

AAAEM ED Acuity Index

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The acuity challenge

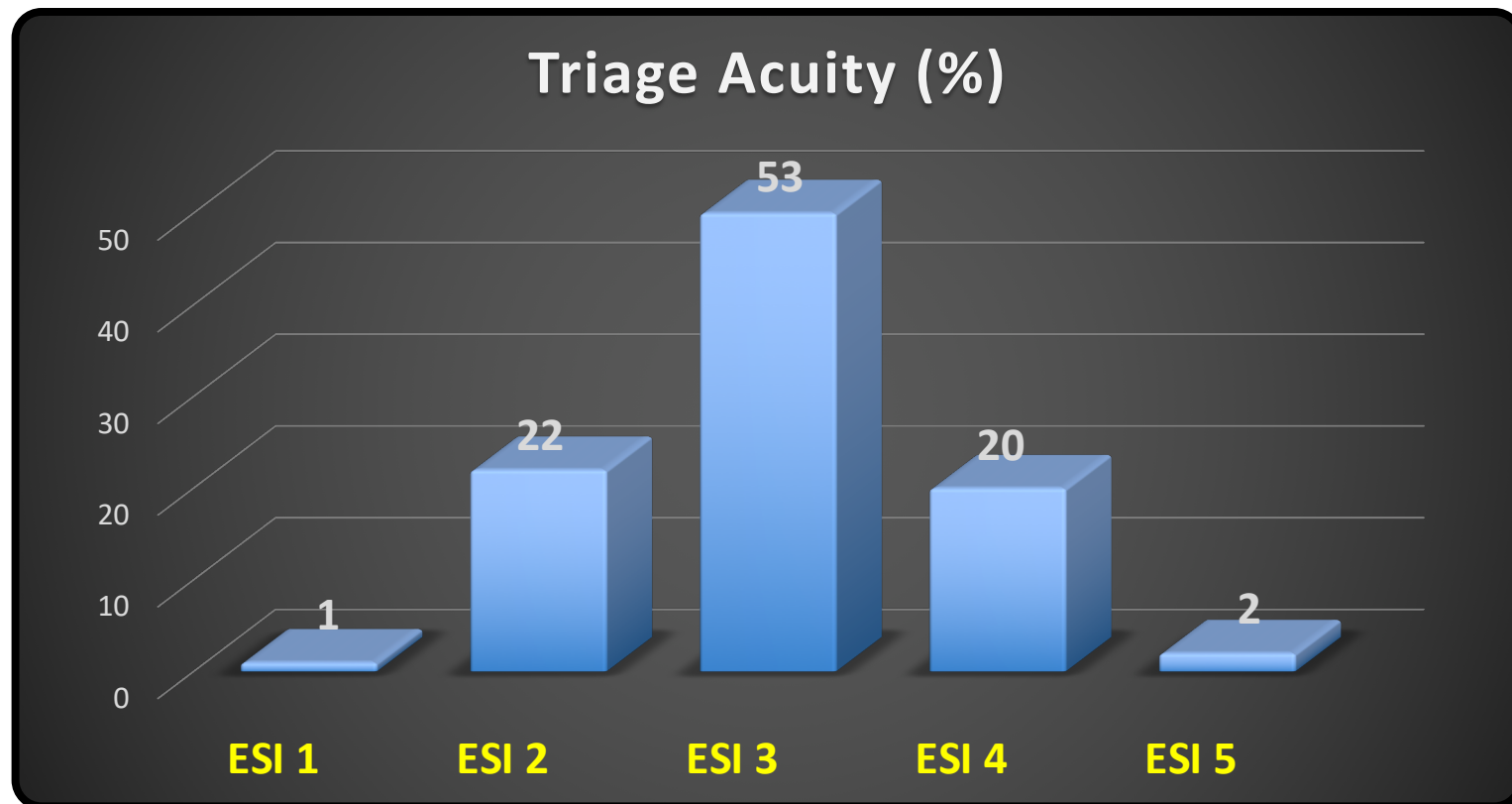
- Existing need to assess acuity of ED patients
- A better measure of acuity or complexity
- A single number – a way to compare

Current ways of measuring acuity

Used by

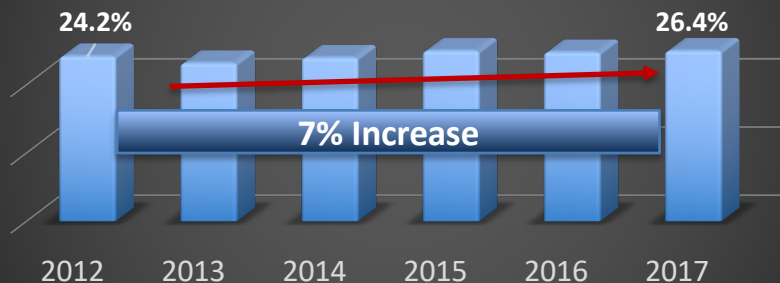
Community and Freestanding

Academic and Affiliated

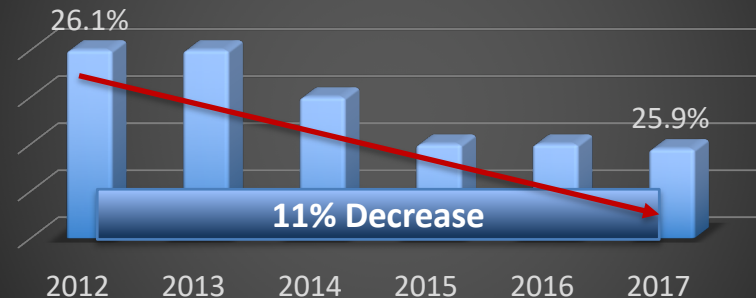


Current ways of measuring acuity

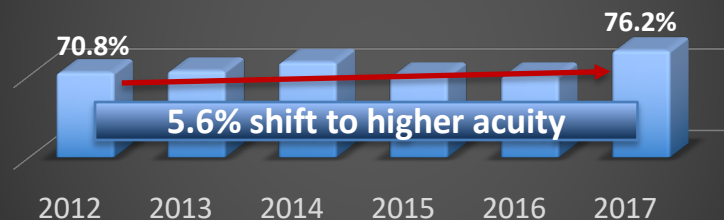
Hospitalization Rate



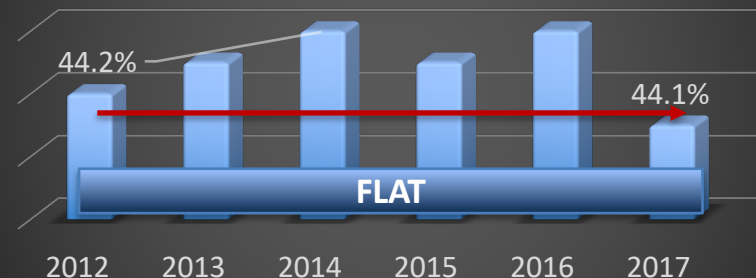
EMS Arrivals



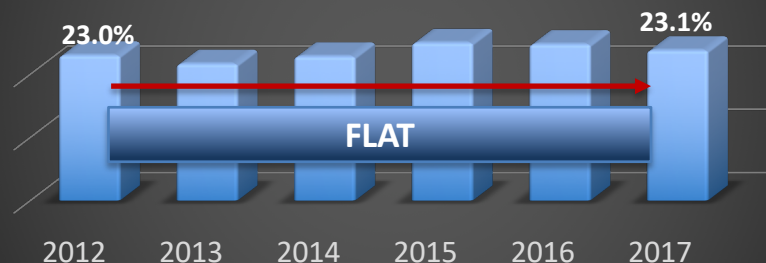
High Acuity Profree Codes



EMS Admissions



Acuity 1/2



Hospitalization Rate increased by 7%
High E&M Codes increased by 5.6%
ESI Acuity Level 1&2 remained flat
EMS Arrivals decrease by 11%
EMS Admissions remained flat

Is there another way?

- Case Mix Index (CMI) for inpatients
 - Case Mix Index (CMI) for patients admitted through ED
 - Case Mix Index (CMI) for all ED patients
-
- ED Acuity or Complexity Index using existing metrics
-
- ED Acuity or Complexity Index using patient level data

4 **WARN**
ACCU WEATHER

HEAT INDEX

TODAY

115°

ARE YOU KIDDING?

110°

DANGEROUS

105°

NOT ENJOYABLE

100°

MEH

95°

NOT TOO BAD!

90°

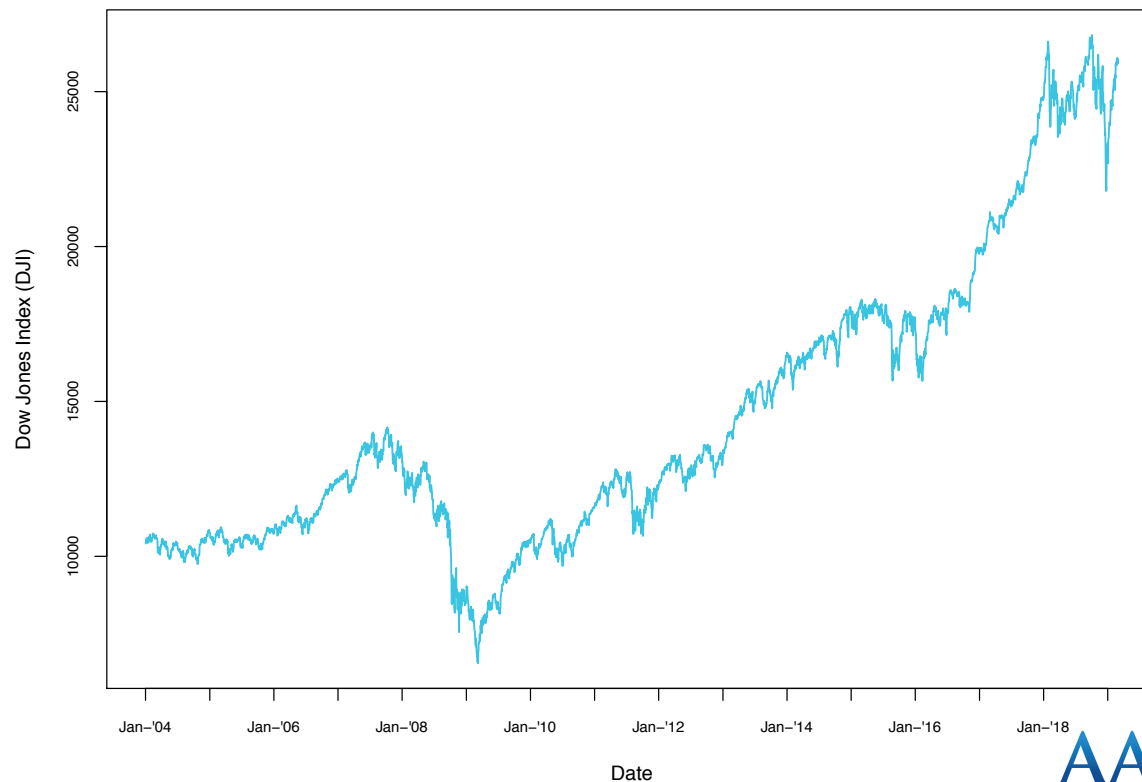
PINCH ME PLEASE!

102°

SONY

What is an Index?

A statistic which assigns a single number to several individual statistics in order to quantify trends (example: Dow Jones)

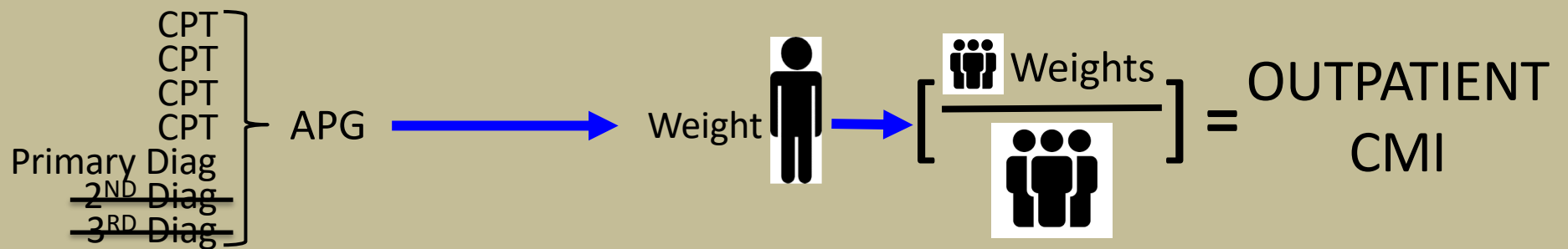
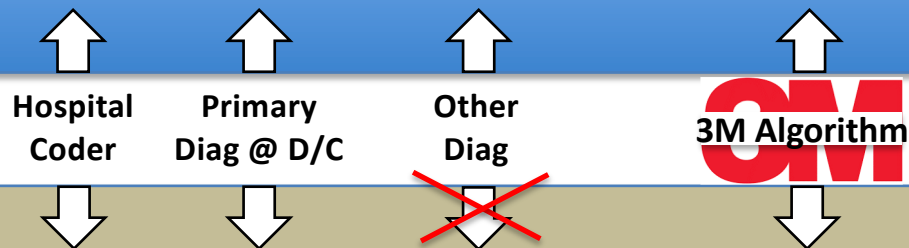
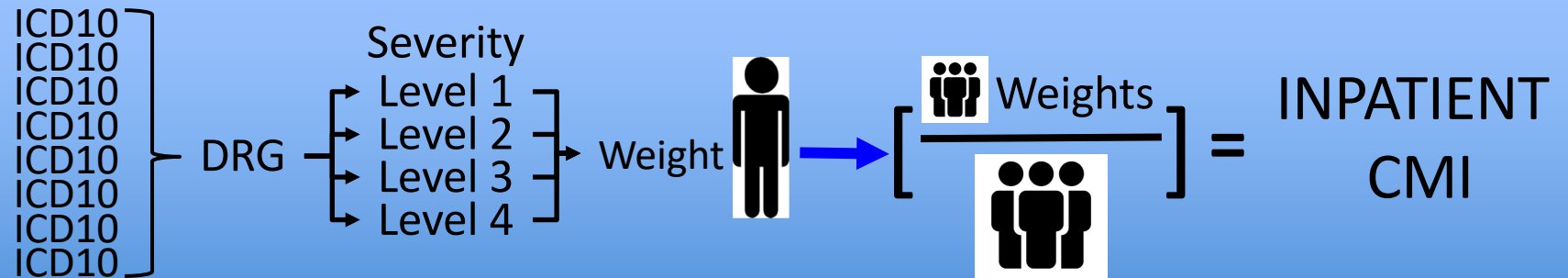


Case Mix Index (CMI)

- Case Mix Index (CMI) is a relative value assigned to the diagnoses and procedures of patients.
- Approximates allocation of treatment resources.¹
 - Clinical complexity
 - Resource demand (costliness)
- CMS uses CMI to determine a hospital's reimbursement rate across all of its I/P cases.

¹ <http://www.healthandhospitalcommission.com/docs/May26Meeting/CasemixIndexDefintion.pdf>

CMI Calculation



CMI Calculation: Available Now

Vizient Inpatient Case Mix Index

AAAEM Member	State	ED Admitted Cases	CMI	Medicare Cases	Medicare CMI	Non-Medicare Cases	Non-Medicare CMI
Cleveland Clinic Akron General - Main	OH	17,414	1.4740	9,429	1.5305	7,985	1.4073
UF Health - Univ. of Florida Shands Jacksonville	FL	21,795	1.4986	8,147	1.5645	13,648	1.4592
Johns Hopkins Hospital	MD	15,705	1.5293	6,001	1.5624	9,704	1.5088
NewYork-Presbyterian / Columbia University Medical Center	NY	16,094	1.5521	6,811	1.7532	9,283	1.4046
Duke University Hospital	NC	19,899	1.6288	8,904	1.7823	10,995	1.5045
Yale New Haven Hospital	CT	42,804	1.6554	22,741	1.7485	20,063	1.5500
Emory University Hospital	GA	12,264	1.6656	6,866	1.6538	5,398	1.6806
Mayo Clinic Hospital - Rochester	MN	17,991	1.7145	10,789	1.7447	7,202	1.6693
Grady Memorial Hospital	GA	28,045	1.7183	8,484	1.7502	19,561	1.7045
Barnes Jewish Hospital	MO	23,237	1.7248	10,597	1.7695	12,640	1.6872
Hospital of University of Pennsylvania	PA	11,601	1.7546	5,423	1.7940	6,178	1.7201
Beth Israel Deaconess Medical Center	MA	16,647	1.7559	10,461	1.7671	6,186	1.7369
Stanford Medical Center	CA	12,473	1.7589	6,349	1.7582	6,124	1.7595
Brigham and Women's Hospital	MA	17,911	1.7958	9,768	1.7870	8,143	1.8065
The George Washington University Hospital	DC	18,792	1.8681	8,899	1.9146	9,893	1.8263
Mount Sinai Hospital	NY	16,539	1.8682	8,659	1.9139	7,880	1.8179
Vanderbilt University Medical Center	TN	21,969	2.0719	6,876	1.9239	15,093	2.1394

CMI: A Useful Tool?

- Best as an inpatient measure
- Available now through Vizient or from each of you...
- A good option for benchmarking ED I/P acuity

Another Tool

- Summarize existing accepted metrics
- Create novel acuity or complexity index

Patient Acuity

VS.

Operational Complexity

ED Patient Population Acuity Index

- **Motivation**

- Which statistic do you currently use to assess the acuity and complexity of your ED's patient population?
- Do you use this statistic to compare your ED's patient population to those of your peers?

- **Goal**

- Develop an index to quantify ED patient population **acuity** and/or **complexity**

- **How?**

- **Version 1:** Use AAAEM/AACEM Benchmark Survey (summary) data
- **Version 2:** Use *deidentified* individual-level patient data

Today: Version 1 only

Indexing Methodology

- What We Did
 - Average percentile rank, rescaled
- Component Selection
 - Consensus
- Component Weighting/Importance:
 - Equal, however ...
- Index Sensitivity:
 - Inclusion of CMI
 - Inclusion of complexity measures
 - Behavioral health visits
 - Geriatric visits
 - Self-pay or Medicaid

Index Components

- Number of Arrivals
- Ratio of % ESI-1/2 to % ESI-4/5
- % ED Arrivals Hospitalized
- % Arrivals by EMS
- % EMS Arrivals Hospitalized
- % Profess 4/5/CC
- [?] Case Mix Index (CMI)
- [?] % BH Visits, % Geriatric Visits, % Self-Pay or Medicaid Payor

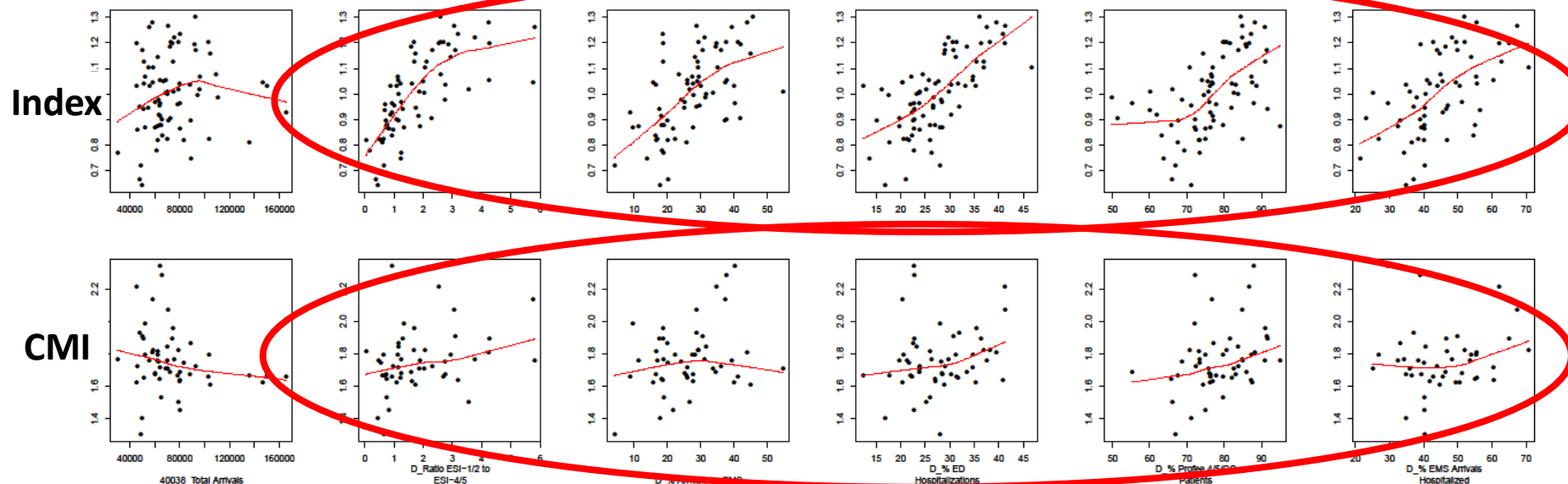
What is my Acuity Index?

Hospital	Index	ESI Ratio	% Hospitalized	% EMS Arrivals	% EMS Arrivals Hospitalized	Profee 4/5/CC	Patient Volume
A	1.302	2.58	36%	46%	52%	84%	92,266
B	1.006	2.03	24%	34%	25%	83%	68,833
C	0.877	0.74	26%	19%	40%	80%	64,898
D	0.664	0.38	21%	20%	37%	66%	47,714

What about CMI?

Weak/no correlation between CMI and all Index factors

POSITIVE ASSOCIATION



ESI Ratio

EMS Arrivals

Admissions

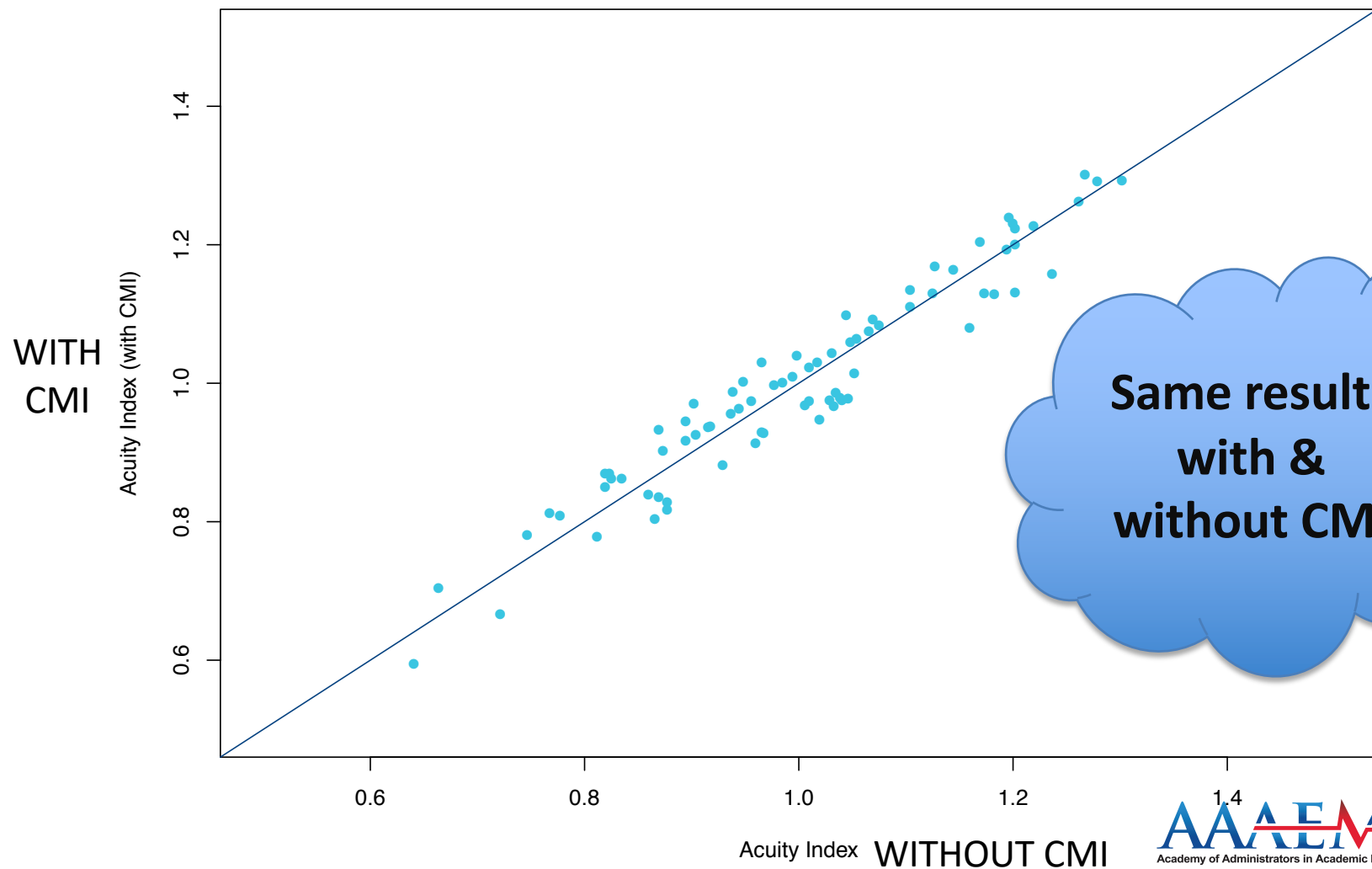
Profes
4/5/CC

EMS Admits

LACK OF ASSOCIATION

What about CMI?

ED Patient Acuity Index
With and Without CMI



Refined ED Patient Population Index

- Why refine?
- The power of individual patient-level data
- Letting the data speak
 - Component selection
 - Components weighting
 - More frequent updating
- What to expect & when

AAAEM Acuity Index

Group Discussion

1. ED Admit CMI: Do we want to benchmark this?
2. Acuity Index: Components – anything missing?
3. Components – add weights or focus on Version 2?
4. Version 2 (pt level) – Comments on value?
5. Version 2 (pt level) – anyone interested in helping to develop tool by sharing data?
6. Indexing over time?

AAAEM Acuity Index



THANK YOU

