for one of your texts.

### MatStats is a show that revolves around stats, but there is a reason we have balance on the show. Not all answers have a numeric quantifiable component.

- Let's have the two on the show that know wrestling weigh in on based their decades around the sport (Jason & Kevin and at times guests).
- To paraphrase the Ramones Gormley needs to be sedated.
- Much to the chagrin of Gorms (The Sultan of Stat), not everything can be quantified with a number(s). You can't put a number on why Babe Ruth (The Sultan of Swat) hit 714 HRs, but we can put a number on how many he hit.
- We will provide answers before the conclusion of this show. If it is not in the numbers, we will do our best to provide answers. One thing you learn in MBA school is find an answer. A consultant's answer can not be hiring a blue-ribbon panel. You went to MBA school to be the blue-ribbon panel.

#### As of 12/4/23, there are 501 men & women's wrestling teams in the NCAA & NAIA.

				Most ever Men's		Most Ever	
Category	Men	Women	Total	Teams	Year	Total Teams	Years
NCAA D1	81	4	85	146	1982	146	1982
NCAA D2	<b>73</b>	<b>32</b>	105	<mark>73</mark>	2023	105	2023
NCAA D3	129	<mark>62</mark>	<mark>191</mark>	149	1982	<mark>191</mark>	2023
NCAA	283	97	380	363*	1982	<mark>381</mark>	2023
NAIA	75	<mark>45</mark>	<mark>120</mark>			<mark>120</mark>	2023
4 Year	358	143	<b>501</b>			<mark>501</mark>	2023

<sup>\* -</sup> Note the NCAA reports 393 men's teams in 1972, but they do not know how many were club teams.

# The biggest correlation between state participation in HS wrestling by state is population.

- We learned in Rock N Roll Part 1 (Episode #26 11/15/23) that population was the biggest correlation in state-by-state HS wrestling participation.
- There is nothing the NWCA can do about state population.
- Dr. Paquette and her staff at the NWCA sent out surveys about to states to see if the NWCA can learn from the surveys.
- Part 2 of this show analyzes the surveys and analyses them to see what we can learn and help HS wrestling grow.

### Like a wrestling match there are a lot of moving parts.

- This study has so many variables and moving parts.
- When did states sanction? When did they start dual meet tourneys?
   When did they have more than 1 state division? How many states responded to the survey?
- In the survey questions, MatStats only uses the states that responded in their analysis.
- Are all questions answered by enough states in the NWCA survey.
- Why was 2019 to 2023 used in many examples. Recent and a long enough time period. Also eliminates a lot of CoVid affects.
- MatStats analyzed and considered as as many factors as possible in doing their analysis.
- This is a large-scale project that MatStats used its stats education to come to meaningful conclusions.

Episode 27-10

• Just like international wrestling, we have two periods.

- 1st Period Girls Wrestling.
- 2<sup>nd</sup> Period Boys HS Wrestling.

#### Where is MatStats starting the 1st Period?

"It's always best to start at the beginning"
- Glinda the good witch to Dorothy in
"The Wizard of OZ".

Episode 27-11

- We are starting with state sanctioning of girls HS wrestling.
- To borrow an old accounting phrase regarding Generally Accepted Accounting Principles, you only get one bite of the apple.



 In our case it has nothing to do with stock sales, it means a state can only sanction one time.

# As of Thanksgiving 2023, 42 states have fully sanctioned girls HS wrestling and 3 more have emerging sport status. 7 more to go (51 w/ DC).

Episode 27-12

Girls	High School	State Sanctioning History
Year	# Sanctioned	States
2023	5	KY, NH, NY, RI, PA
2022	5	IA, NE, NC, OH, WY
2021	6	FL, IL, MI, MN, ND, WI
2020	6	AL, ID, MT, NV, OK, SD
2019	7	AR, CO, CT, KS, MD, NM, UT
2018	7	AZ, GA, ME, MA, MO, NJ, OR
2015-17	0	
2014	2	AK, TN
2012-13	0	
2011	1	CA
2008-10	0	
2007	1	WA
1999-2006	0	
1999	1	тх
1998	1	HI
Total	42	
ES	3	IN, VA, WV (all in 2022)
Total	45	

States That Need To Be Sanctioned As of 11/15/23

DE, LA, MS, SC, VT, DC

Thanks to Sally Roberts & WLAG For the data here.

#### State Sanctioning Just Means More!!

Episode 27-13

	1 (2023)	2	3
8* Sanctioned States 2022	1.91X		
All States	1.57X		
* Includes 3 ES			
	1 (2022)	2 (2023)	3
6 Sanctioned States 2021	2.49X	4.44X	
All States	1.65X	2.60X	
	1 (2021)	2 (2022)	3 (2023)
6 Sanctioned States 2020	<mark>1.18X</mark>	<mark>2.44X</mark>	3.74X
All States	0.75X	1.24X	1.94X
	1 (2020)	2 (2021)	3 (2022)
7 Sanctioned States 2019	<mark>1.88X</mark>	1.65X	3.21X
All States	1.22X	0.91X	1.50X
	1 (2019)	2 (2020)	3 (2021)
7 Sanctioned States 2018	2.35X	3.37X	3.42X
All States	1.23X	1.49X	1.11X

In all cases since state sanctioning for girls HS Wrestling became vogue, the states that sanctioned far outgrew all states.

MatStats did this for a 1 to 3 year period after sanctioning.

#### State sanctioning causes significant participation growth for girls HS wrestling!!

- The simplest case of stochastic dominance is statewise dominance (also known as state-by-state dominance), defined as follows: Note I had to explain to Hazard the difference between stochastic and scholastic. Stochastic is a state term.
- Random variable A is statewise dominant over random variable B if A gives at least as good a result in every state (every possible set of outcomes), and a strictly better result in at least one state.
- In layman's terms there is a higher growth rate for states that sanction than all states. Stochastic Dominance is such a strong term, there must be a cause and effect in sanctioning and growth. Sanctioning causes growth.

## There is a higher growth rate (4.30X vs 2.54X) from 2019 to 2023) in states that have a girl's dual meet state tourney.

Episode 27-15

	States Wi	th Girls HS		
	Dual Me	eet State		
	Tou	rney		
		# Girls HS	# Girls HS	
		Wrestlers	Wrestlers	
Category	# States	2019	2023	Multiplier
Total	39	14,749	39,804	2.70X
Yes Dual				
Tourney	8	1,356	5,825	4.30X
No Dual tourney	31	13,393	33,979	2.54X

There are only 8 states that responded to this survey that have a girls dual meet state tourney.

Hard to make a confident judgment.

Have more states allow a girls' dual meet tourney and MatStats will revisit this.

# from the 39 states that responded to the NWCA survey only.

#### States growth rates from 2019 to 2023 regarding who girls can wrestle.

Episode 27-16

Category Can girls wrestle with boys (# states)	# Girls HS Wrestlers 2019	# Girls HS Wrestlers 2023	Multiplier
1 (13) Yes, No Girls Team	1,573	8,060	<mark>5.12X</mark>
2 (13) Yes, even if they have a girl's team	10,131	17,595	1.74X
3 (13) No, if girls' team	3,045	14,149	4.65X
Control for CA & WA - Category 2	2,253	8,255	<mark>3.66X</mark>

# from the 39 states that responded to the NWCA survey only.

#### Why MatStats has controlled for CA & WA

- We controlled for CA & WA because -
- 1) CA (2011) & WA (2007) were on a different point on their growth curve (MatStats discussed the difference in growth vs mature businesses in Part 1 of this topic on Episode 26 11/15/23) than the other 11 states in the category of girls can wrestle with boys even if their school has a girl's team.
- 2) From 2019 to 2023 the national growth rate was 236%. CA was 114% & WA was 133%.
- 3) As we learned on Slide #26-13, CA is #1 & WA #3 for the number of HS girl's wrestlers.
- 4) Including CA & WA on this question would bias our findings too much.

What is MatStats recommendation to increase growth in girls' HS participation as far as if There is a girl's team should girls be allowed to wrestle on the boy's team?

# To maximize growth in girls HS wrestling, MatStats believes it is best to have girls wrestle on girl's teams if the school has a girl's team.

- There are so many moving parts in this question of where girls should wrestle.
- Just like there are so many moving parts in most of the survey questions MatStats has addressed.
- Even controlling for CA & WA states that allow girls to wrestle on boys' teams at schools that have girls' teams do not grow at the same rate from 2019 to 2023 as states that say if your school has a girls' team you must wrestle on the girls' team (3.66X vs 4.65X)
- MatStats final opinion on this issue is that to promote growth in girls
  HS participation a state should consider having girls wrestle girls only
  in schools that have girls' teams. Especially in states like CA & WA
  that have a lot of girls participating.

# MatStats feels if a HS does not have a girls team, that girls should be allowed to wrestle on boy's teams.

- From the surveys provided to MatStats from Dr. Paquette and the NWCA staff, the greatest growth rate from 2019 to 2023 is in states that allow girls to wrestle on boy's teams at schools that do not have a girl's team (5.12X).
- This is an example of a growth industry.
- The key here is when to switch to only allowing girls to wrestle girls once they have girls teams.
- Also vital for a school to decide to when to start a girls team.

## MatStats feels it does not matter how many divisions there are regarding growth rates in girls HS participation rates.

Episode 27-20

# Divisions in state Tourney (# States)	2019 Girls HS Wrestlers	2023 Girls HS Wrestlers	Multiplier
1 (27)	9,801	25,946	<mark>2.65X</mark>
>1 (12)	4,948	13,858	2.80X

Let each state decide. It does not affect the growth rates.

# from the 39 states that responded to the NWCA survey only.

Having more than 1 female wrestlers from a school in the same weight class does not affect the growth rate in girls HS wrestling participation from 2019 to 2023.

Episode 27-21

Team Wrestlers/			
Weight (# States)	2019 Girls HS Wrestlers	2023 Girls HS Wrestlers	Multiplier
1 (26)	11,163	30,617	2.74X
>1 (13)	3,586	9,187	2.56X

# from the 39 states that responded to the NWCA survey only.

Let the states decide on if more than 1 entry per weight per school should be allowed until we reach the day when there are so many girls wrestling in HS that we must restrict it to 1.

- As businesses & sports start out, they tend to do things outside the box.
- MatStats has no problem with more than 1 girl from a HS participating in the states at the same weight.
- It does not affect the growth, so there is not a stats reason.
- Not everything is quantifiable.
- There will be time when we have so many girls wrestling in HS that the states will have to be like the boys and have 1 per weight per school.
- Gorms has never been a big fan of Big Brother making all the decisions. This
  is an example of locals making the most educated decisions.
- James Madison wrote something about this. Now if JMU would only have two NCAA wrestling teams.

### MatStats does not see a growth difference for girls HS wrestling from 2019 to 2023 for keeping a team score at individual state tourneys.

Episode 27-23

Team Score Individual			
State	2019 Girls HS	2023 Girls HS	
Tourney	Wrestlers	Wrestlers	Multiplier
Yes (32)	13,873	37,097	2.67X
No (7)	876	2,707	3.09X
Total (39)	14,749	39,804	2.70X

There is not a significant difference in states that keep team scores. Also, there are only 7 states That did not keep a team score & they are small states in regard to girls HS numbers.

## There were some questions on the surveys that MatStats looked at and concluded they could not provide a valid statistical answers.

- The NWCA had some great questions to help the growth of girls HS wrestling. Some of these questions did not have enough feedback to be analyzed and provide a meaningful stats answers.
- Some examples are -
  - Attendance not enough states reported.
- Other survey questions either not enough answers or too many variables.
  - If a dual meet tourney is held, when it is held did not have enough feedback.

#### 2<sup>nd</sup> period - Boys HS Wrestling

- MatStats will now dive into the numbers of HS boy's wrestlers.
- MatStats analyzes the surveys that Dr. Paquette and her NWCA staff sent out.
- MatStats also analyzes the numbers from Episode 26 11/15/23 with all 50 states when pertinent.
- Just like with the Girl's HS numbers, MatStats starts with the affect if any states sponsoring girls wrestling has on the boys.

The number of HS boys reversed its decrease once sponsoring of girls HS wrestling began in earnest in 2018 (as seen on slide 27-12).

Episode 27-26

Boys HS	Multiplier	Increase in
Wrestling	# HS Boys	NCAA Men's
Years	Wrestlers	Teams
2013-2017	0.91X	+18
2018-2023	1.15X	<b>+38</b>

The increase in NCAA Men's teams is the announced teams as of 12/4/23.

Note - There is 1 more year from 2018-23 than in 2013-17, however CoVid happened in the 2018-23 span. Covid had such an affect on wrestling numbers due to the events of CoVid that MatStats essentially is using equal time spans.

## MatStats has shown on several past Episodes that the inclusion of women helps the number of males wrestling.

- On several past Episodes, MatStats has shown statistically that one women started wrestling it was a catalyst for the increase in male collegiate wrestlers and teams.
- MatStats has been trying to explain this to our viewers.
- MatStats also has made a concerted effort to explain this to the old wrestlers in Gorms & Hazard's generation.
- To quote British novelist, William Golding, "There is, they say, no fool like an old fool.
- Some listen, others don't. Reminds Gorms of what Mark Twain said, "It's easier to fool people than to convince them they have been fooled."

# Having a dual meet State Tourney has NO statistical effect on the boys HS growth rate from 2019 to 2023.

Episode 27-28

Dual Meet State Tourney (# States)	2019 # Boys HS Wrestlers	2023 # Boys HS Wrestlers	Multiplier
No (18)	93,244	104,541	1.12X
Yes (21)	108,387	123,118	1.14X
Total (39)	201,631	227,659	1.13X

Note - These numbers only include the 39 states that responded to the NWCA survey.

## There is a moderate increase in growth for states that do keep a team score in individual state tourneys for boys.

Episode 27-29

Team Score at		2023 # HS	
Individual State	2019 # HS	Boys	
Tourney (# States)	<b>Boys Wrestlers</b>	Wrestlers	Multiplier
No (6)	48,346	50,095	1.04X
Yes (33)	153,285	177,564	1.16X
Total (39)	201,631	227,659	1.13X

Note - These numbers only include the 39 states that responded to the NWCA survey.

## MatStats can not say for sure if keeping a team score at the individual state tourney effects boys HS growth from 2018 to 2023.

- As MatStats did on the previous Slides 27-16 to 27-19, we explored further and controlled for some variables.
- On the topic of does keeping a team score at the individual state tourney affect the boy's growth rate from 2019 to 2023, we only had 6 states that do not keep a team score.
- 2 (IL & MD) of these 6, went to 0 in 2021 in reaction to CoVid. IL was the state with the most wrestlers that went to 0.
- Only 7 states with more than 125 boy's wrestlers in 2020 went to 0 in 2021.
- This is such a large externality and factor that MatStats can not say for sure if keeping a team score will increase boys HS growth.
- MatStats can say this keeping a team score certainly does not hurt the growth rate for boys from 2019 to 2023.

## We do not know if having the dual meet tourney before or after the individual tourney effects boys HS growth.

- Of the 21 states that responded to this survey, that have a dual meet tourney, there are only two states that have their dual meet championships after the individual (IL & ND).
- Therefore, MatStats has no idea if it effects and growth in boys HS wrestling. We just discussed the IL situation with CoVid, so that is another monkey wrench in this.
- The world's oldest and greatest sport has always been an individual driven sport at tourney time.
- Gorms remembers the first year of the VA Duals (1981). That was one of the first major dual meet tourneys.
- It is an interesting option to have the dual meet be the featured event. But since the crown jewel of our sport is the Men's NCAA D1 tourney, who wants to swim upstream?

## There is NO effect on boys HS growth from 2019 to 2023 on what the competition limit is set on (Team or Individual).

Episode 27-32

Competition		2023 # HS	
Limits (#	2019 # HS	Boys	
States)	<b>Boys Wrestlers</b>	Wrestlers	Multiplier
Team (19)	83,391	97,568	1.17X
Individual (20)	118,240	130,091	1.10X
Total (39)	201,631	227,659	1.13X

Note - These numbers only include the 39 States that responded to the NWCA survey.

## The number of days the individual state tourney has NO effect on the growth rates for boys HS wrestling from 2019 to 2023.

Episode 27-33

# of days		2023 #	
Individual	2019 # Boys	Boys HS	
State Tourney	<b>HS Wrestlers</b>	Wrestlers	Multiplier
2 (18)	61,347	67,802	1.11X
3 (18)	126,073	144,910	1.15X
Total (39)	201,631	227,659	1.13X

Note - IA & MO have a 4-day individual state tourney & ME has a 1-day event. These numbers are only for the 39 states that responded to the NWCA survey.

The number of days in states individual state championships could be decided based on potential revenue. The individual state championships are almost always after the dual due to attendance also.

- The two states with a 4-day individual state tourney (IA & MO) have large crowds. IA 80K in 2022. MO 23K in 2022.
- The one state with a 1-day tourney (ME) only had 1,350 fans in 2022.
- IA only had 10K fans at their dual meet state tourney in 2022. This is typical for the 39 states that responded to the NWCA survey. Of the two states that have their dual after their individual (IL & ND), we only know the attendance in both for ND. ND had more fans at their individual tourney.
- It makes sense for the individual tourney to be the last event.

### MatStats feels there are several reasons for the growth in certain states that can not be easily measured.

Episode 27-35

Let's have Jason, Kevin, & Dr J discuss other reasons that could be responsible for some states growth rates exceeding other states.

- NWCA
- Leadership academy
- Random HS leaders
  - Beat the streets
    - WLAG
- Trenton Youth wrestling
  - Flo & social media
    - Grass roots
    - Youth clubs
- Admin people supervising the growth and the program.

#### 80% of all the growth in boy's HS wrestling from 2017 to 2023 came from states with LA's.

Category	2017 Boy's HS Wrestlers	2023 Boy's HS Wrestlers	2023- 2017	% Change	% Number Increase
LA (32)	188,071	218,788	30,717	<b>16.3%</b>	<mark>80%</mark>
No (18)	57,368	65,197	<mark>7,829</mark>	<mark>13.6%</mark>	<mark>20%</mark>
Total	245,439	283,985	38,546	15.7%	100%

#### MatStats strongly encourages states to have LAs based on the results from 2017 to 2023.

- The states that had LAs from 2017 to 2023 tend to be the states with a larger number of boy's HS wrestlers to begin with.
- The percentage increase is only slightly higher for the states with LA's (16.3% vs 13.6%) however the overall numerical growth is much larger in the states that had LA's (30,717 vs 7,829).
- As we discussed previously it tends to be easier to grow in growth vs mature businesses.
- The fact that in this case the mature and larger states are growing at a larger percnetgae and a much larger absolute numerical terms, gives MatStats the reason to suggest all states should have LA's.

The first ever dual meet televised live on ESPN resulted in the Hawkeyes beating the Cyclones 18-14. In the MatStats MOV scoring the Cyclones would have won 29-16.

Episode 27-38

Weight	Result	<b>Current Scoring</b>	MOV Scoring
125	lowa 7-2	Iowa 3-0	lowa 5-0
133	ISU 8-1	Tied 3-3	ISU 7-5
141	lowa 4-1	lowa 6-3	lowa 8-7
149	ISU 6-3	Tied 6-6	ISU 10-8
157	lowa 4-2	lowa 9-6	Tied 10-10
165	ISU 16-4	ISU 10-9	ISU 18-10
174	lowa 14-13	lowa 12-10	ISU 18-11
184	lowa 3-2	lowa 15-10	ISU 18-12
197	Iowa 7-3	lowa 18-10	ISU 18-16
285	ISU 17-6	lowa 18-14	ISU 29-16

There is a better chance that Dresser would like the MatStats MOV scoring than Brands.

You don't need a degree in stats to figure that out.

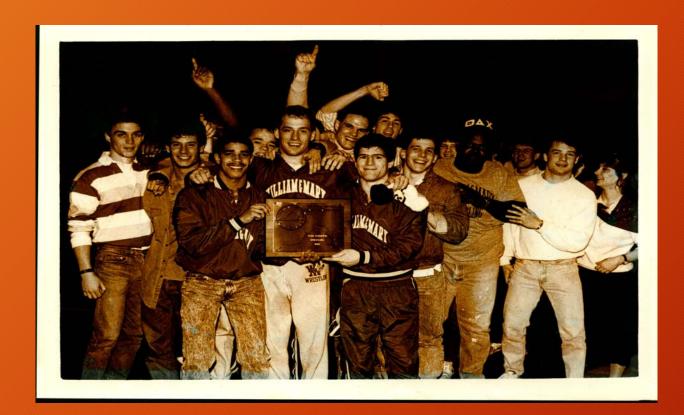
How would MOV scoring have changed each match strategy in this dual?

#### Thierry Chaney to be inducted into the EIWA Hall of Fame in March 2024.

- Thierry Chaney (W&M '91) is being inducted to the EIWA Hall of Fame in March 2024.
- Thierry was a two-time EIWA OW (1988 & 1991).
- Thierry is the first W&M wrestler to be inducted to the EIWA HOF.
- Thierry was so good, he made Pincus & Gorms look like they knew what they were doing.
- On behalf of the W&M alums, MatStats says, congrats TC. See you at Bucknell in March.

#### Chaney and the Tribe celebrate the VA State Team Title in 1988.

Episode 27-40



#### **W&M EIWA Champs**

1982 - B. Swezey 1984 - C. Aragona 1988 - T. Chaney (OW) 1988 - M. McLaughlin 1990 - B. Wincheski 1990 - R. Larmore 1991 - T. Chaney (OW)

## Episode 27 MatKevin's Notes #1 Girls HS Wrestling

- 1) The largest factor under our control for girls HS growth is State Sanctioning.
  - 2) HS girls should have a state dual meet tourney to help growth.
- 3) Girls should wrestle on girl's teams if the school has a girl's team to help growth.
- 4) If a HS does not have a girl's team, let girls wrestle on a boy's team, but encourage them start of a girl's team.
  - 5) The number of divisions in a state and allowing more than one entry per weight per school has no affect on the growth rate of girl's HS participation.

#### Episode 27 MatKevin's Notes #2 Boy's HS Wrestling

Episode 27-42

- 6) The advent of girls wrestling has coincided with the renewed growth of HS boys wrestling.
- 7) Having a dual meet tourney, keeping score at the individual tourney, & competition limits have no effect on growth rates of boys HS wrestling.
- 8) The number of days for the individual state tourney & if it is the last event have no provable affect on the boys HS growth rate.
- 9) The length of the state individual tourney is most likely based on revenue potential.
- 10) There are factors determining the growth in HS boys in certain states that are near impossible to statistically prove. This is why we need the NWCA. On the NWCA website it states, "The NWCA is focused on growing the sport through its core competencies...."

Go to a local NWCA Leadership Academy

#### What is the topic next month (Wednesday 1/17/24 3PM EST)?

#### The number of matches the top male wrestlers have through the years in the NCAA's.



- Tune In Next Month
  - Same Mat Time
- Same Mat Channel



- Next months show will inform the viewers on the number of matches the top male wrestlers in the NCAA's have had through the years.
- MatStats will investigate if these numbers have changed, what it means, and how it compares to other sports.