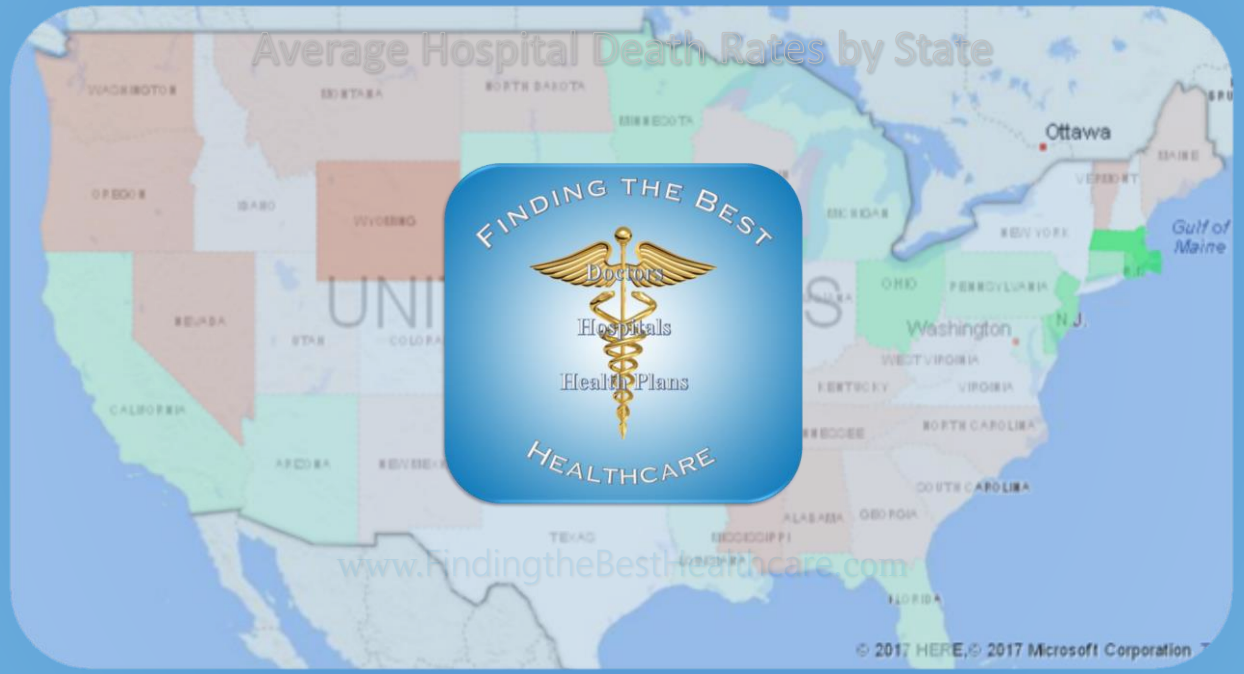
Hospital Outcomes Scoring (HOS) Database

Providing consumers access to hospital death & complications information.



Peter A. Wadsworth
www.AmoryAssociates.com

© Copyright Amory Associates 2017

"A study by researchers at Johns Hopkins Medicine says medical errors should rank as the third leading cause of death in the United States…" NPR.org May 3, 2016

"Death is the most important hospital outcome to avoid."

© Copyright Amory Associates 2017

What are Hospital Outcomes Scores (HOS)?

"Death is the most important hospital outcome to avoid."

The Centers for Medicare & Medicaid Services (CMS) compile hospital outcomes data for:

- 7 Causes of Deaths with reported rates as high as 21.2% of discharges
- 10 Types of Complications with rates as high as 2.3% of discharges

Each rate is scaled to yield hospital scores from 0% to 100% and medians of 50%.

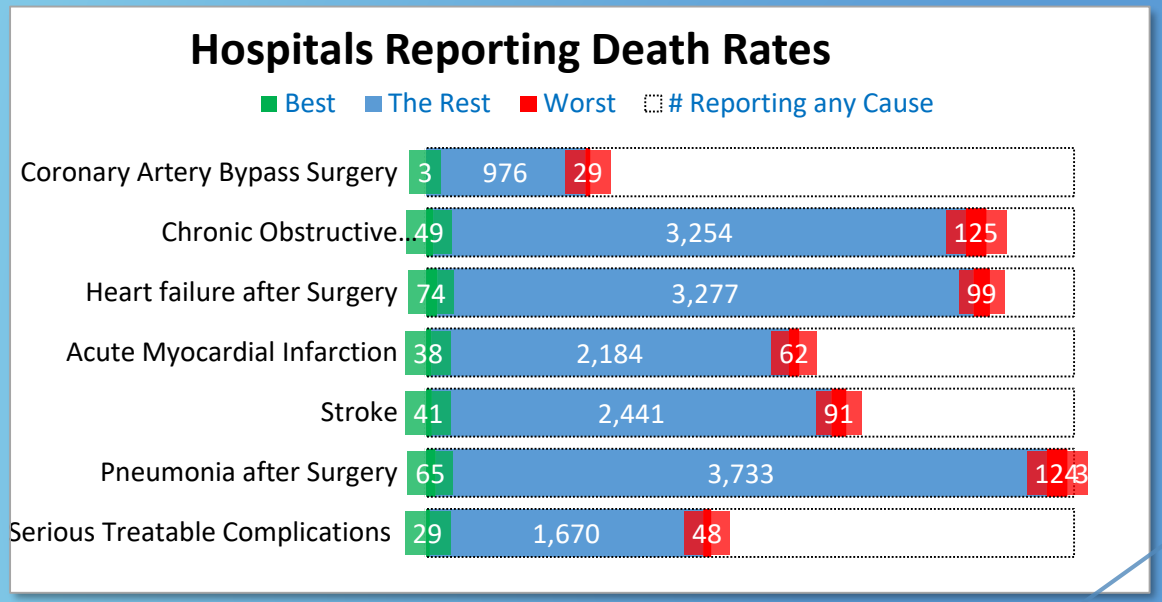
Scaled rates for each hospital are then averaged to yield a Death Score and a Complication Score:

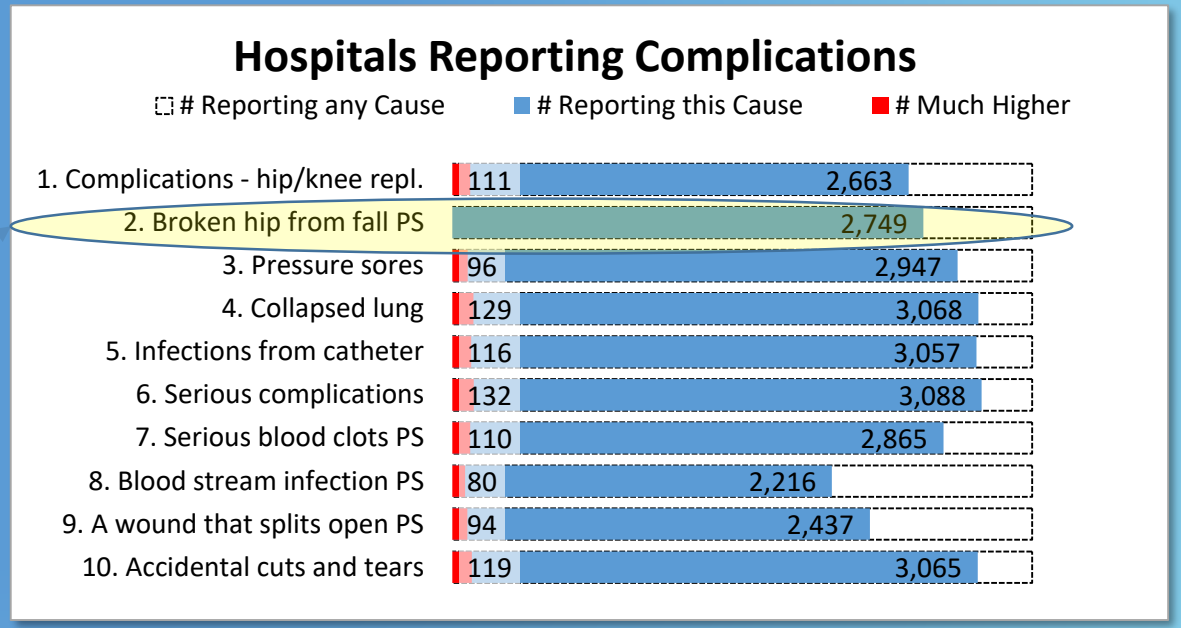
- Average death rate (Death Score) based on up to 7 reported death rates.
- Average complication rate (Complication Score) based on up to 9* reported rates.

**One complication rate is excluded for reasons explained later.*

© Copyright Amory Associates 2017

3,382 U.S. Hospitals reported at least one Death Rate and one Complication Rate

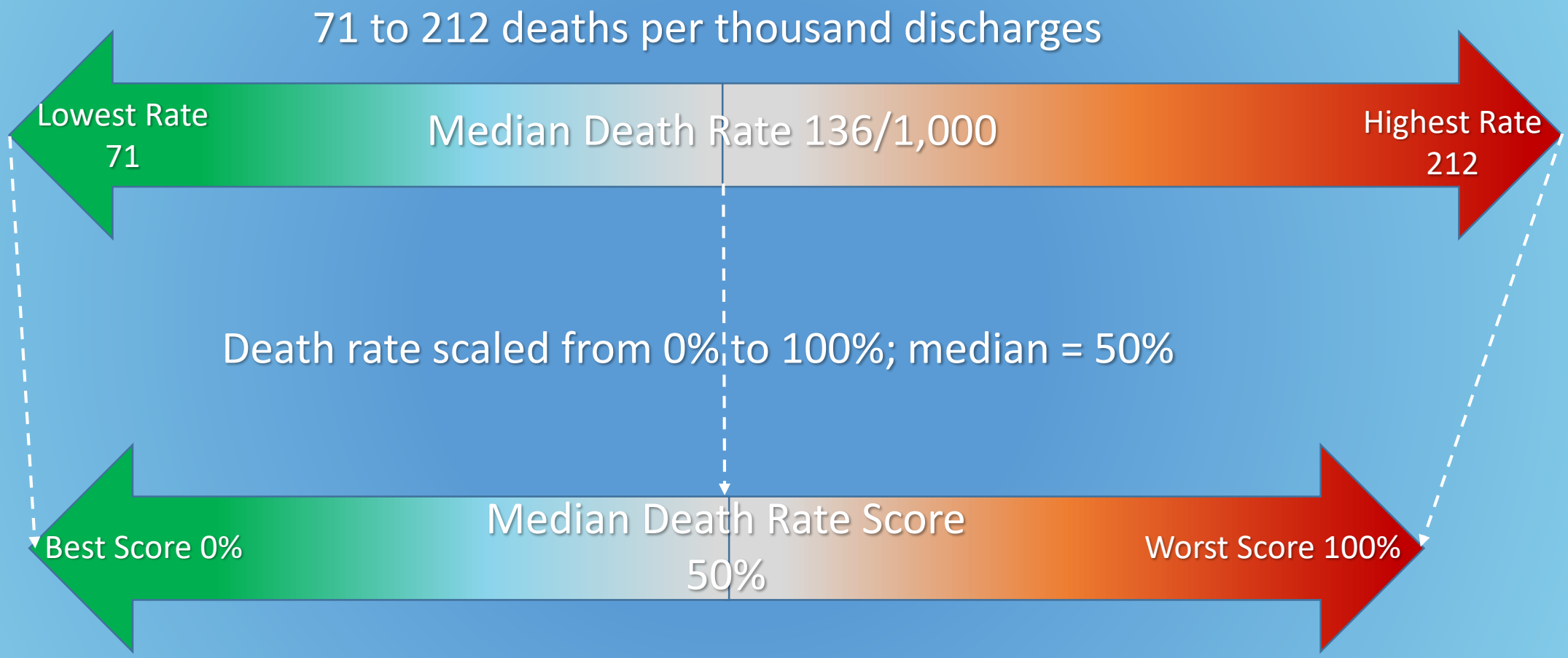




excluded from Complication Scores because all hospitals reported the same rate.

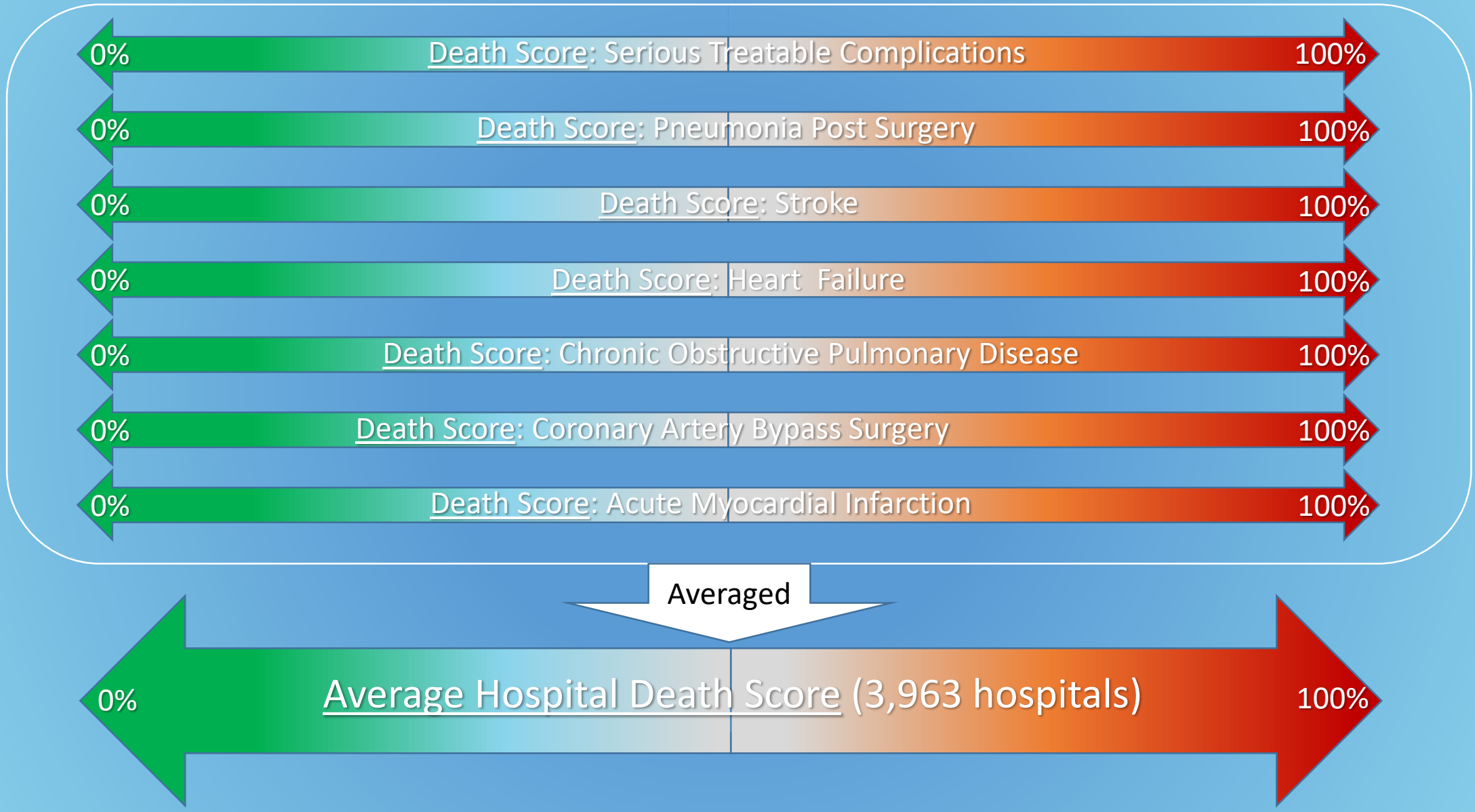
© Copyright Amory Associates 2017

Example: Death rates due to Serious Treatable Complications



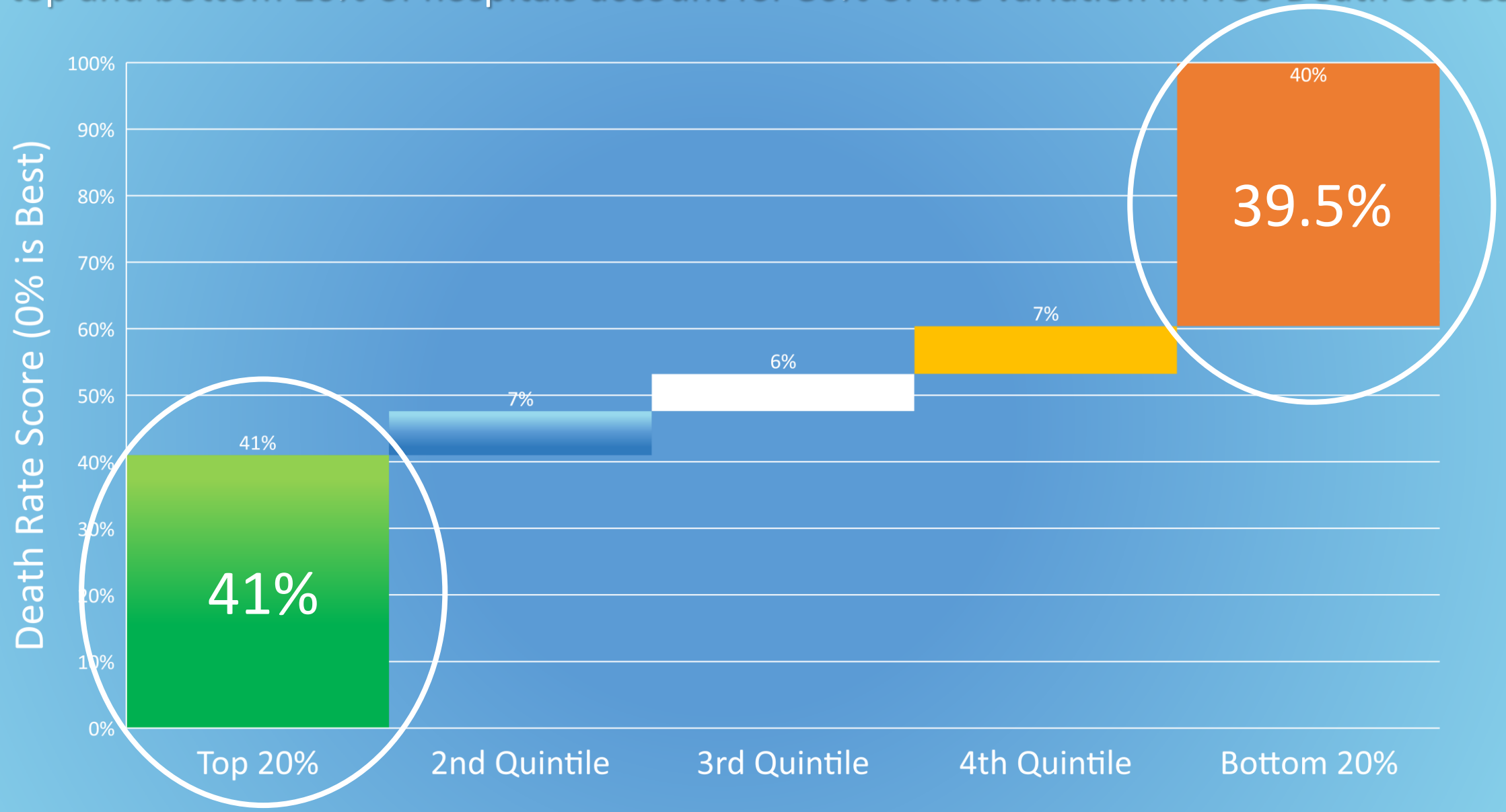
© Copyright Amory Associates 2017

Hospital Death Score = average of all 7 Death Rate Scores



© Copyright Amory Associates 2017

The top and bottom 20% of hospitals account for 80% of the variation in HOS Death Scores.



© Copyright Amory Associates 2017

WHY DO WE NEED HOSPITAL OUTCOMES SCORES (HOS)?

"Death is the most important hospital outcome to avoid."

Hospital Outcomes Scores (HOS) offer certain advantages over other ratings systems:

1. Zero in on the most objective measures of safety - outcomes.
2. Rank hospitals by Death Score then by Complications Score.
3. Don't dilute outcomes by combining them with non-outcome factors.
4. Other hospital safety ratings don't predict death rates very well.
5. Median Scores of 50% make it easier to tell which hospitals are better.
6. Scores from 0% to 50% differentiate more effectively than 123 or ABC .

Accordingly, we think that HOS should be seen by consumers alongside other safety ratings.

© Copyright Amory Associates 2017

Death Rate Scores may lead consumers to make different choices than Medicare Ratings & Hospital Safety Grades

10 Lowest Hospital Death Rate Scores in NY & MA	ST	Death Rate Score	Compli-cation Score	Medicare Rating (5=best)	Medicare Safety Score* (1=best)	Hosp. Safety Grade
Specialty Hospital	NY	5.8%	38.6%	5	1	NR
Teaching Hospital	NY	9.7%	50.7%	4	1	C
Teaching Hospital	NY	13.0%	40.5%	4	4	C
Community Hospital	MA	13.4%	58.0%	3	5	B
Community Hospital	NY	16.9%	44.1%	2	1	D
Community Hospital	NY	16.9%	48.5%	4	3	A
Community Hospital	MA	20.1%	45.1%	3	1	A
Teaching Hospital	MA	21.6%	45.5%	4	1	A
Community Hospital	MA	21.9%	42.0%	4	1	NR
Community Hospital	MA	22.8%	54.6%	3	3	B
Teaching Hospital	MA	22.8%	53.7%	3	5	A
Teaching Hospital	NY	22.9%	55.1%	3	3	C

* Medicare Safety Scores based on Number of Years and most recent year of Safety Penalties assessed by Medicare.

© Copyright Amory Associates 2017

HOS Power BI Database Model

Amory Associates has created a

Power BI (©Microsoft) Database Model

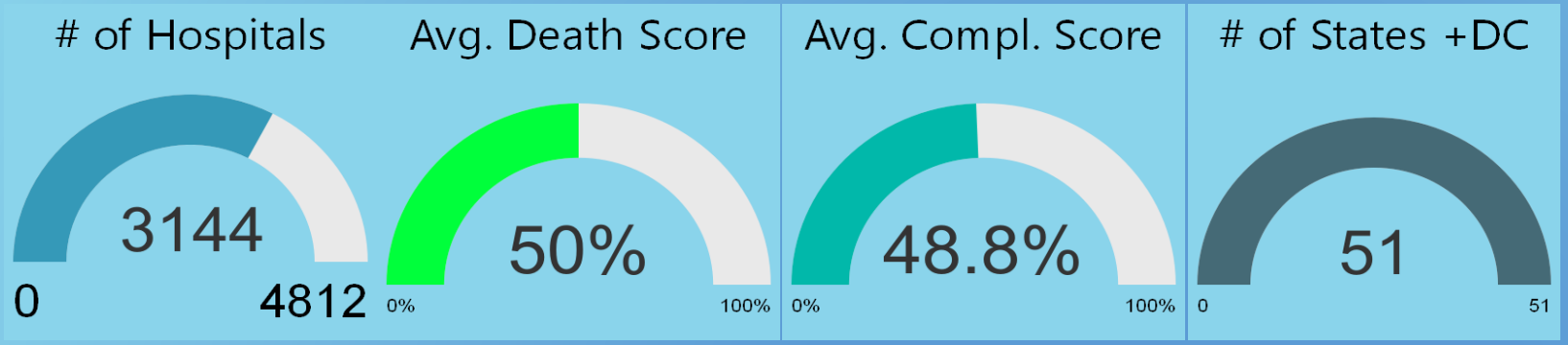
as illustrated on the following slides

to provide quick access to

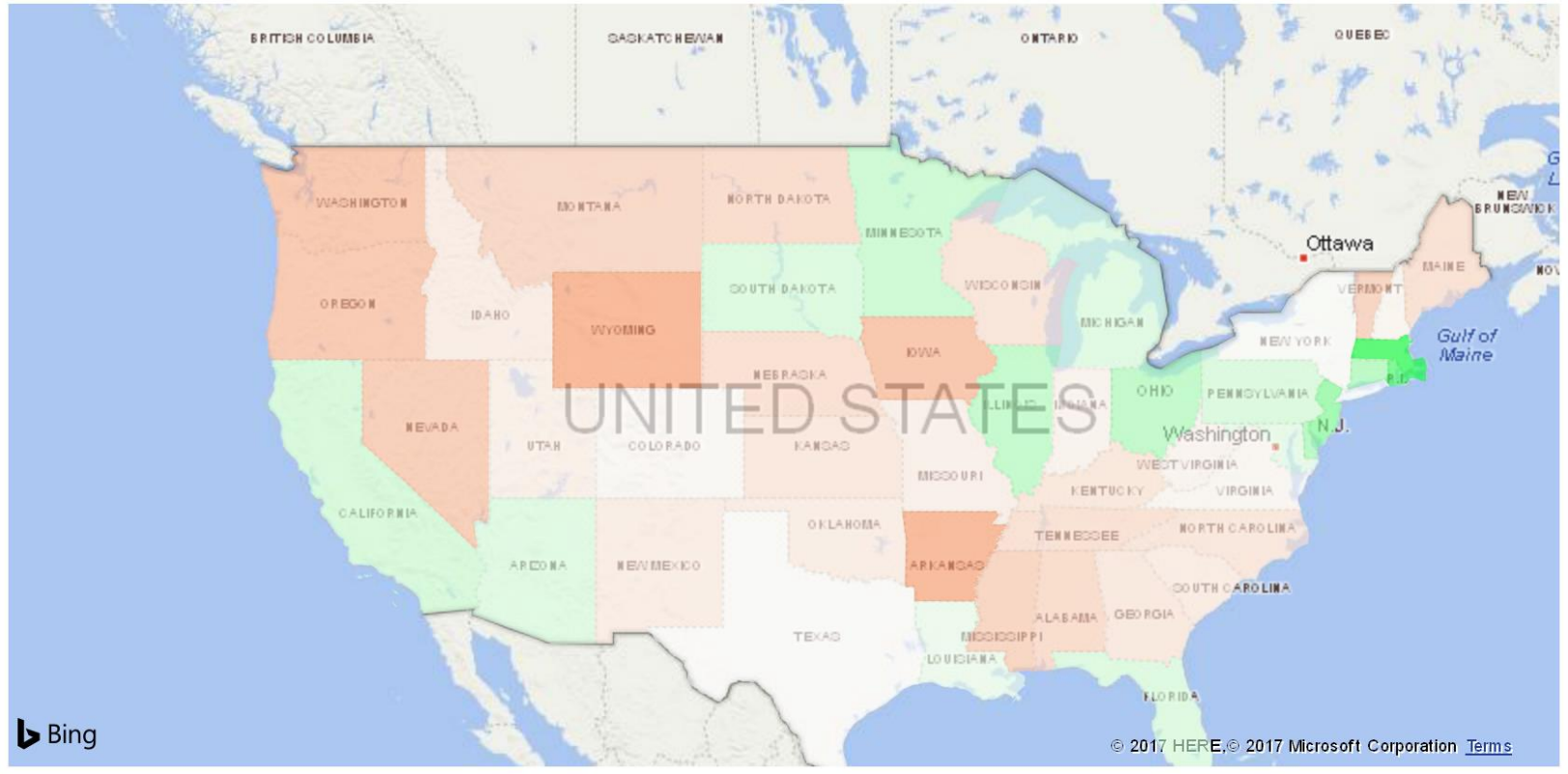
HOS Scores anywhere in the U. S.

© Copyright Amory Associates 2017

All U.S. Hospitals reporting Death & Complication Scores



Average Hospital Death Rates by State (green is best)

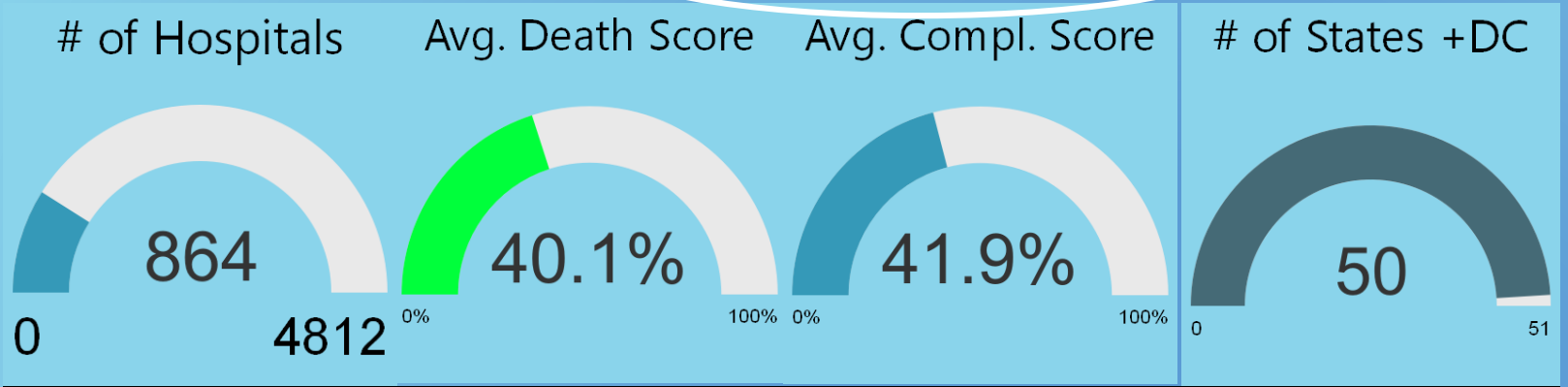


State Death Score Averages

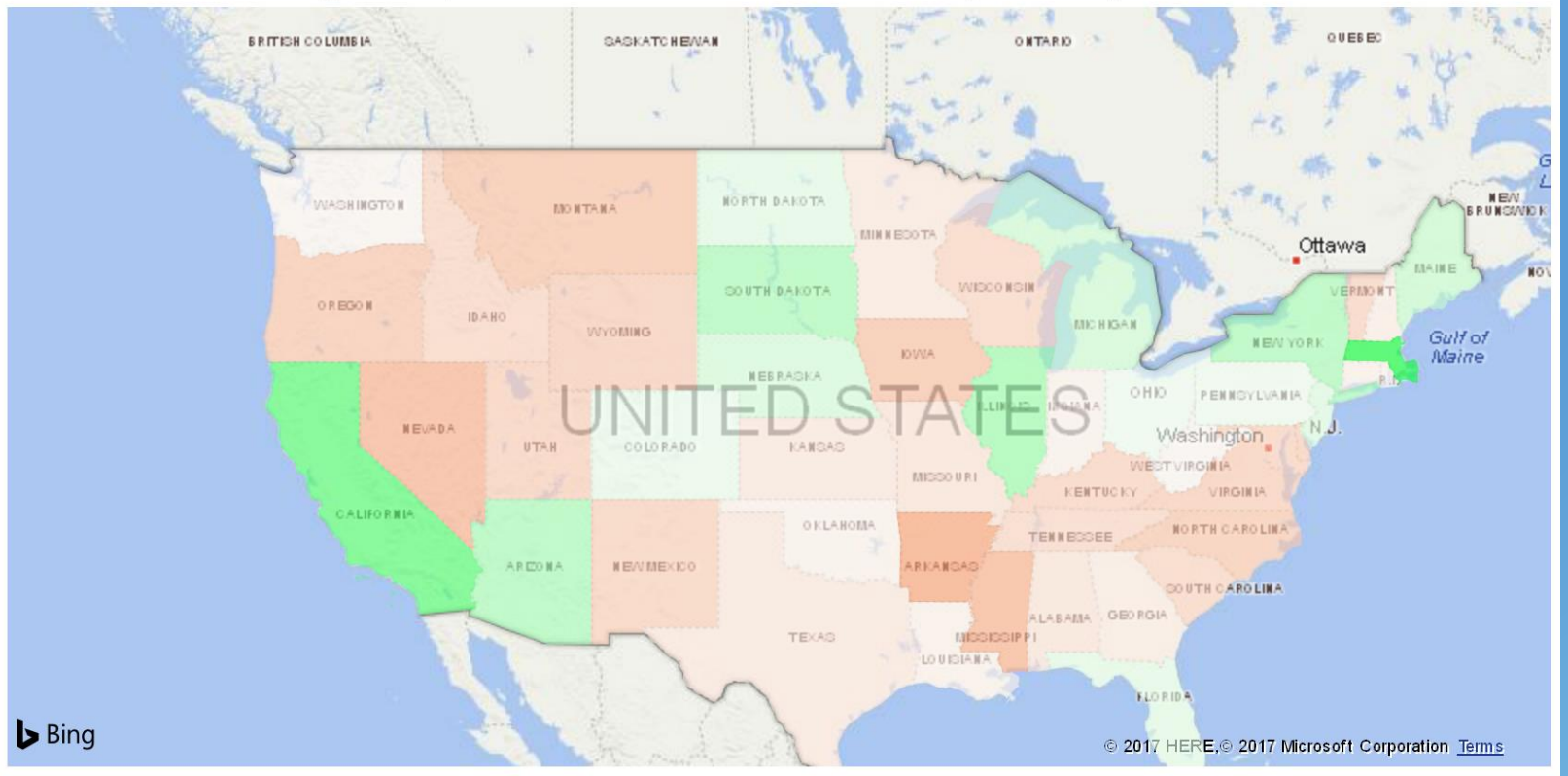
State	#	Death Rates (0% is best)	Complication Rates (0% is best)	Mcare Safety Pen. (1 is best)	Mcare Rating (5 is best)
MA	56	37.5 %	48.0 %	1.95	3.09
RI	10	40.3 %	45.4 %	2.80	3.40
NJ	60	43.1 %	46.8 %	2.53	2.58
DE	6	44.9 %	43.8 %	2.50	3.67
CT	28	45.0 %	53.0 %	2.89	2.61
OH	119	45.3 %	47.0 %	1.50	3.35
IL	125	45.5 %	48.3 %	1.76	3.08
MN	57	46.3 %	52.0 %	1.74	3.46
CA	265	46.9 %	47.2 %	2.12	2.76
PA	132	47.2 %	48.8 %	2.03	2.98
SD	16	47.3 %	50.5 %	1.69	3.00
FL	161	47.4 %	46.3 %	1.83	2.65
DC	6	47.5 %	53.6 %	3.00	1.50
AZ	56	47.6 %	49.6 %	1.86	2.73
MI	98	47.6 %	49.3 %	1.99	3.17
MD	38	48.1 %	50.6 %	1.45	0.00
LA	67	48.5 %	50.2 %	1.76	3.00
NY	139	49.3 %	49.6 %	2.42	2.27
TX	241	49.6 %	48.0 %	1.76	3.06
CO	48	50.0 %	51.1 %	1.79	3.21
VA	73	50.2 %	46.3 %	1.82	3.00
NH	20	50.2 %	45.6 %	1.65	3.50
WV	28	50.5 %	50.6 %	1.71	2.64
IN	83	50.7 %	46.5 %	1.61	3.49
UT	30	51.2 %	50.9 %	2.30	3.13
MO	73	51.2 %	48.4 %	1.75	2.96
ID	22	51.6 %	48.0 %	1.41	2.23
NM	29	51.7 %	51.6 %	2.03	2.41
OK	71	51.7 %	50.8 %	1.66	2.96
SC	51	51.9 %	47.4 %	2.18	3.10
HI	11	52.0 %	47.0 %	1.45	3.36
GA	95	52.4 %	49.6 %	2.17	2.87
KS	52	52.7 %	49.8 %	1.54	2.87
KY	62	52.7 %	48.1 %	1.65	2.92
NC	84	52.8 %	47.2 %	1.73	3.00
WI	76	53.0 %	49.2 %	1.62	3.66
TN	84	53.8 %	49.2 %	1.61	2.87
ME	23	53.8 %	51.2 %	1.74	3.39
NE	39	53.9 %	51.8 %	1.46	3.00
AL	80	54.7 %	49.0 %	1.43	2.93
ND	12	54.8 %	51.3 %	1.33	2.25
AK	9	55.2 %	54.1 %	1.89	2.89
MT	22	55.4 %	52.5 %	1.32	3.05
Total	3144	50.0 %	48.8 %	1.84	2.91

© Copyright Amory Associates 2017

Hospitals with Better than Median Death & Complication Scores



Average Hospital Death Rates under 50% by State (green is best)

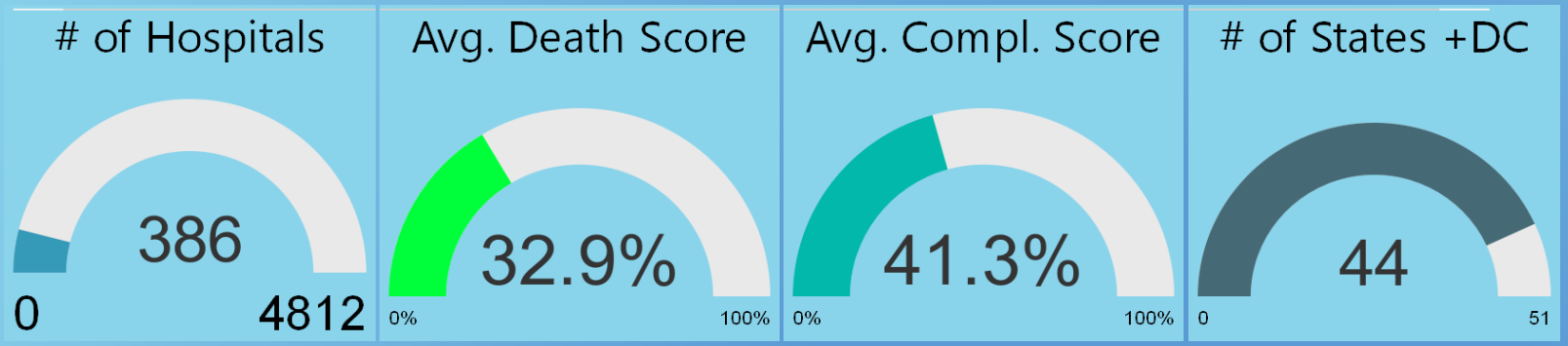


State Death Score Averages

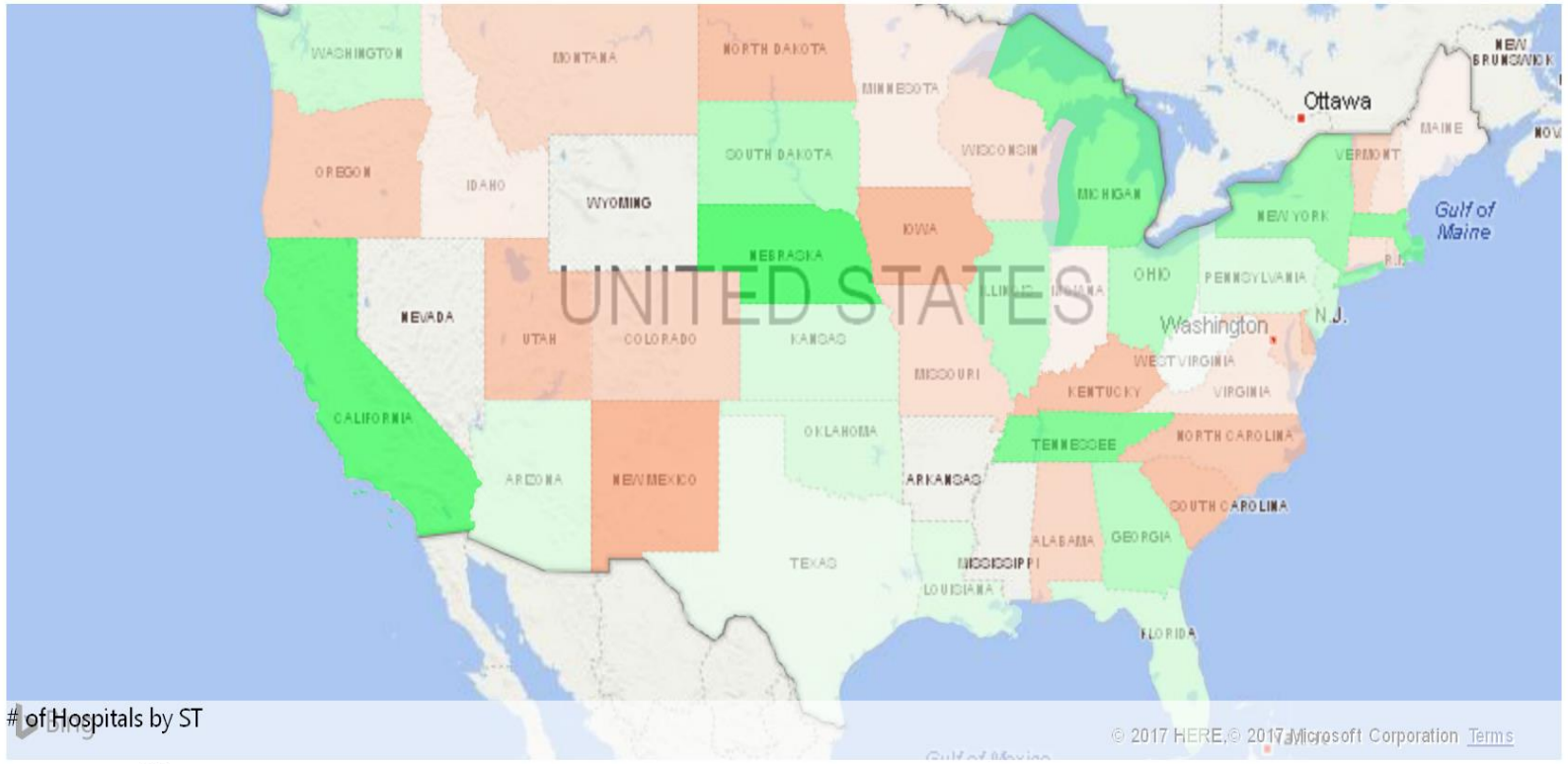
State	#	Death Rates (0% is best)	Complication Rates (0% is best)	Mcare Safety Pen. (1 is best)	Mcare Rating (5 is best)
MA	24	32.5 %	42.3 %	1.25	3.42
CA	97	34.7 %	40.8 %	1.93	3.20
IL	44	37.0 %	42.3 %	1.45	3.39
AZ	13	37.5 %	43.7 %	1.46	3.85
SD	6	37.5 %	46.0 %	1.67	4.33
NY	34	37.5 %	42.8 %	2.32	2.62
ME	2	38.5 %	48.4 %	2.00	4.50
MI	32	38.7 %	41.7 %	2.13	3.38
NE	3	38.9 %	41.6 %	1.00	3.67
NJ	29	39.3 %	41.6 %	2.17	2.97
FL	57	39.4 %	42.1 %	1.61	2.95
ND	1	39.5 %	45.2 %	5.00	4.00
CO	7	39.7 %	42.4 %	1.43	4.14
PA	50	39.8 %	43.4 %	2.02	3.44
OH	55	39.9 %	41.5 %	1.42	3.65
WV	6	40.7 %	43.3 %	1.50	2.83
WA	5	40.7 %	35.1 %	1.60	3.60
RI	7	40.9 %	41.8 %	2.43	3.43
OK	13	41.1 %	42.2 %	1.69	3.62
IN	25	41.1 %	40.5 %	1.52	3.76
CT	6	41.1 %	44.5 %	2.33	3.17
LA	17	41.1 %	43.2 %	1.41	3.59
NH	5	41.3 %	41.9 %	2.80	3.60
GA	17	41.6 %	43.6 %	2.35	3.35
MN	10	41.9 %	43.3 %	1.60	3.70
KS	13	41.9 %	39.9 %	1.69	2.77
TX	75	42.0 %	41.9 %	1.61	3.63
DC	1	42.0 %	39.3 %	1.00	1.00
AL	10	42.2 %	43.7 %	1.10	3.40
MO	20	42.4 %	41.9 %	1.60	3.45
TN	11	43.2 %	42.6 %	1.64	3.36
WI	21	43.4 %	43.8 %	1.81	3.90
SC	16	43.5 %	41.1 %	1.56	3.88
ID	7	43.5 %	39.0 %	1.00	2.71
VT	3	43.6 %	41.1 %	1.00	3.33
KY	16	43.6 %	43.4 %	1.81	3.00
MD	8	43.7 %	28.5 %	1.38	0.00
DE	4	43.8 %	42.0 %	3.25	3.50
NM	3	43.9 %	45.9 %	2.33	3.33
UT	6	43.9 %	41.5 %	2.33	3.33
VA	25	44.0 %	40.4 %	1.52	3.24
WY	1	44.1 %	48.9 %	1.00	4.00
NC	25	44.5 %	42.1 %	1.40	3.40
Total	864	40.1 %	41.9 %	1.74	3.34

© Copyright Amory Associates 2017

Death Scores in top Quintile; Complication Scores better than Median



Average Hospital Death Rates under 41% by State (green is best)

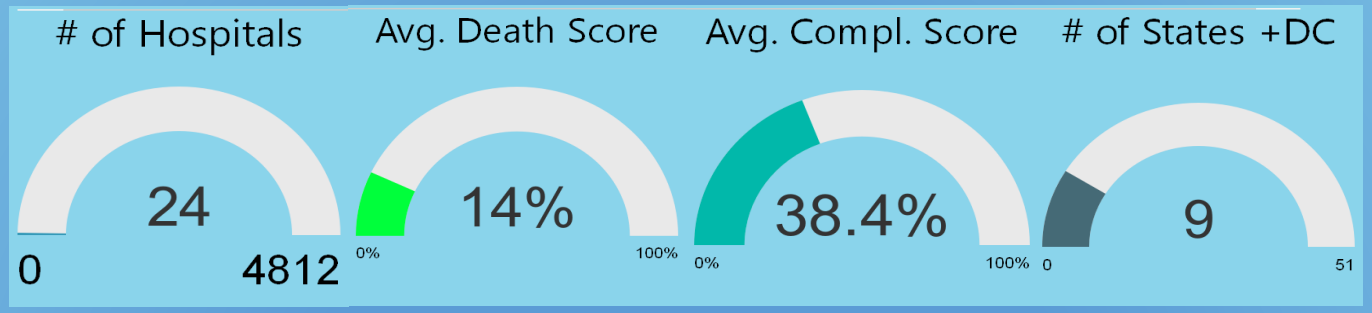


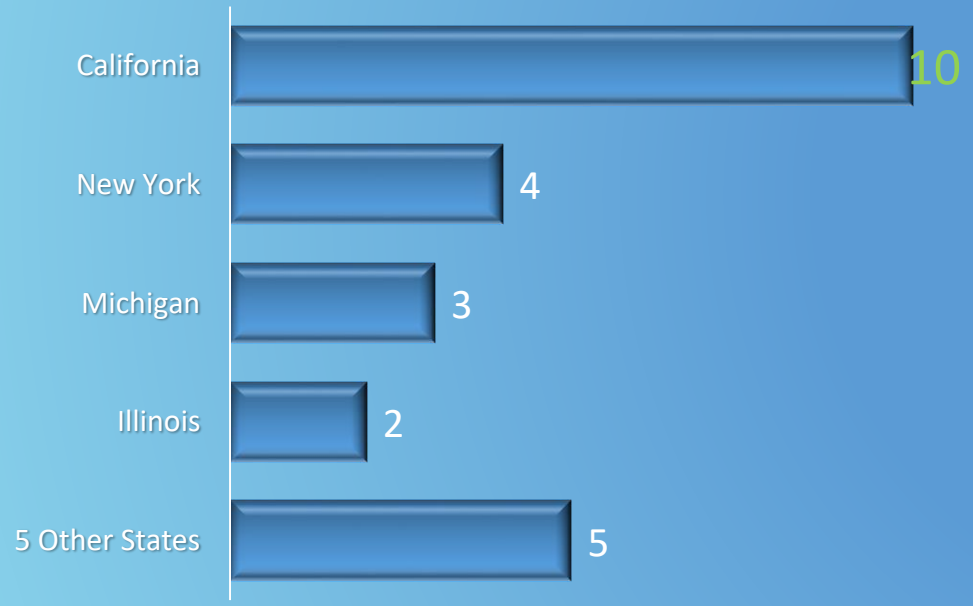
State Death Score Averages

State	#	Death Rates (0% is best)	Complication Rates (0% is best)	Mcare Safety Pen. (1 is best)	Mcare Rating (5 is best)
NE	1	28.4 %	47.7 %	1.00	3.00
CA	63	28.7 %	39.7 %	2.02	3.21
TN	2	29.9 %	48.0 %	2.50	4.00
MI	14	30.3 %	39.7 %	2.14	3.57
MA	21	30.5 %	41.5 %	1.29	3.48
NY	20	31.2 %	42.0 %	2.30	2.90
SD	3	31.9 %	43.8 %	1.67	4.67
GA	5	32.1 %	45.1 %	2.80	3.40
OH	23	32.1 %	40.8 %	1.61	3.96
IL	28	32.2 %	40.9 %	1.46	3.54
WA	2	32.8 %	32.9 %	2.00	4.50
NJ	15	33.1 %	39.7 %	2.33	3.13
FL	27	33.3 %	42.4 %	1.37	3.11
KS	4	33.3 %	41.2 %	2.50	3.00
OK	5	33.3 %	40.6 %	1.40	4.40
PA	24	33.4 %	43.3 %	2.04	3.75
AZ	9	33.5 %	43.5 %	1.44	3.78
LA	6	33.6 %	42.1 %	1.83	3.67
TX	24	33.9 %	41.1 %	1.96	3.75
WV	3	34.3 %	43.3 %	1.33	3.00
ME	1	35.2 %	49.5 %	2.00	5.00
IN	11	35.2 %	39.8 %	1.64	4.00
ID	2	35.4 %	38.0 %	1.00	2.00
MN	3	35.5 %	45.9 %	2.33	3.67
VA	4	35.7 %	41.6 %	2.50	3.25
NH	2	36.1 %	41.6 %	4.50	3.50
CT	3	36.3 %	45.2 %	2.33	3.33
RI	4	36.4 %	38.1 %	2.00	3.75
WI	7	36.5 %	43.7 %	2.00	4.00
MO	7	36.9 %	43.8 %	1.57	3.43
MD	3	37.1 %	21.1 %	1.67	0.00
MT	1	37.5 %	34.1 %	2.00	4.00
AL	5	37.6 %	43.5 %	1.20	3.60
VT	1	37.6 %	36.3 %	1.00	2.00
CO	5	37.7 %	41.5 %	1.00	4.20
OR	2	38.5 %	47.9 %	4.00	3.50
DE	2	38.7 %	43.0 %	4.00	3.50
NC	6	38.8 %	46.9 %	2.00	3.33
UT	1	39.0 %	42.0 %	1.00	0.00
KY	7	39.3 %	45.7 %	2.14	3.14
SC	6	39.4 %	38.7 %	1.50	4.00
ND	1	39.5 %	45.2 %	5.00	4.00
[illegible]	[illegible]	40.0 %	[illegible]	2.00	4.00
Total	38	32.9 %	[illegible]	1.87	3.46

© Copyright Amory Associates 2017

Death Scores below 20% and Complication Scores better than Median



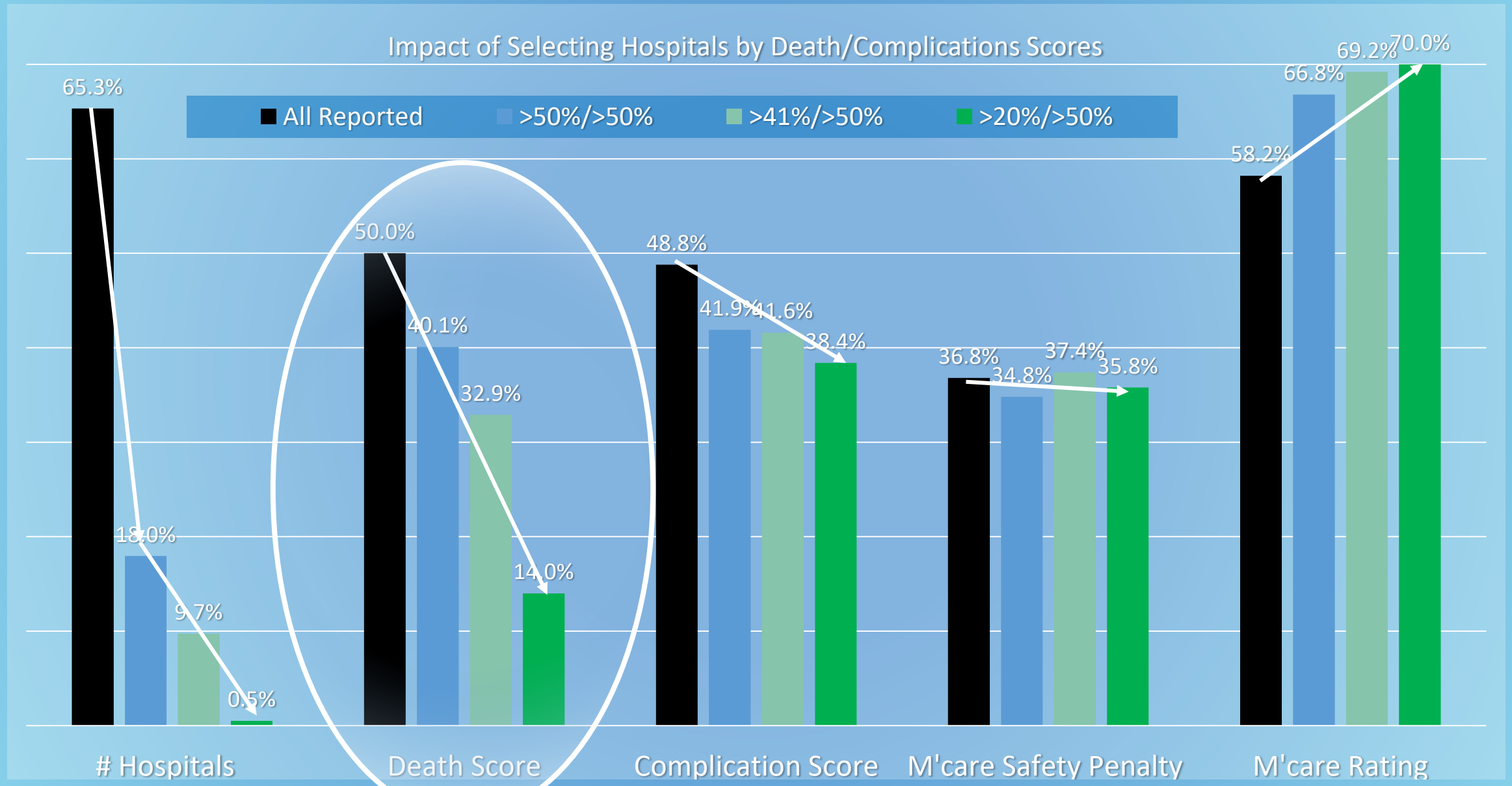


Hospitals with Lowest Death Rate Scores

Hospital Name	#	State	Death Rates (0% is best)	Complication Rates (0% is best)	Mcare Safety Pen. (1 is best)	Mcare Rating (5 is best)
Los Angeles Community Hospital	1	CA	5.3 %	35.2 %	1.00	3.
Hospital For Special Surgery	1	NY	5.8 %	38.6 %	1.00	5.
Southern California Hospital At Hollywood	1	CA	8.9 %	23.4 %	3.00	3.
Providence - Providence Park Hospital	1	MI	9.6 %	36.7 %	3.00	4.
Oroville Hospital	1	CA	9.6 %	33.4 %	1.00	2.
Hillcrest Hospital	1	OH	9.9 %	46.9 %	1.00	4.
Silver Lake Medical Center	1	CA	10.7 %	16.6 %	1.00	4.
Evanston Hospital	1	IL	10.7 %	46.5 %	2.00	3.
Sherman Oaks Hospital	1	CA	12.5 %	38.5 %	1.00	2.
NYU Hospitals Center	1	NY	13.0 %	40.5 %	4.00	4.
Mayo Clinic Hospital	1	AZ	13.5 %	41.3 %	1.00	5.
Palos Community Hospital	1	IL	13.7 %	33.2 %	5.00	4.
Centinela Hospital Medical Center	1	CA	14.0 %	26.1 %	1.00	4.
Desert Valley Hospital	1	CA	14.3 %	35.0 %	1.00	2.
Encino Hospital Medical Center	1	CA	16.6 %	41.5 %	1.00	3.
Maimonides Medical Center	1	NY	16.9 %	44.1 %	1.00	2.
John T Mather Memorial Hospital Of Port Jefferson	1	NY	16.9 %	48.5 %	3.00	4.
Avera Heart Hospital Of South Dakota	1	SD	18.0 %	40.7 %	1.00	5.
Beaumont Hospital, Grosse Pointe	1	MI	18.4 %	44.7 %	4.00	4.
Byrd Regional Hospital	1	LA	19.2 %	46.3 %	1.00	3.
Beaumont Hospital, Troy	1	MI	19.6 %	32.8 %	1.00	3.
Methodist Hospital Of Southern Ca	1	CA	19.7 %	35.4 %	1.00	5.
Olympia Medical Center	1	CA	19.8 %	47.5 %	3.00	2.
Franklin Woods Community Hospital	1	TN	20.0 %	47.7 %	1.00	4.
Total	24	AZ	14.0 %	38.4 %	1.79	3.

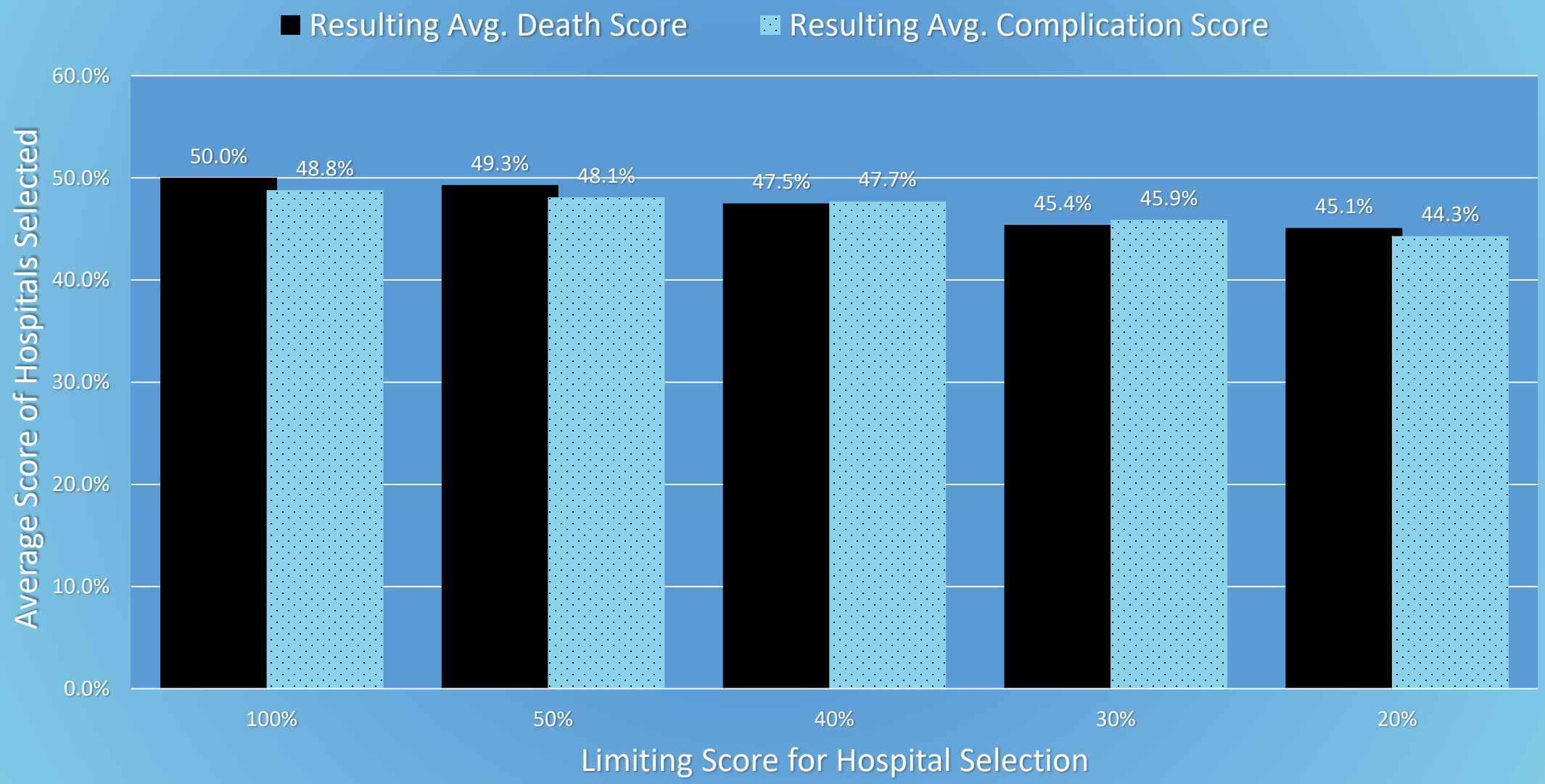
© Copyright Amory Associates 2017

Careful Selection of Hospitals can Substantially Reduce Mortality Risk



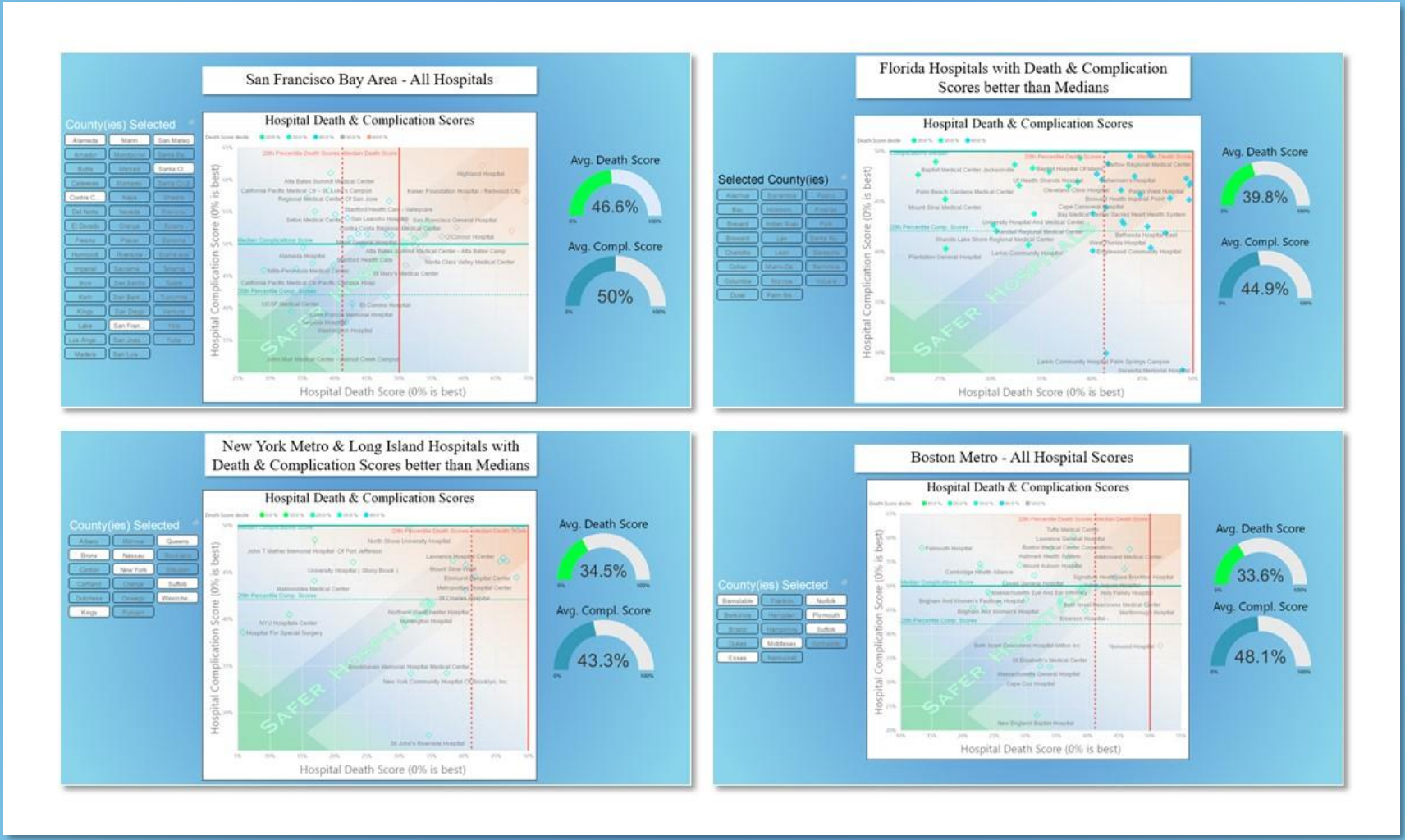
© Copyright Amory Associates 2017

However, selecting hospitals by limiting the Complication Score Has little impact on the Death Score, and vice versa . . .



© Copyright Amory Associates 2017

Four geographic areas illustrate the local capabilities of the HOS Power BI Model.



© Copyright Amory Associates 2017

To keep it short, we'll just look at

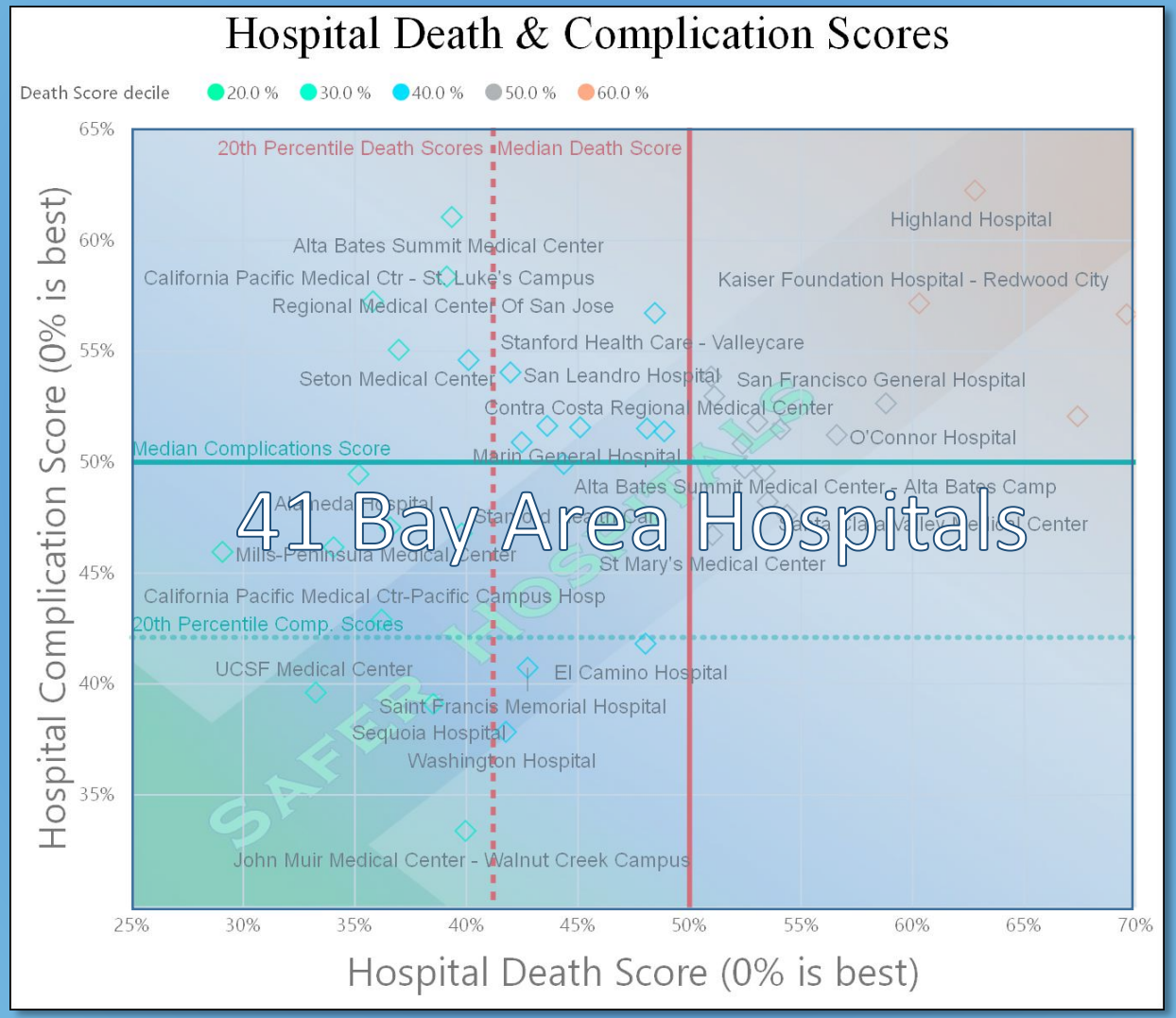
San Francisco & Boston.

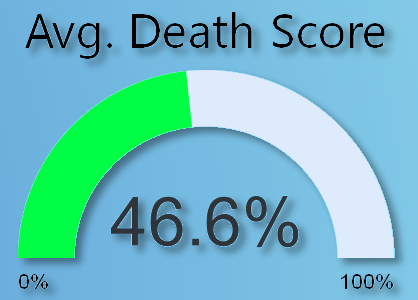
© Copyright Amory Associates 2017

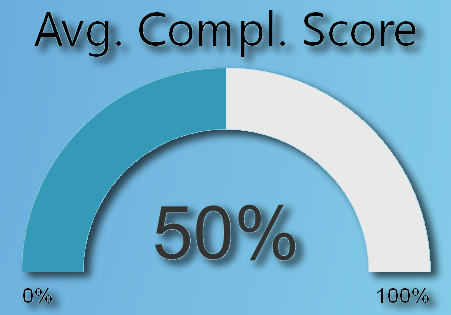
41 Bay Area Hospitals have an average Death Score of 46.6%.

County(ies) Selected

Alameda	Marin	San Mateo
Amador	Mendocino	Santa Ba...
Butte	Merced	Santa Cl...
Calaveras	Monterey	Santa Cruz
Contra C...	Napa	Shasta
Del Norte	Nevada	Siskiyou
El Dorado	Orange	Solano
Fresno	Placer	Sonoma
Humboldt	Riverside	Stanislaus
Imperial	Sacrame...	Tehama
Inyo	San Benito	Tulare
Kern	San Bern...	Tuolumne
Kings	San Diego	Ventura
Lake	San Fran...	Yolo
Los Ange...	San Joaq...	Yuba
Madera	San Luis ...	







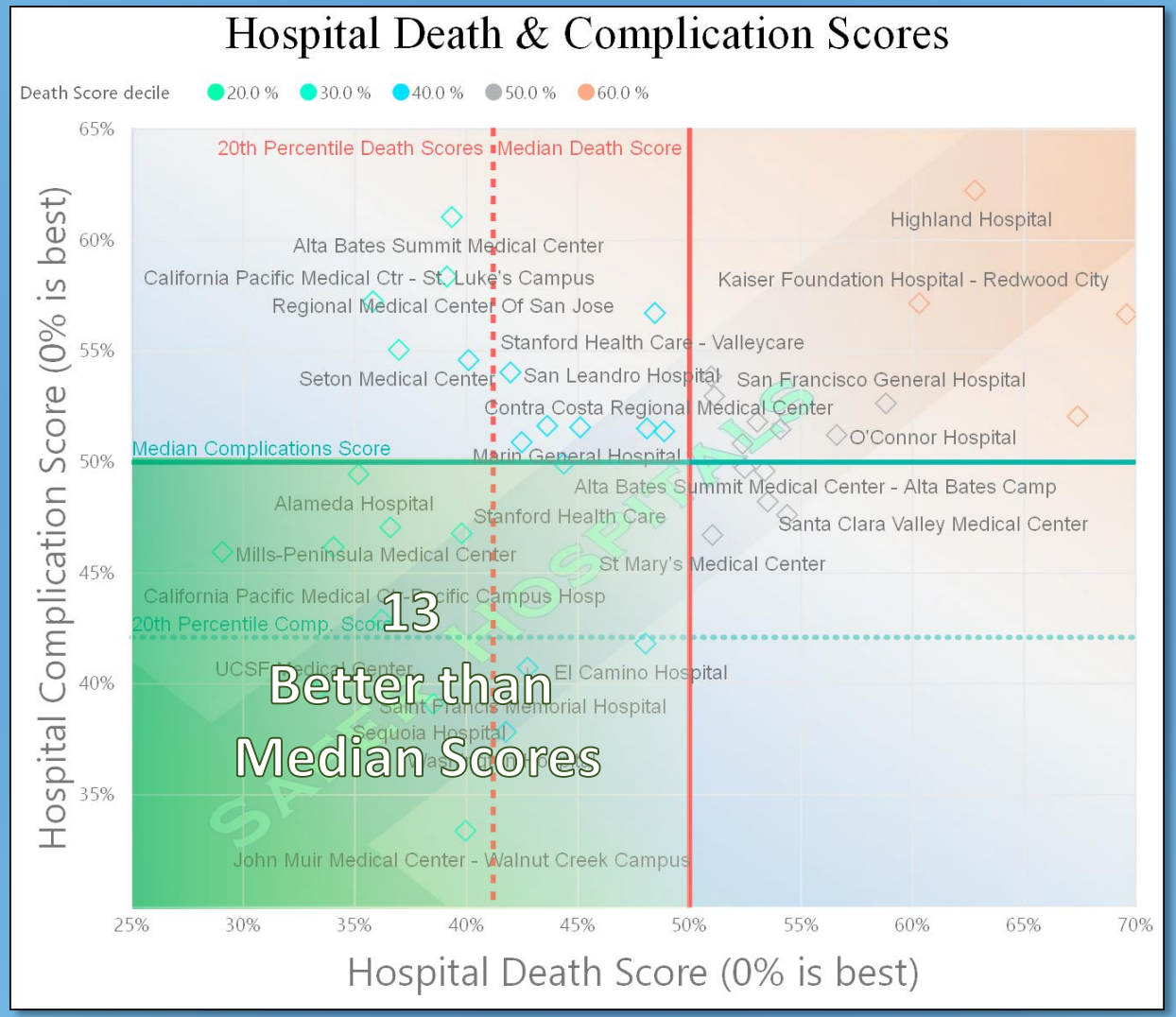
© Copyright Amory Associates 2017

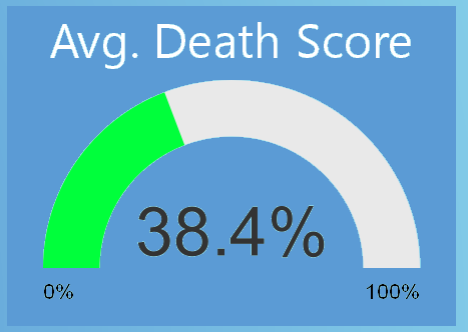
41 Bay Area Hospitals have an average Death Score of 46.6%.

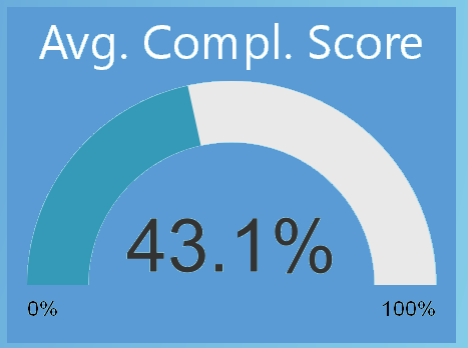
But 13 hospitals with better than Median Scores average 38.4%.

County(ies) Selected

Alameda	Marin	San Mateo
Amador	Mendocino	Santa Ba...
Butte	Merced	Santa Cl...
Calaveras	Monterey	Santa Cruz
Contra C...	Napa	Shasta
Del Norte	Nevada	Siskiyou
El Dorado	Orange	Solano
Fresno	Placer	Sonoma
Humboldt	Riverside	Stanislaus
Imperial	Sacrame...	Tehama
Inyo	San Benito	Tulare
Kern	San Bern...	Tuolumne
Kings	San Diego	Ventura
Lake	San Fran...	Yolo
Los Ange...	San Joaq...	Yuba
Madera	San Luis ...	







© Copyright Amory Associates 2017

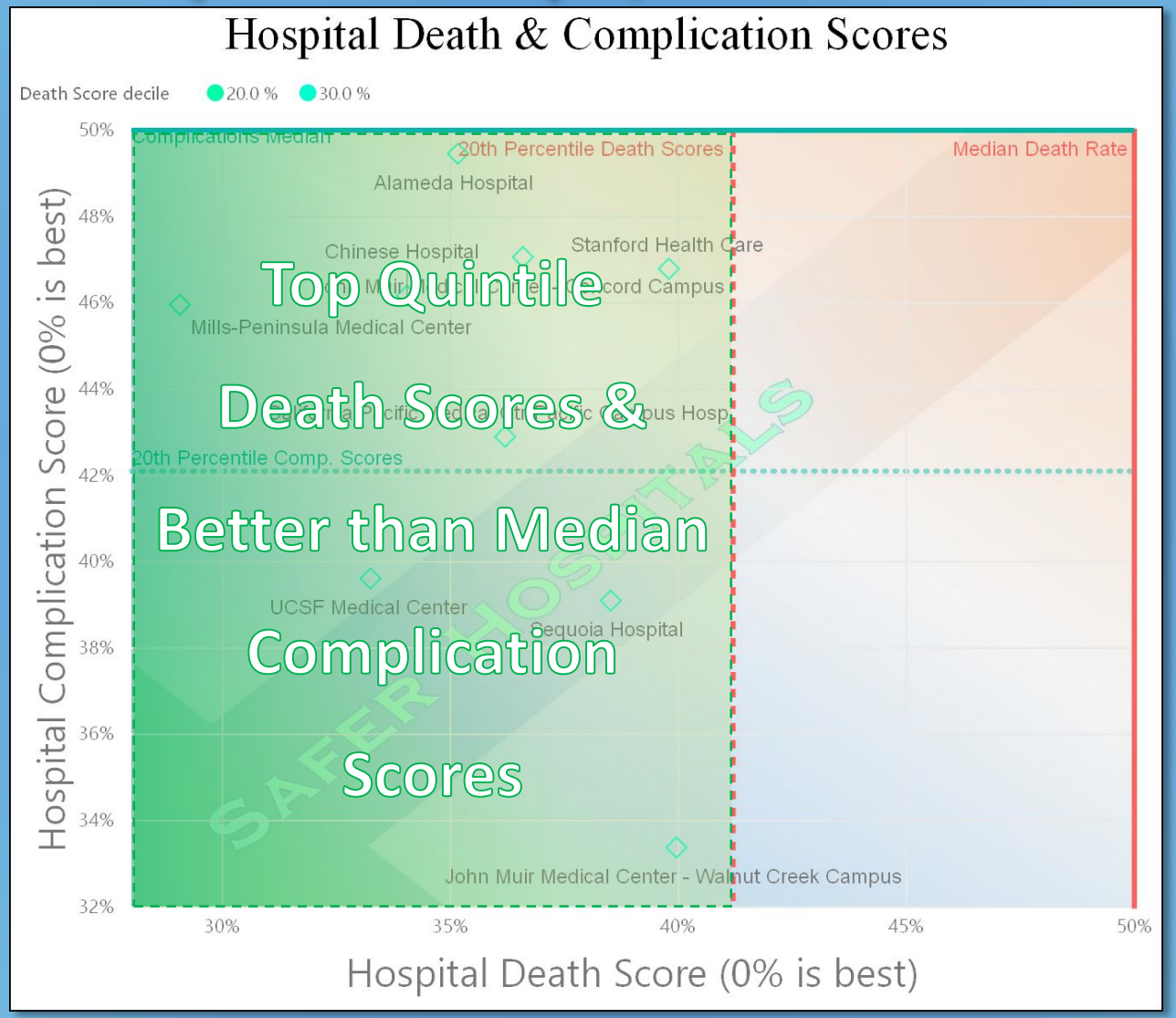
41 Bay Area Hospitals have an average Death Score of 46.6%.

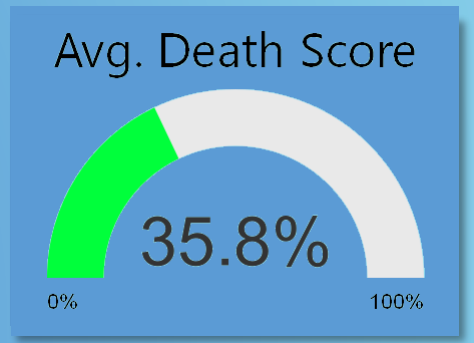
But 13 hospitals with better than Median Scores average 38.4%.

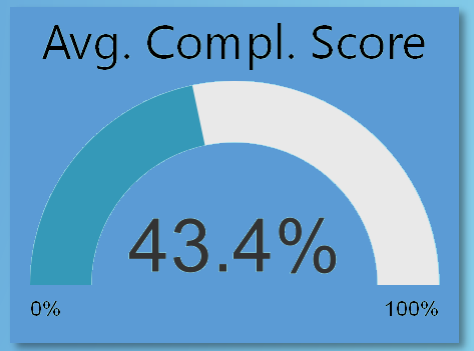
And 9 Hospitals with top Quintile Death Scores average 35.8%.

Selected County(ies)

Alameda	Marin	San Mateo
Amador	Mendocino	Santa Ba...
Butte	Merced	Santa Cl...
Calaveras	Monterey	Santa Cruz
Contra C...	Napa	Shasta
Del Norte	Nevada	Siskiyou
El Dorado	Orange	Solano
Fresno	Placer	Sonoma
Humboldt	Riverside	Stanislaus
Imperial	Sacrame...	Tehama
Inyo	San Benito	Tulare
Kern	San Bern...	Tuolumne
Kings	San Diego	Ventura
Lake	San Fran...	Yolo
Los Ange...	San Joaq...	Yuba
Madera	San Luis ...	







© Copyright Amory Associates 2017

HOS Power BI Database Model

In addition to

HOS Death & Complication Scores

the Power BI Model includes:

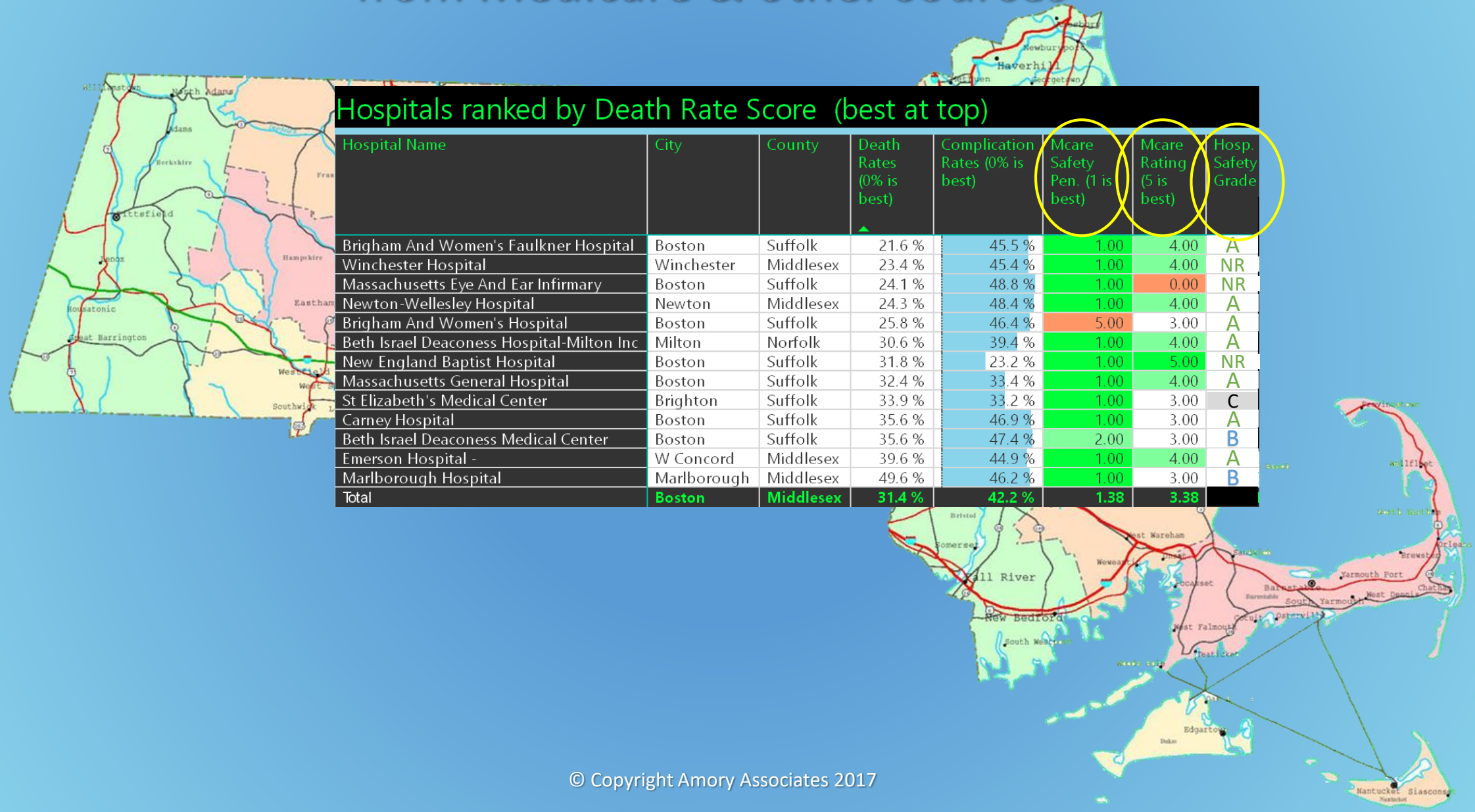
Medicare Hospital Ratings

Medicare Safety Penalties

Other Safety Scores

© Copyright Amory Associates 2017

The Power BI Model includes safety information from Medicare & other sources

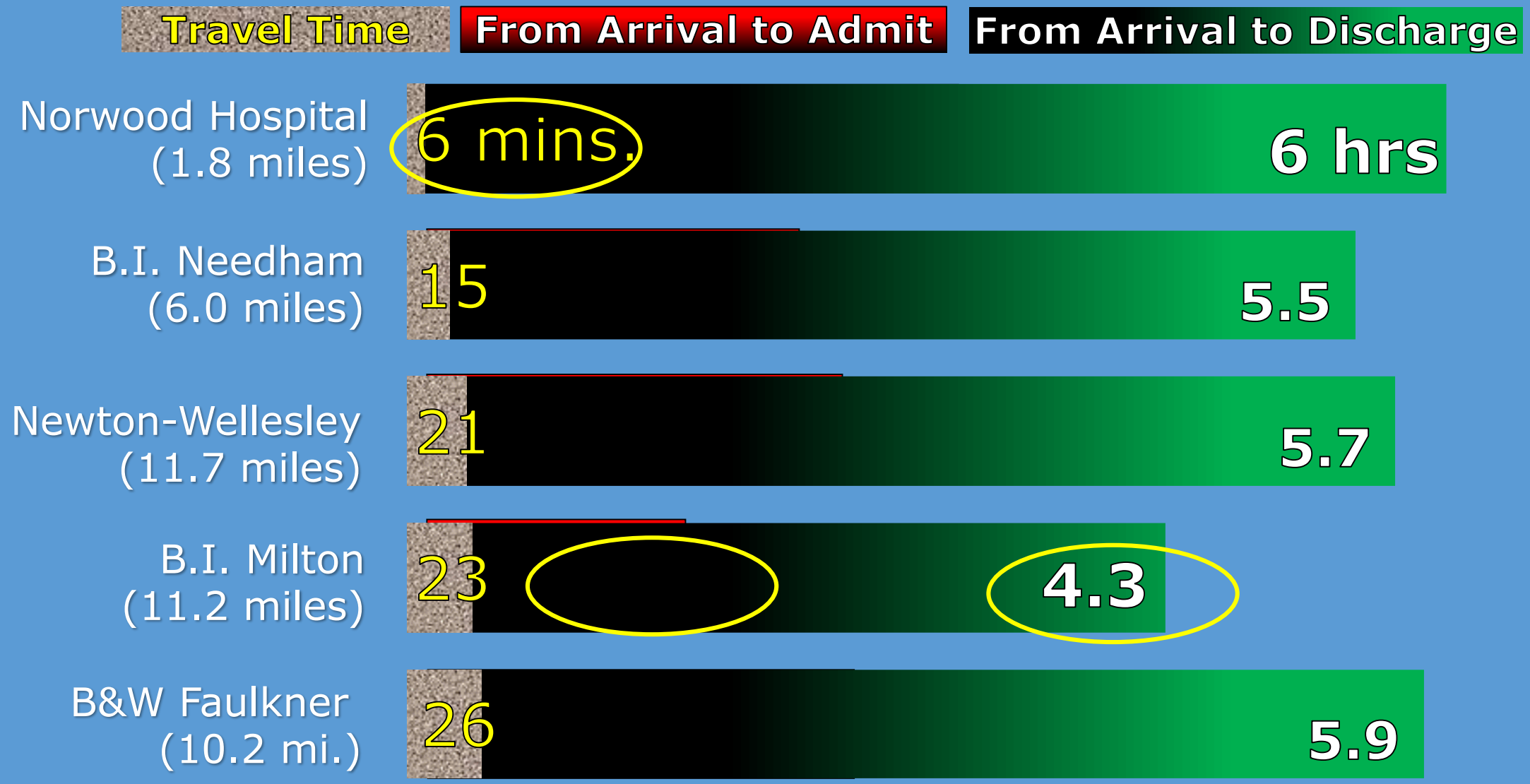


Hospitals ranked by Death Rate Score (best at top)

Hospital Name	City	County	Death Rates (0% is best)	Complication Rates (0% is best)	Mcare Safety Pen. (1 is best)	Mcare Rating (5 is best)	Hosp. Safety Grade
Brigham And Women's Faulkner Hospital	Boston	Suffolk	21.6 %	45.5 %	1.00	4.00	A
Winchester Hospital	Winchester	Middlesex	23.4 %	45.4 %	1.00	4.00	NR
Massachusetts Eye And Ear Infirmary	Boston	Suffolk	24.1 %	48.8 %	1.00	0.00	NR
Newton-Wellesley Hospital	Newton	Middlesex	24.3 %	48.4 %	1.00	4.00	A
Brigham And Women's Hospital	Boston	Suffolk	25.8 %	46.4 %	5.00	3.00	A
Beth Israel Deaconess Hospital-Milton Inc	Milton	Norfolk	30.6 %	39.4 %	1.00	4.00	A
New England Baptist Hospital	Boston	Suffolk	31.8 %	23.2 %	1.00	5.00	NR
Massachusetts General Hospital	Boston	Suffolk	32.4 %	33.4 %	1.00	4.00	A
St Elizabeth's Medical Center	Brighton	Suffolk	33.9 %	33.2 %	1.00	3.00	C
Carney Hospital	Boston	Suffolk	35.6 %	46.9 %	1.00	3.00	A
Beth Israel Deaconess Medical Center	Boston	Suffolk	35.6 %	47.4 %	2.00	3.00	B
Emerson Hospital -	W Concord	Middlesex	39.6 %	44.9 %	1.00	4.00	A
Marlborough Hospital	Marlborough	Middlesex	49.6 %	46.2 %	1.00	3.00	B
Total	Boston	Middlesex	31.4 %	42.2 %	1.38	3.38	

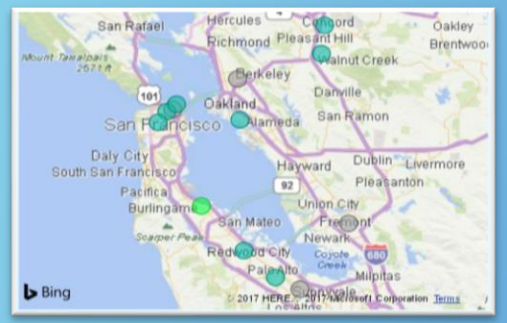
© Copyright Amory Associates 2017

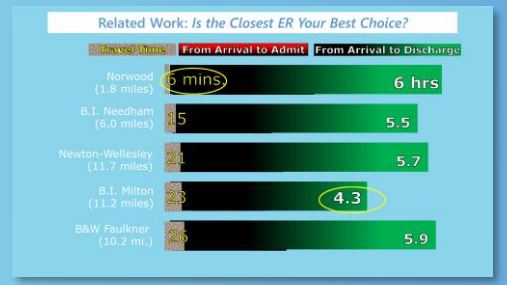
Personalized Profiles help choose a hospital for emergencies

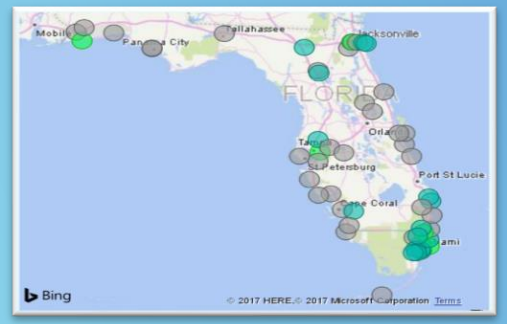


© Copyright Amory Associates 2017

Current Status & Outlook







We can go Local
anywhere in the U.S. Today

We can create Personalized Profiles

for home or work that include

Death & Complication Scores,

safety scores, ER services,

hospital specialties,

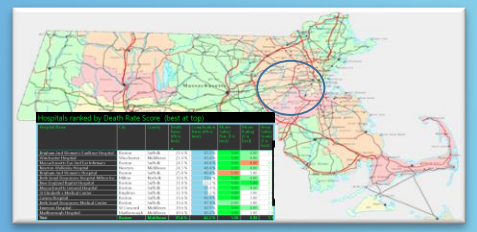
& more . . .

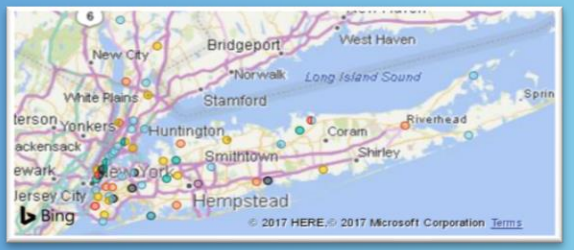
Future Initiatives & Directions

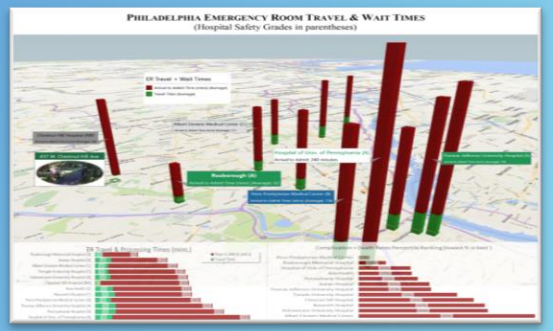
Online, queriable database (prototype stage)

Publications, Lectures & Presentations

Sponsorships & Joint Ventures



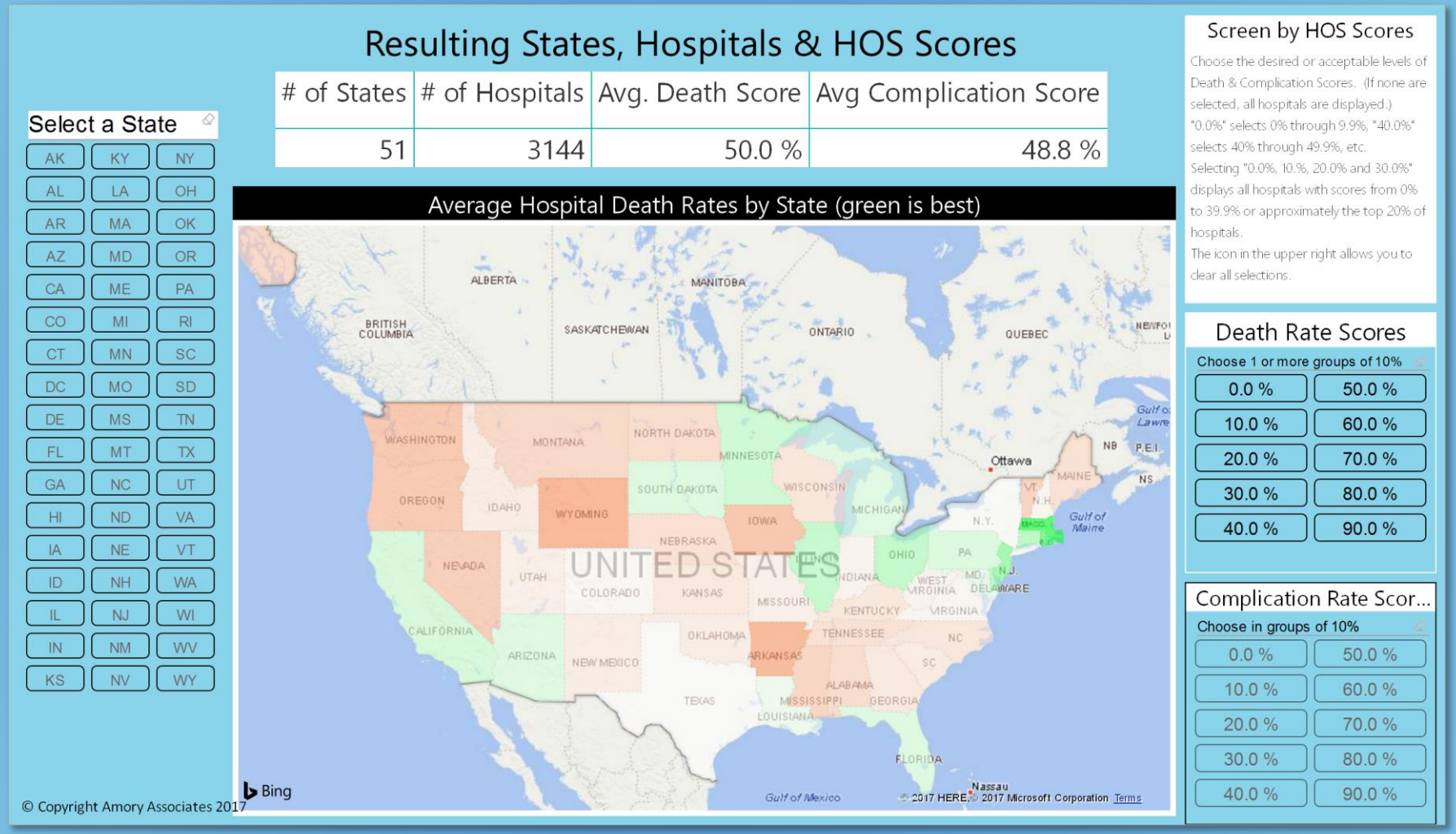




© Copyright Amory Associates 2017

Try out our public demo* of the HOS Database at

http://www.findingthebesthealthcare.com/hospitalsafety/hos-power-bi-database-demo



**Screenshot of HOS Power BI-Database Demo (hospital names omitted)*

© Copyright Amory Associates 2017

We would be happy to give a live demonstration of the
HOS Database to interested parties
And discuss its capabilities in more detail.

Thanks for watching

paw@AmoryAssociates.com

"Death is the most important hospital outcome to avoid."

Musical Accompaniment by Robert Farmer
"Every path but your own is the path of fate"

© Copyright Amory Associates 2017