Regional **A**pproach to **C**ardiovascular **E**mergencies

Cardiac Arrest Resuscitation System

CARES Update

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RACE

Cardiac Arrest Resuscitation System

Objectives:

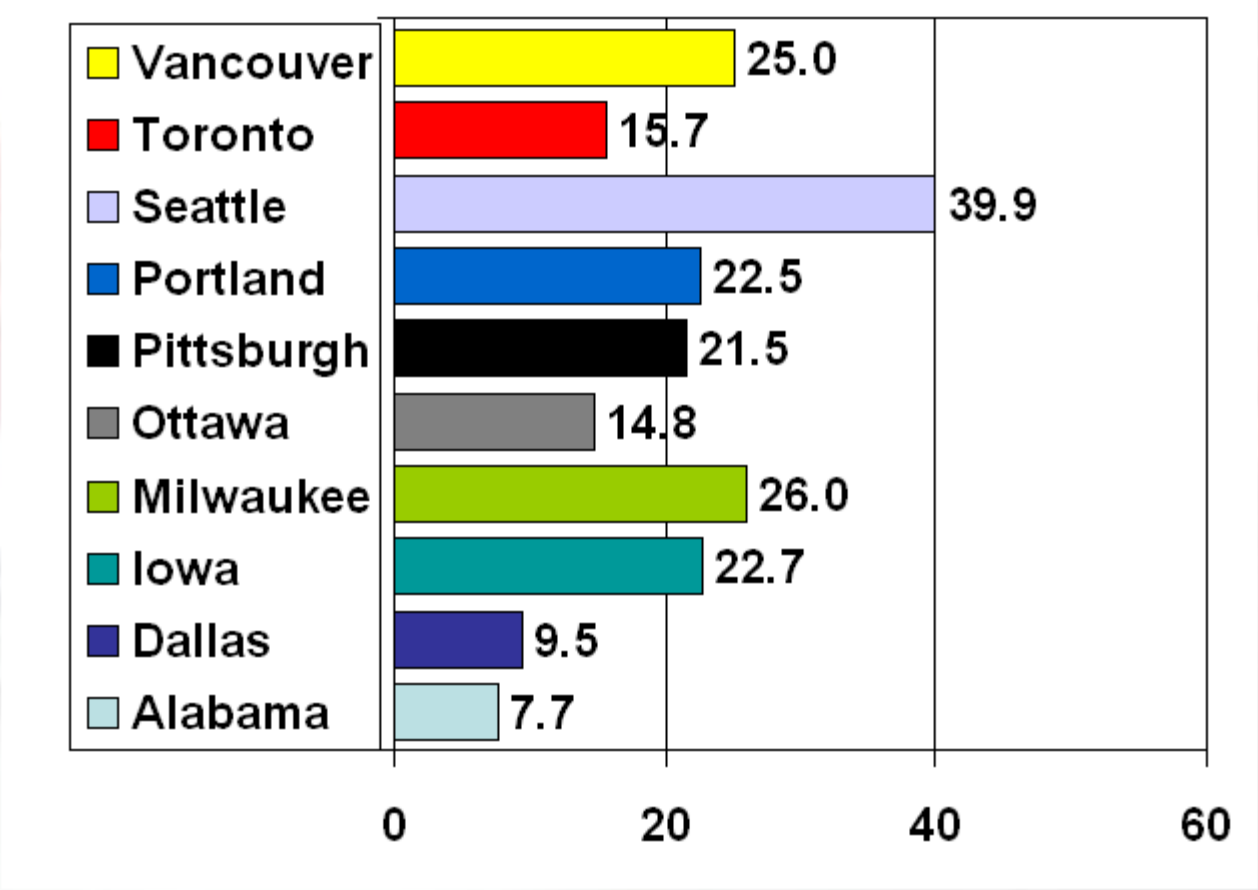
- Review current NC and National Statistics for Cardiac Arrest
- Discuss the RACE CARS Project

Out of Hospital Cardiac Arrest in U.S.

- 236 000 to 325 000 people in the United States each year
  - 600-1000 Americans will suffer OOHCA today
  - 20+ during this talk
- 3rd leading cause of death
- High morbidity and mortality
  - ~80% die before hospital admission

Variation in survival VF arrest
Resuscitations Outcomes Consortium

Survival to discharge



Nichol JAMA. 2008;300(12):1423-1431

Elements of success:

- Witnessed
- Recognition, 911
- Medical dispatch
- Bystander CPR
- 1st responder AED
- Hypothermia protocol

Quality Improvement:

- You cannot improve what you do not measure.
- You must measure what matters:
  - 1) Survival
  - 2) Neurological Outcome

Cardiac Arrest Registry to Enhance Survival: *CARES*

- Sponsored by CDC
- Administered by Emory University
- Arrest through Discharge data
- EMS web site entry ⟶ hospital email
- National and state bench marks
- Dashboard, reports, and export capabilities

myCares.NET™
powered by Sansio

CARES

- *Registries are disease / injury specific databases.*
- *Arrest through Discharge data*
- *Calculates*
  - *Survival rates*
  - *Neurological outcome*

Data Collected:

- Basic Demographics
- Basic Incident /Response Details
- Arrest Details
- CPR Details
- AED Usage
- EMS Interventions
- Outcome

Patient Criteria for EMS

- Sudden cardiac arrest of <u>non-traumatic</u> etiology:
  - EMS must preform CPR
    Or
  - The patient is defibrillated either by AED or manual defibrillator
  - Excluded: Arrest terminated because signs of death or injuries incompatible with life

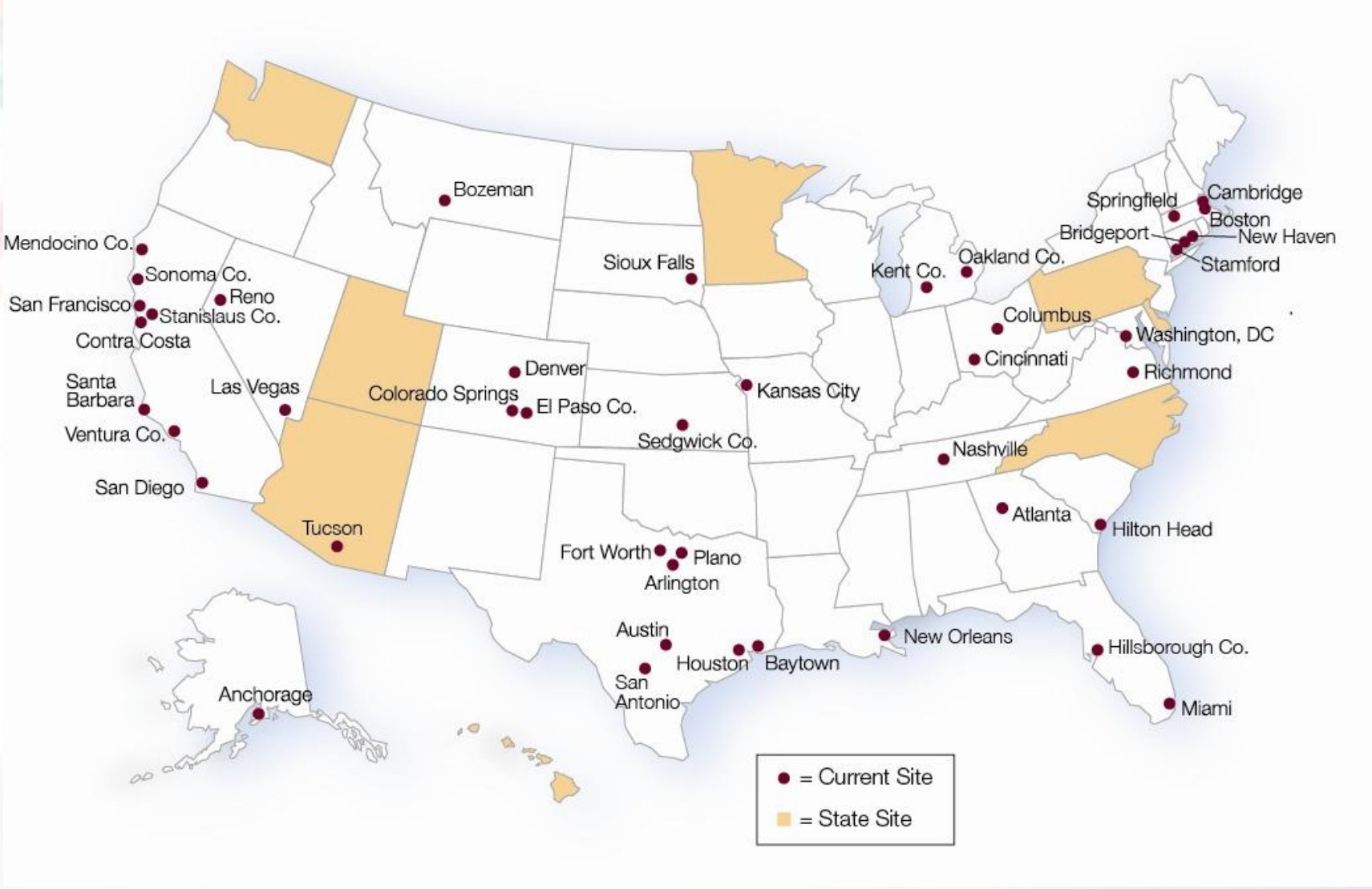
Data

- From your Patient Care Report
- The quality of your documentation matters
- Opportunity for Improvement!!!!!!

Data

- It takes Data to drive true improvement.
- Evidence driven medicine is the future of EMS.

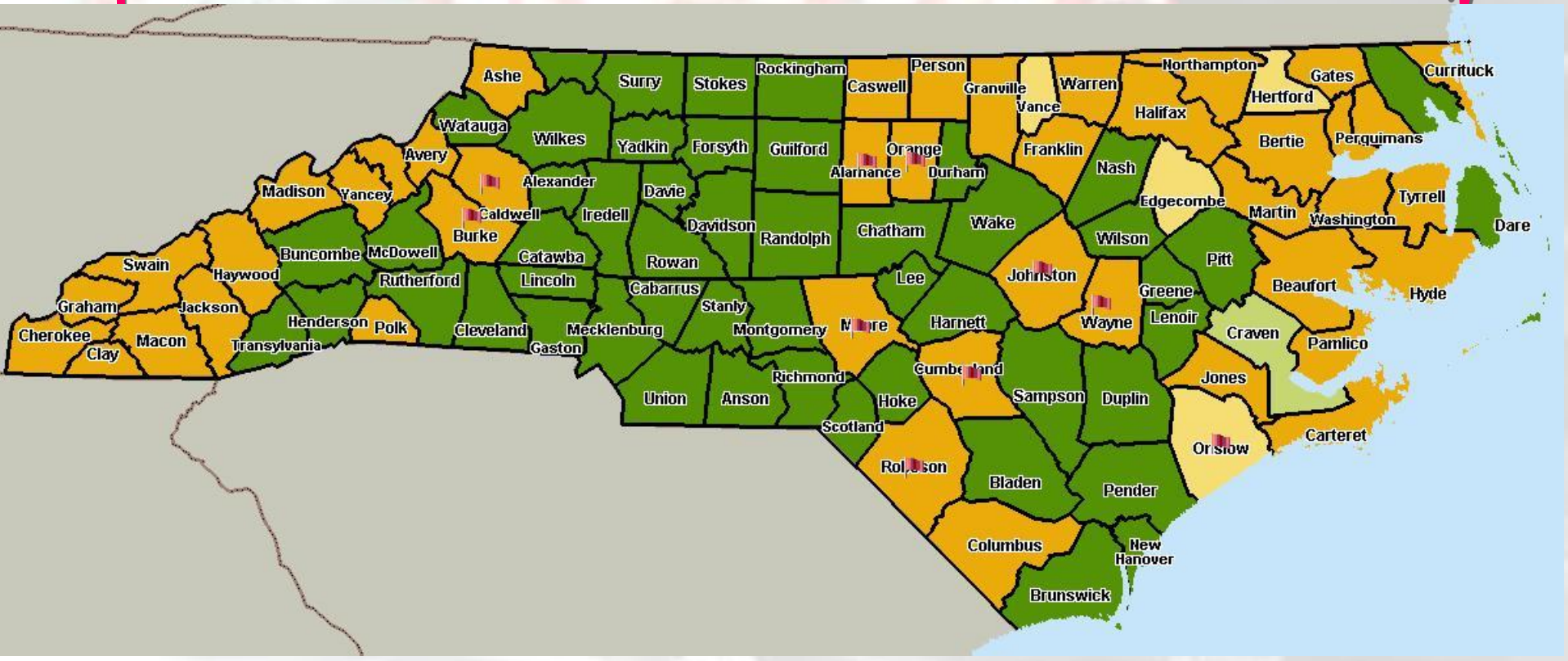
CARES Participation:



CARES Participation:

	Number	% Population	Cumulative Population
EMS Systems in NC	100	100%	
Counties reporting into CARES	52	72.96%	72.96%
Countiess in Progress	4	3.26%	76.22%
Future Counties	44	23.86%	100
Cases in the CARES (audited)			
Original 2010 count	1206		
2010 to Date	1789		
2011 to Date	1940		
Total 2012 (219% increase over 2011)	4244		
Total 2013	291		
Grand Total to date	8264		
Hospitals in CARES			
Total Hospitals Needed for CARES NC data	141		
Hospitals identified by EMS as destination	97		
Hospitals Trained	85		
Hospitals with data in system	74		

CARES Participation:



- Reporting Counties
- Limited Reporting – only select agencies
- Site set up in progress
- Future Sites
- Priority for Recruitment (Population)

Communicate

- **Data must be shared!!**
- EMS needs to share data with:
  - First Responders
  - 911 Communications
  - Emergency Department / Hospital
- Survivor Celebrations are a tremendous tool

Demographics:

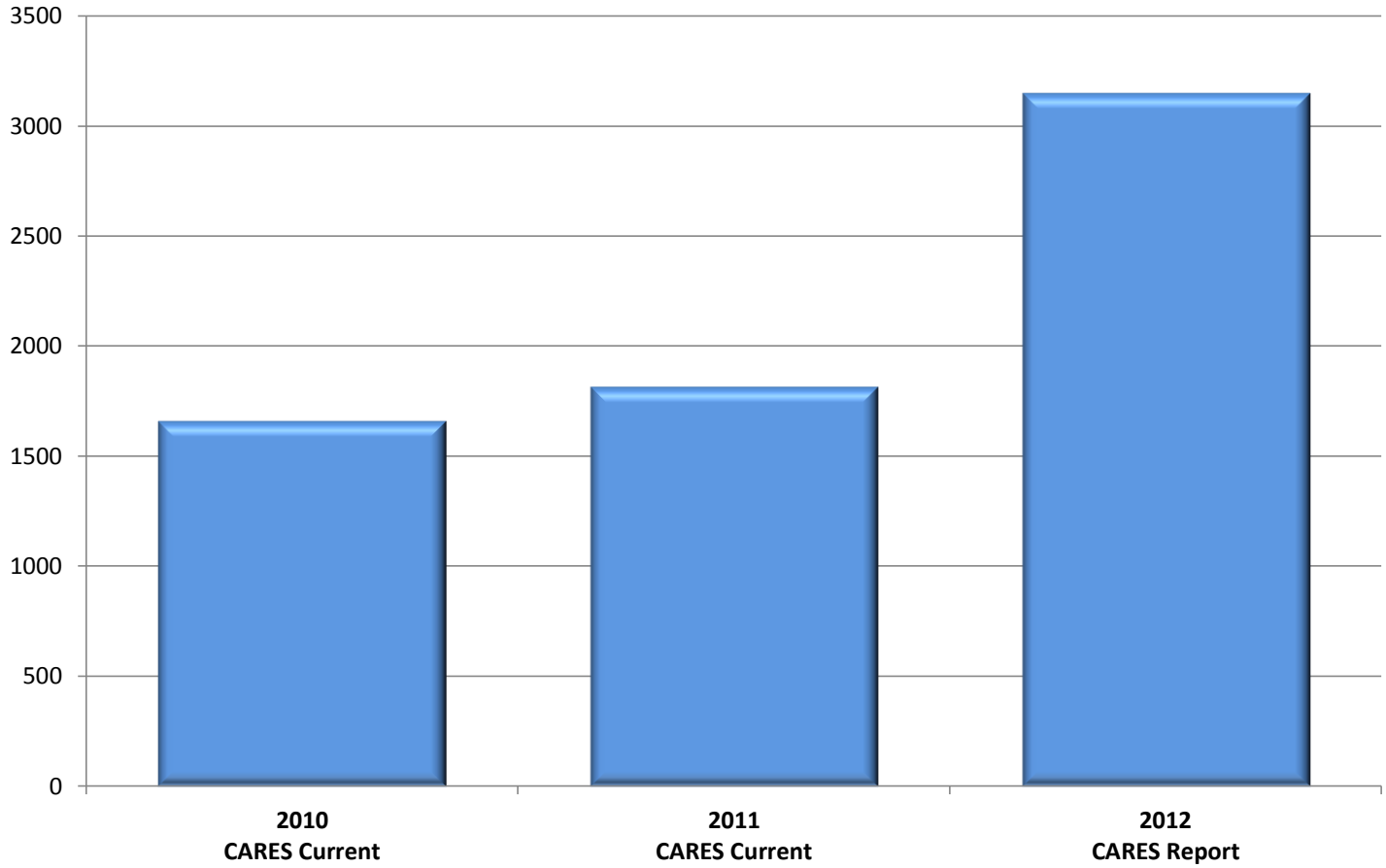
		NC	National
Volume	Volume	3,283	25,811
Age Median	Age	65	65
Gender percentage	Male	61%	61%
RACE percentage	White	65%	45%
	Black/African American	30%	20%
Location percentage	Home/residence	70%	70%
	HC Facility	6%	4%
	Nursing Home	12%	12%
Event percentage	Witnessed	43%	49%
	UnWitnessed	47%	51%
CPR percentage	Bystander CPR	40%	38%

Measuring Survival:

- **Overall**
  - Cardiac Etiology
- **Utstein**
  - Cardiac Etiology
  - Witnessed Arrest
  - Found in V-fib / V-tach rhythm

Must compare apples to apples

North Carolina CARES
CARES Volume
2010 - 2012
April 24, 2013



North Carolina CARES
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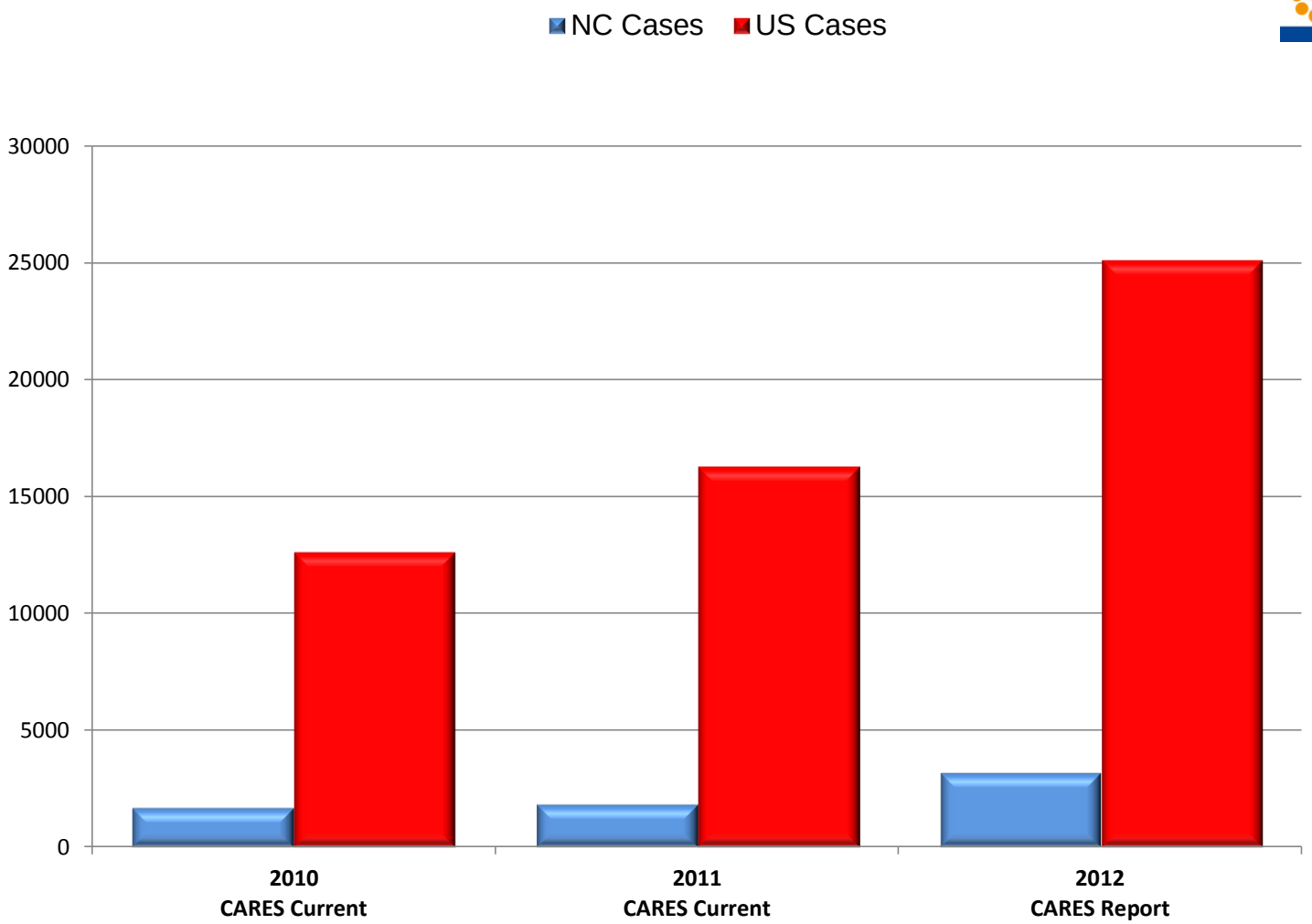

North Carolina CARES

Overall Survival

2010 - 2012

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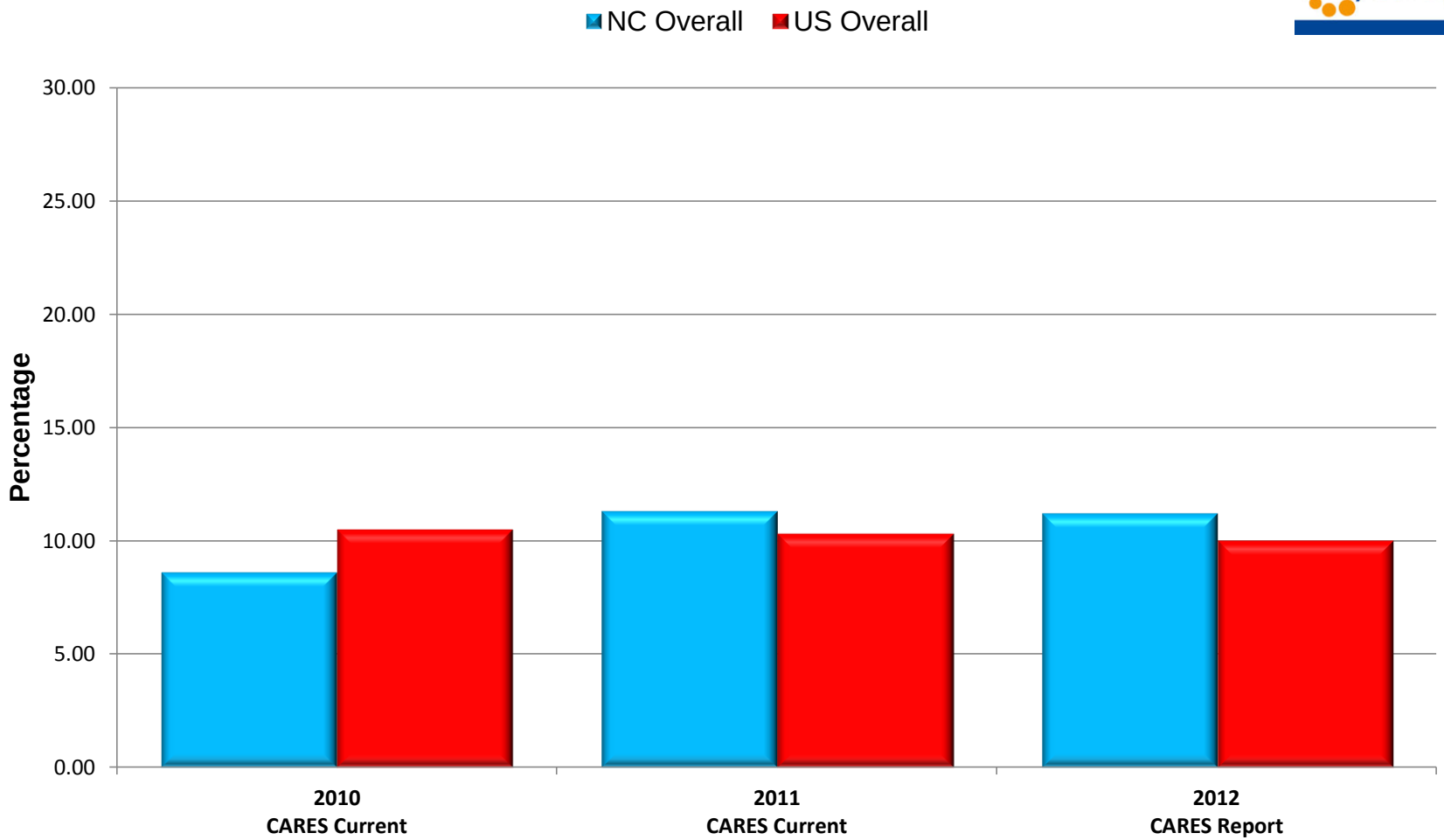

North Carolina CARES
Overall Survival
2012
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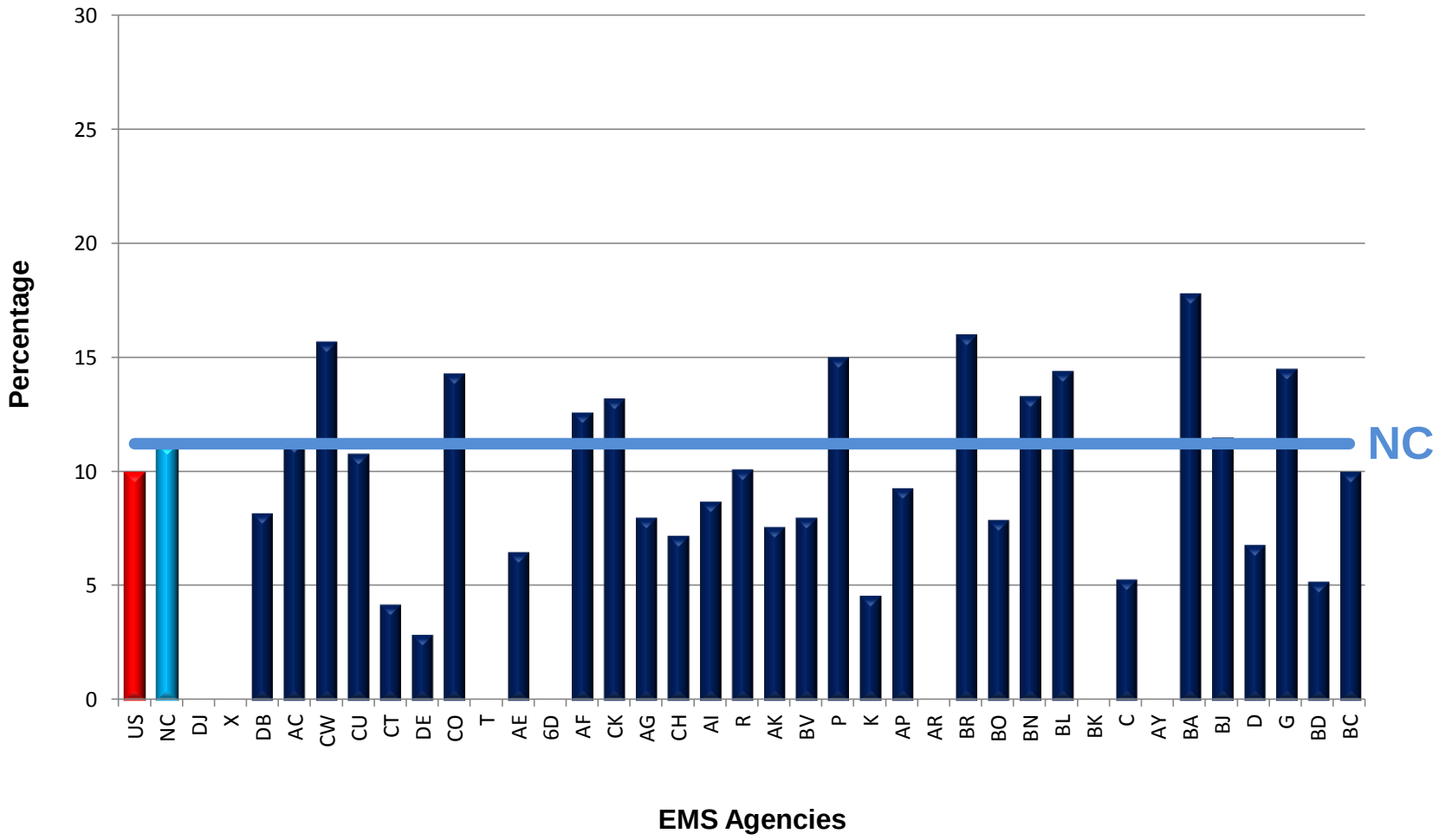
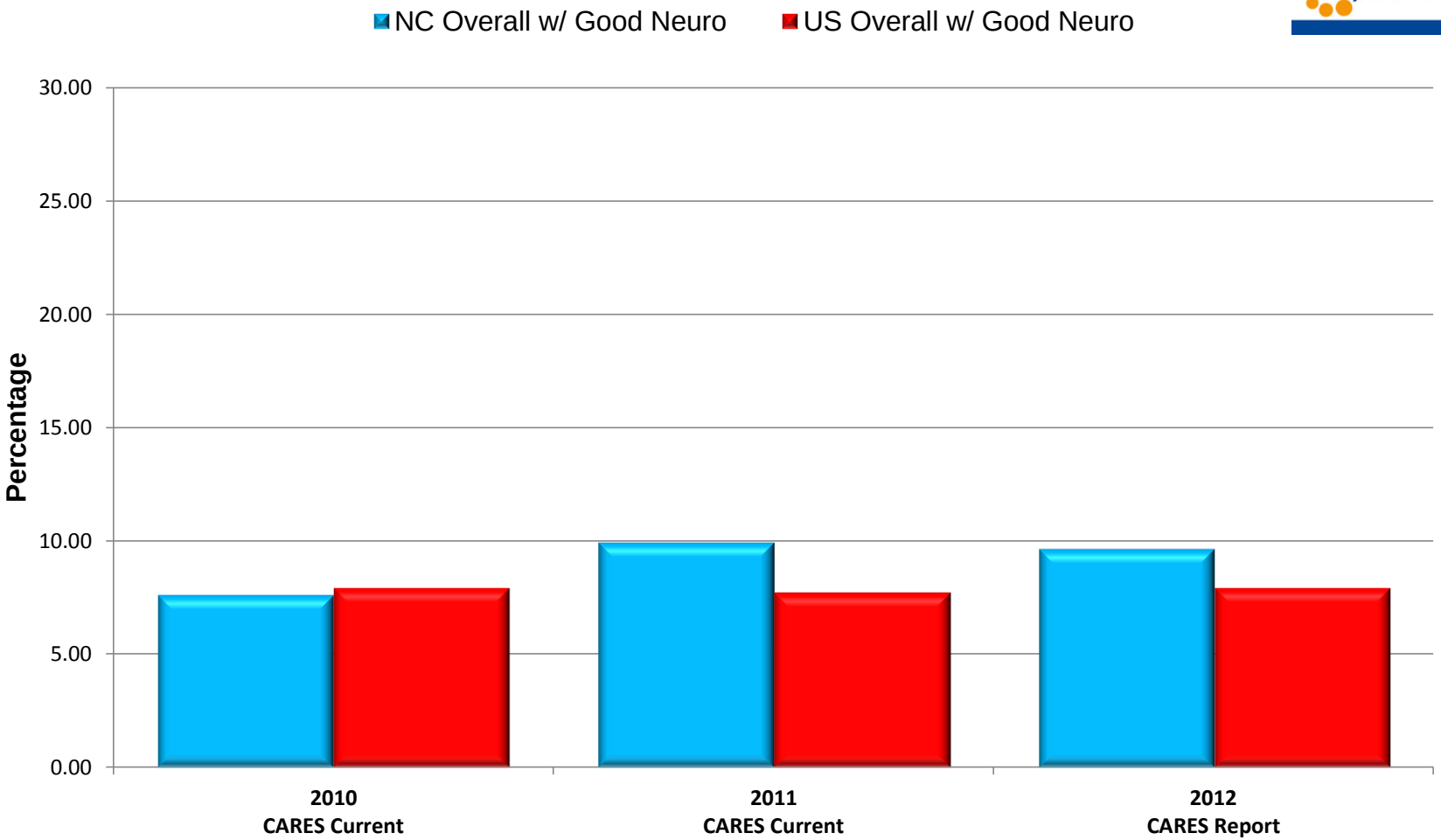


North Carolina CARES

Overall Survival with Good Neurological Outcome

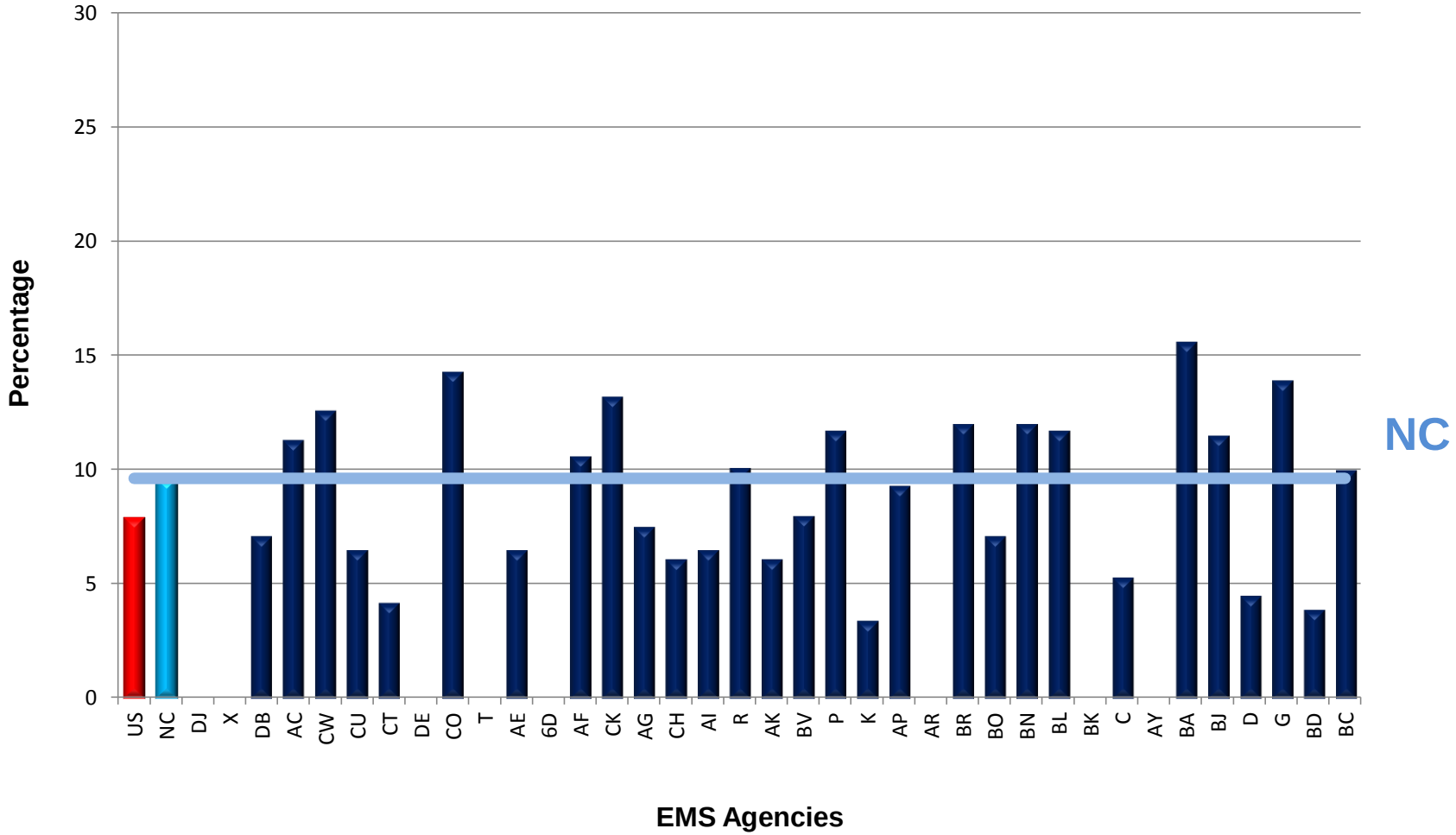
2010 - 2012

April 24, 2013

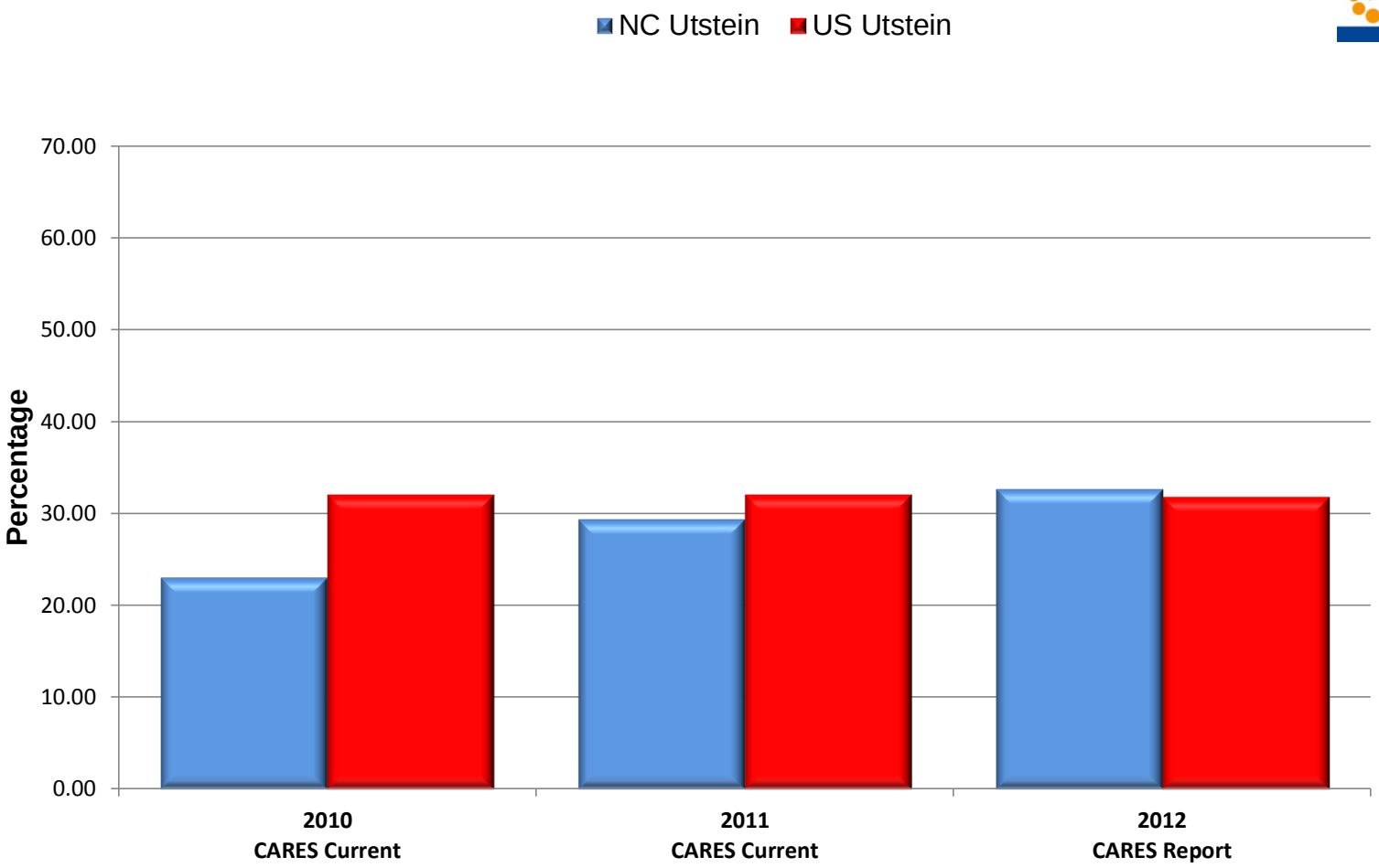


* Data run 4/23/2013

North Carolina CARES
Overall Survival with Good Neurological Outcome
2012
April 24, 2013



North Carolina CARES
Utstein* Survival Rate
2010 - 2012
April 24, 2013



* Cardaic etilogy, witnessed arrest, found in VT/Vfib

North Carolina CARES
Utstein* Survival Rate
2012
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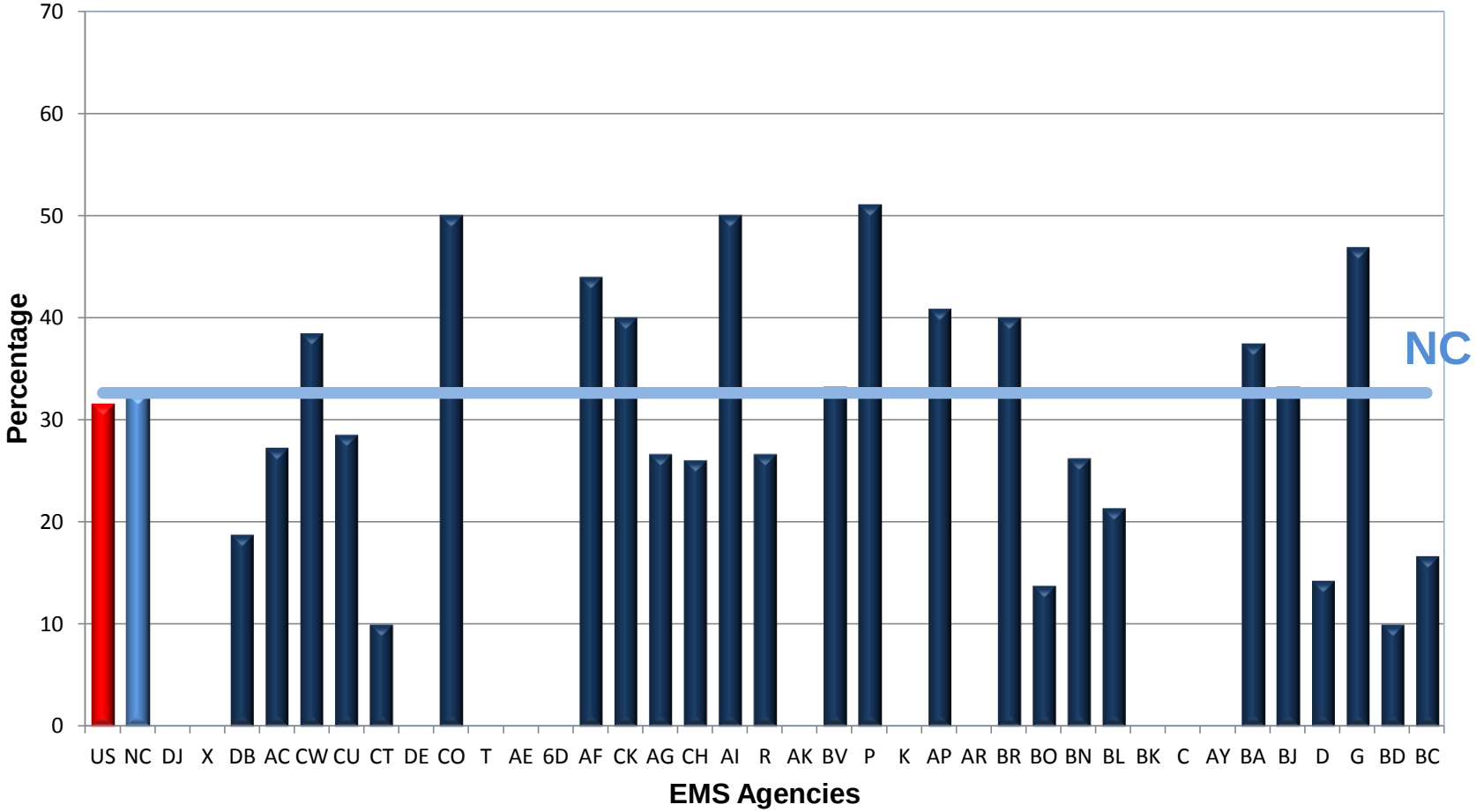

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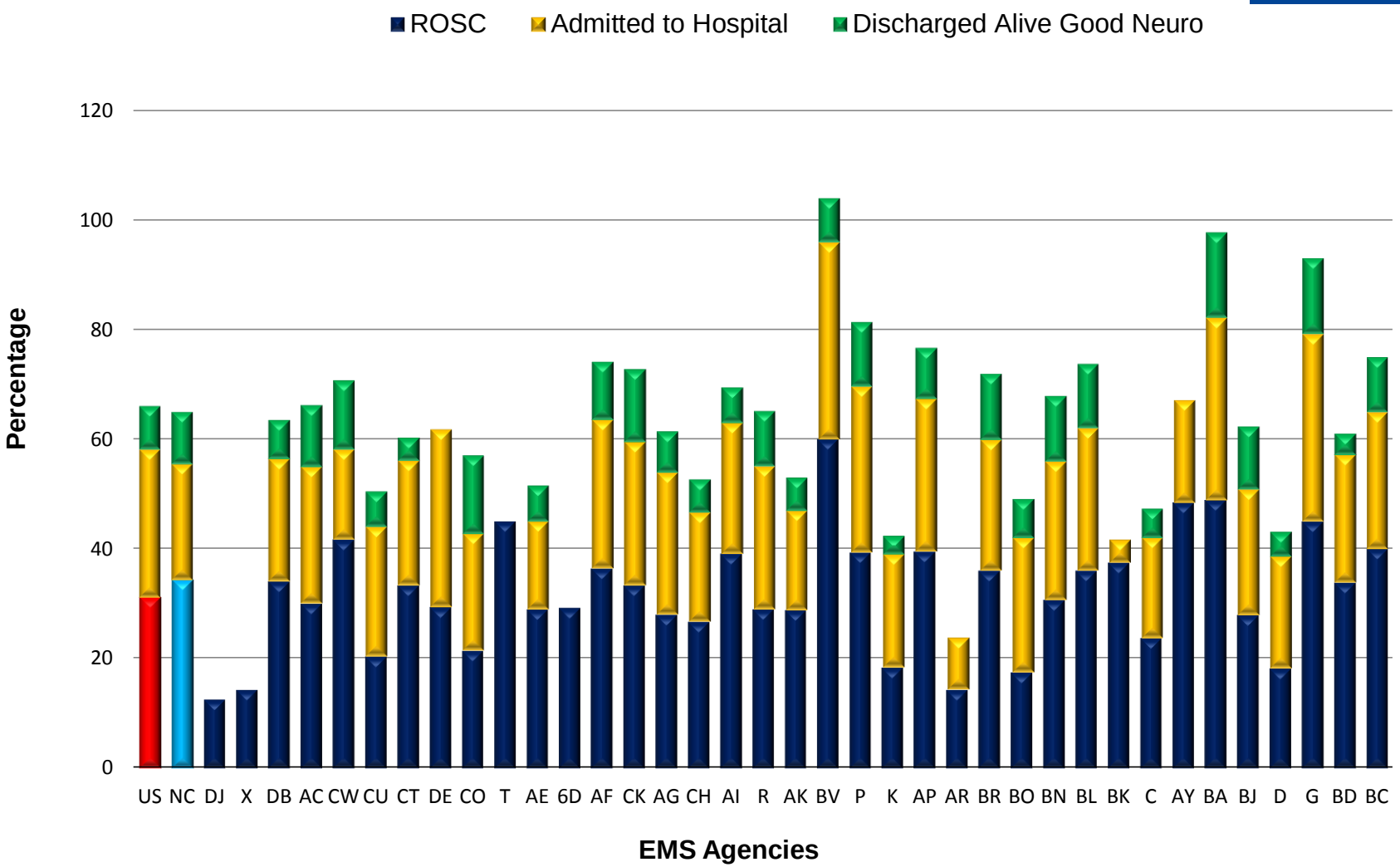
North Carolina CARES

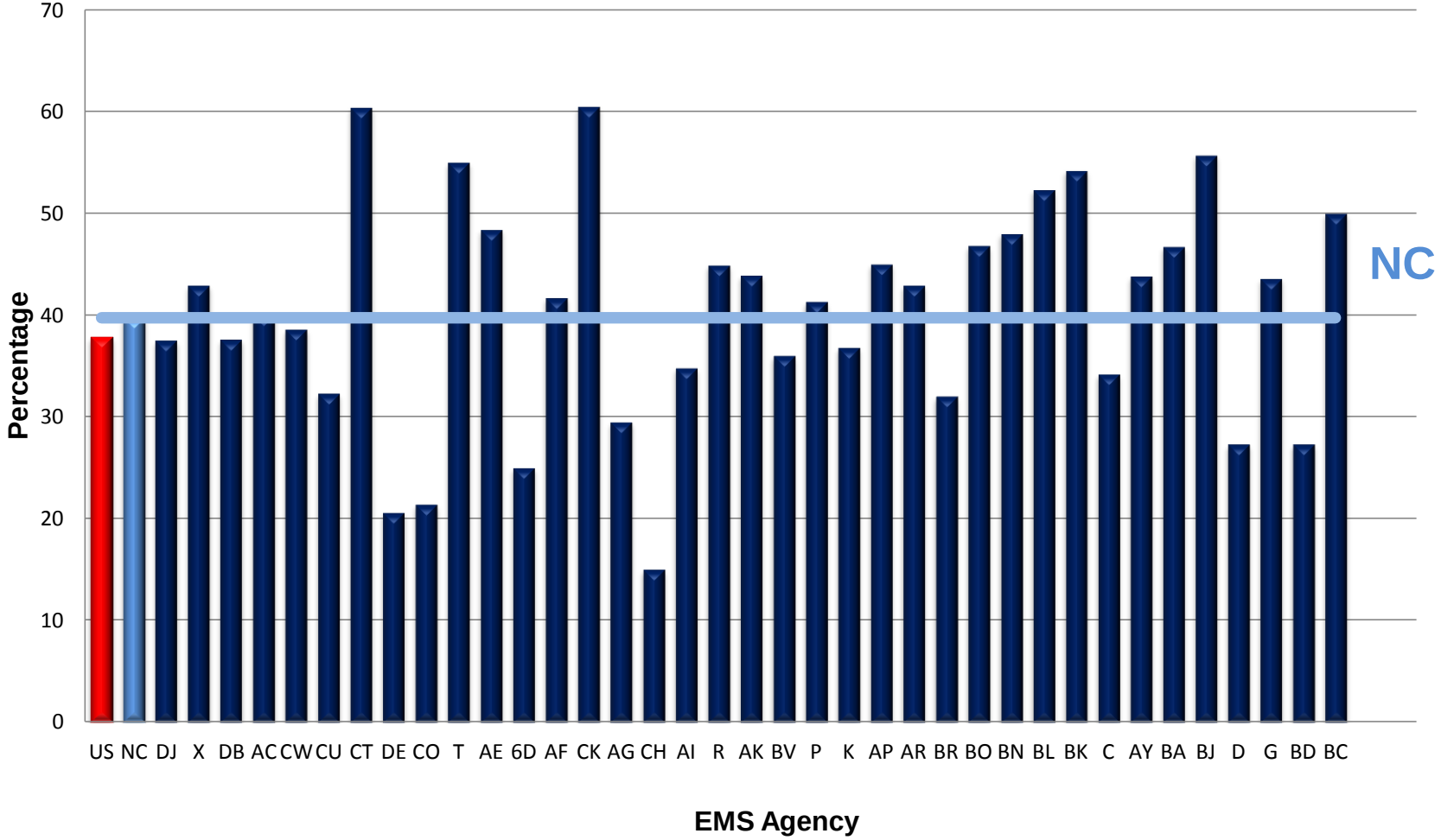
ROSC / Admitted to Hospital and Discharge Alive

2012

April 24, 2013

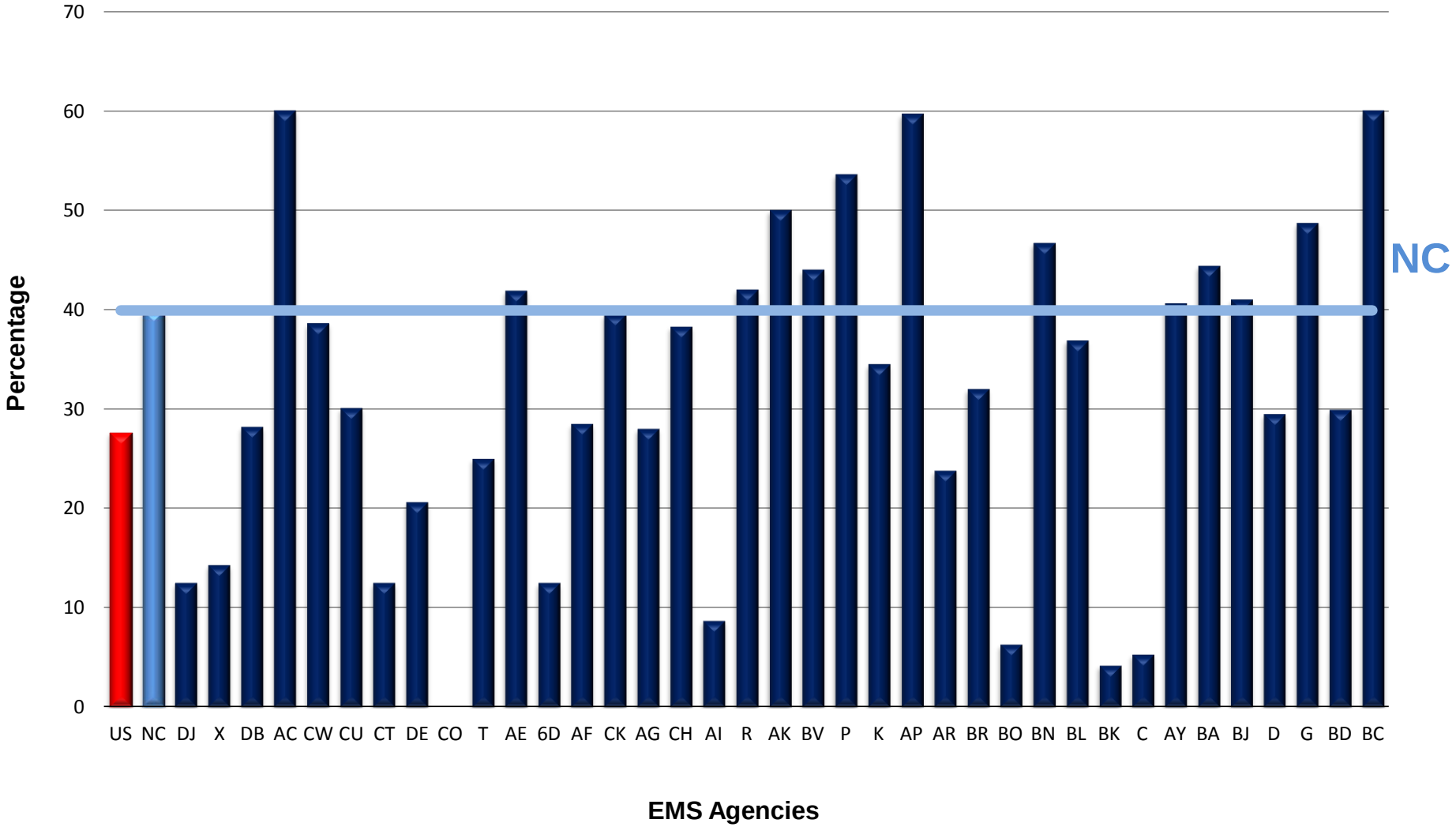


North Carolina CARES
Bystander CPR Rates
2012
April 24, 2013



WAIT A MINUTE... THEY'RE PERFORMING CPR ON YOU.
7/27

North Carolina CARES
AED Application Prior to EMS
2012
April 24, 2013



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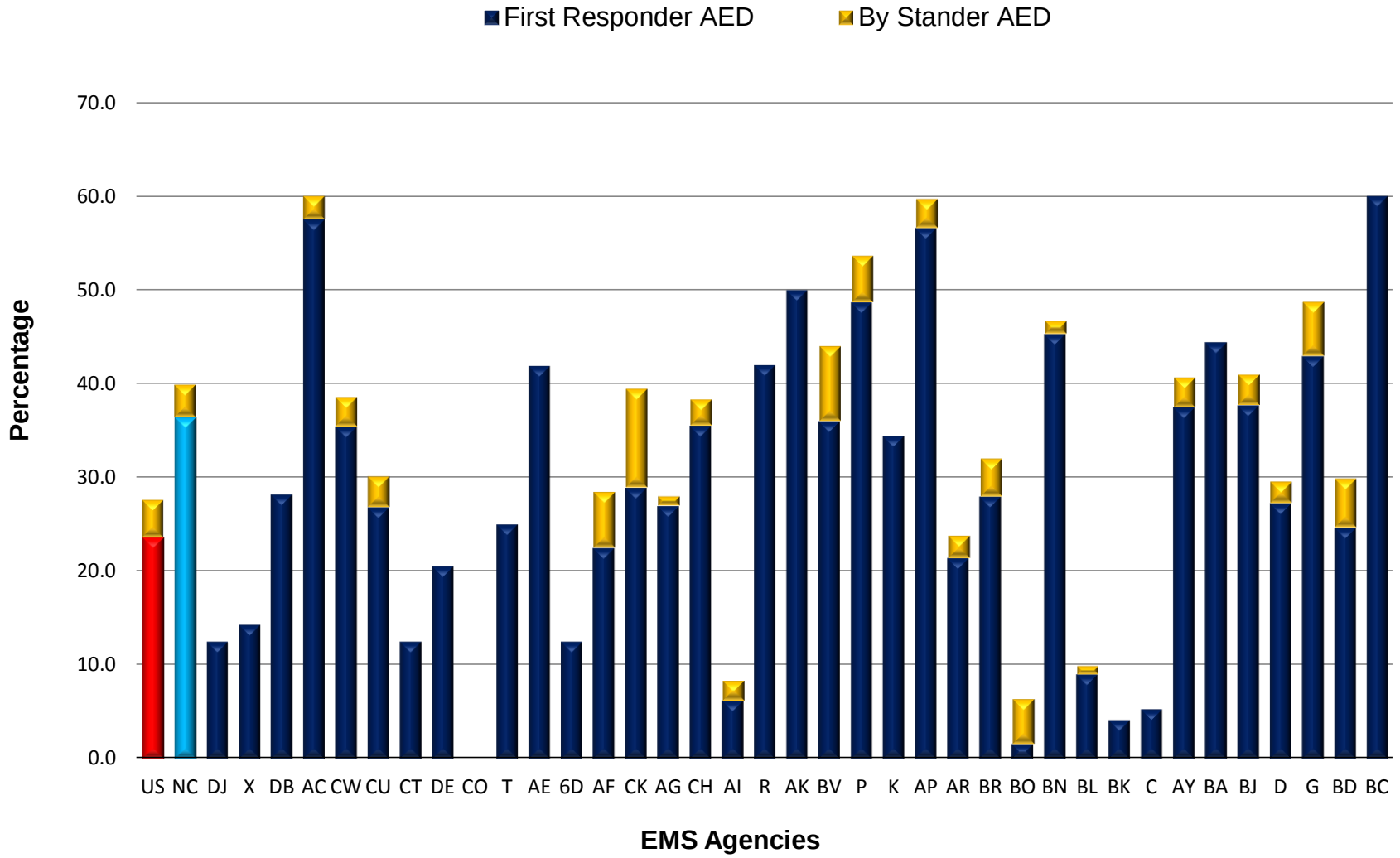

North Carolina

- Estimated Cardiac Arrest 2012

  - 7189

- Estimated Survivors Overall 2012

  -755

- A 1% change in survival = 72 lives

Extrapolated from 2012 CARES Data based upon population reporting per month.

Cardiac
Arrest
Resuscitation
System

Optimal Cardiac Arrest System Specification By Point Of Care Operations Manual Version 3.0

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Adult Chain of Survival

1. Immediate recognition of cardiac arrest and activation of the emergency response system
2. Early CPR with an emphasis on chest compressions
3. Rapid defibrillation
4. Effective advanced life support
5. Integrated post–cardiac arrest care

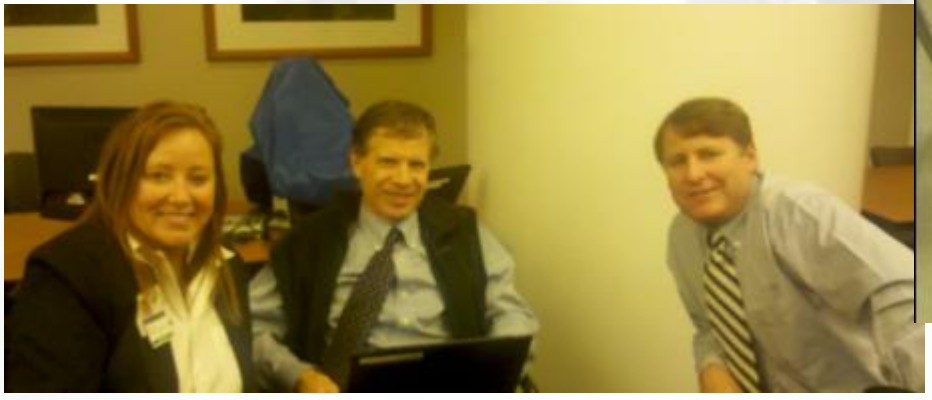
Metrics

- Time to cardiac arrest recognition by dispatcher
- Time to chest compressions measured from 911 recording
- Compression fraction for 911 responders
- Perishock Pause

Metrics

- Time to 1st defibrillation
- ROSC in Field
- Hypothermia rates
- Transportation to Resuscitation Center

Conclusions:

- Cardiac arrest is common and the third leading cause of death.
- Victims of out of hospital cardiac arrest are unlikely to survive
- Simple interventions in the chain of survival are likely to improve survival
- Your role in EMD can help communities improve their survival rates!

Let’s make NC the best place in the country to have a heart attack or a cardiac arrest!