

# GAMUT 2017 Q2 Organizational Summary Report

*PHI*

Report produced on 2017-09-16 with support from



American Academy  
of Pediatrics



DEDICATED TO THE HEALTH OF ALL CHILDREN™



Laerdal Foundation



## Contents

Interpreting the metrics . . . . .	3
<b>Advanced Airway metrics</b>	<b>4</b>
Ventilator utilization - Neonatal . . . . .	4
Ventilator utilization - Pediatric . . . . .	5
Ventilator utilization - Adult . . . . .	6
Waveform capnography - Neonatal . . . . .	7
Waveform capnography - Pediatric . . . . .	8
Waveform capnography - Adult . . . . .	9
Tracheal tube confirmation . . . . .	10
<b>Intubation metrics</b>	<b>11</b>
First Attempt Success - Neonatal . . . . .	11
First Attempt Success - Pediatric . . . . .	12
First Attempt Success - Adult . . . . .	13
DASH1A - Neonatal . . . . .	14
DASH1A - Pediatric . . . . .	15
DASH1A - Adult . . . . .	16
RSI Protocol Compliance . . . . .	17
<b>General Transport metrics</b>	<b>18</b>
Neonatal Hypothermia . . . . .	18
Pain Assessment . . . . .	19
HEMS Over-triage . . . . .	20
CPR During transport . . . . .	21
Standardized handoffs . . . . .	22
<b>Specific Clinical metrics</b>	<b>23</b>
Blood glucose checks with altered mentation . . . . .	23
Accurate 12-lead ECG interpretation . . . . .	25
Hemorrhagic Stroke . . . . .	26
Hemorrhagic Shock . . . . .	27
Aortic Dissection . . . . .	28
<b>Safety Event metrics</b>	<b>29</b>
Patient injuries . . . . .	29
Crew injuries . . . . .	31
Medical equipment failures . . . . .	32
Device dislodgement . . . . .	33
Medication errors . . . . .	34
Serious Reportable Events . . . . .	35
Transport-related patient mishaps . . . . .	36
Adverse Drug Events . . . . .	37
<b>References</b>	<b>38</b>

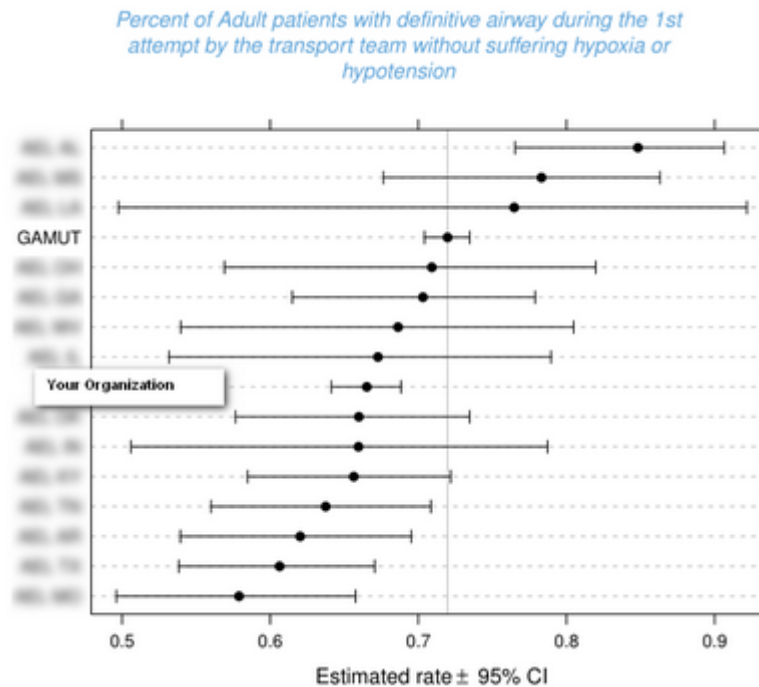


Figure 1: Example benchmark plot

## Interpreting the metrics

There are two sections for each metric:

- **Benchmark plot** Each plot shows the rolling 12 month average rate for your organization, the overall GAMUT rate and each program in your organization. Plots include those programs with at least 5 cases in the denominator.
- **Data table** Monthly raw data used to calculate the benchmark plots.

Benchmark plots show your program compared to other GAMUT participants. The black dots represent the rate and horizontal bars represent the 95% confidence intervals. The vertical line shows the overall combined rate across all GAMUT participants, excluding your organization. When the horizontal bar crosses the vertical line, this indicates that your program rate is not significantly different than the GAMUT rate. Only programs that submitted a total of at least 5 cases in the metric denominator for the year are included in the graphs.

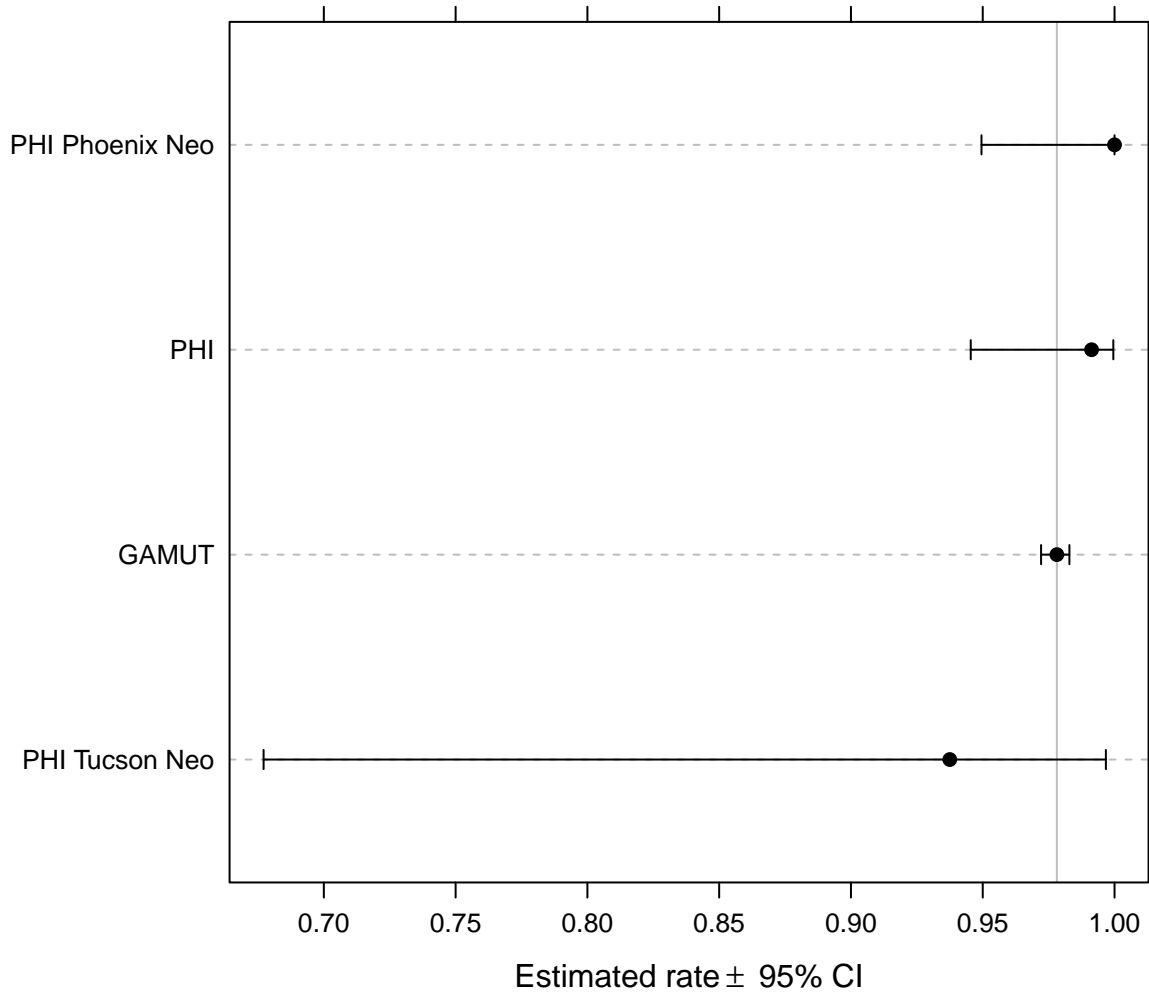
In the plot above, the first program at the top is significantly higher than the overall GAMUT rate and the organization's overall rate. The last program at the bottom is significantly lower than the overall GAMUT rate and the organization's overall rate.

Data tables show the individual numerators, denominators and calculated rates by program for the 12 month benchmark reporting period. Programs with missing data or invalid calculations are not shown.

## Advanced Airway metrics

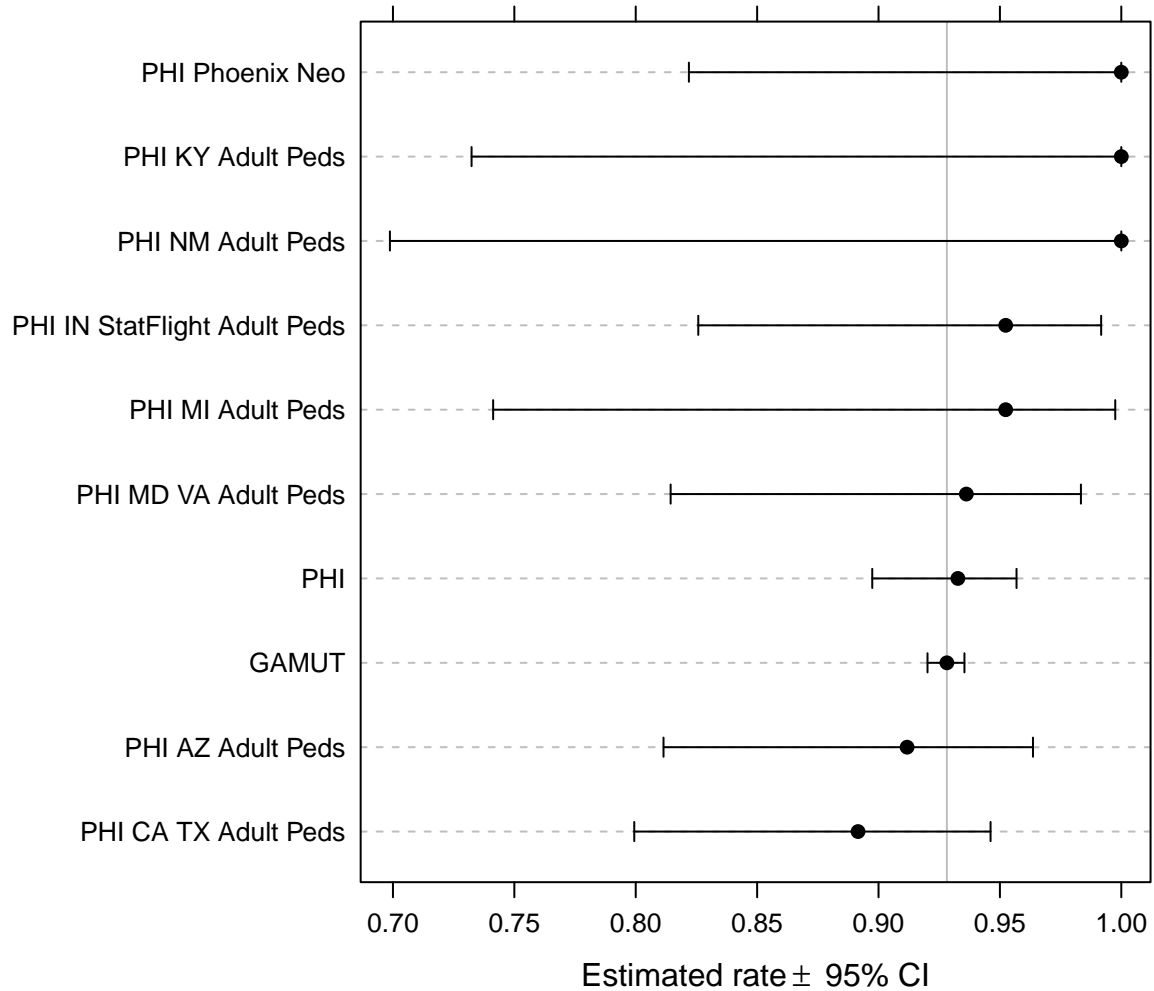
### Ventilator utilization - Neonatal

*Percent of Neonatal patient transport contacts with an advanced airway supported by a mechanical ventilator*



**Ventilator utilization - Pediatric**

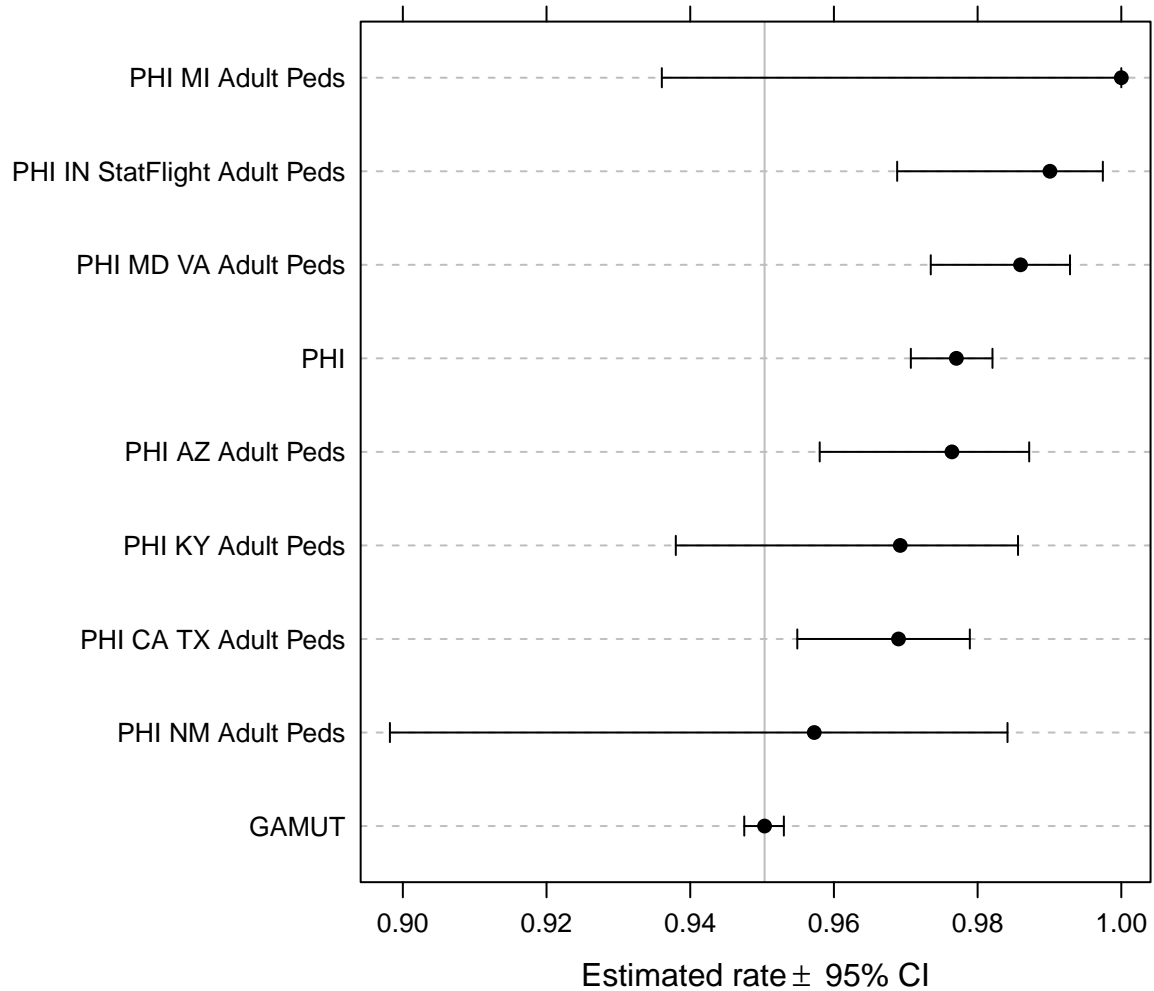
*Percent of Pediatric patient transport contacts with an advanced airway supported by a mechanical ventilator*



group	num	den	prop
PHI KY Adult Peds	14	14	1.0000000
PHI NM Adult Peds	12	12	1.0000000
PHI Phoenix Neo	23	23	1.0000000
PHI IN StatFlight Adult Peds	40	42	0.9523810
PHI MI Adult Peds	20	21	0.9523810
PHI MD VA Adult Peds	44	47	0.9361702
PHI	291	312	0.9326923
GAMUT	4237	4565	0.9281490
PHI AZ Adult Peds	62	68	0.9117647
PHI CA TX Adult Peds	74	83	0.8915663

**Ventilator utilization - Adult**

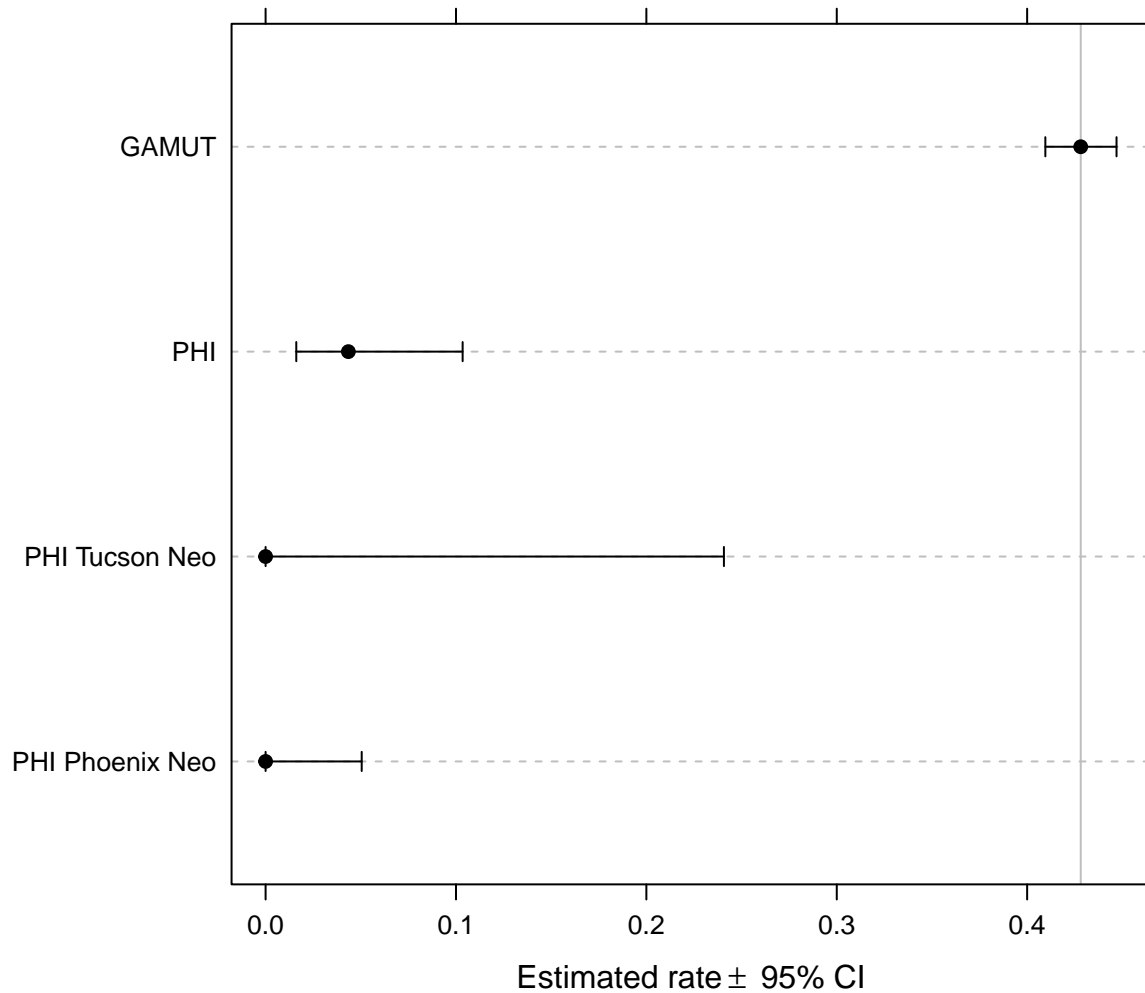
*Percent of Adult patient transport contacts with an advanced airway supported by a mechanical ventilator'*



group	num	den	prop
PHI MI Adult Peds	71	71	1.0000000
PHI IN StatFlight Adult Peds	299	302	0.9900662
PHI MD VA Adult Peds	703	713	0.9859748
PHI	2809	2875	0.9770435
PHI AZ Adult Peds	497	509	0.9764244
PHI KY Adult Peds	252	260	0.9692308
PHI CA TX Adult Peds	875	903	0.9689922
PHI NM Adult Peds	112	117	0.9572650
GAMUT	23045	24249	0.9503485

**Waveform capnography - Neonatal**

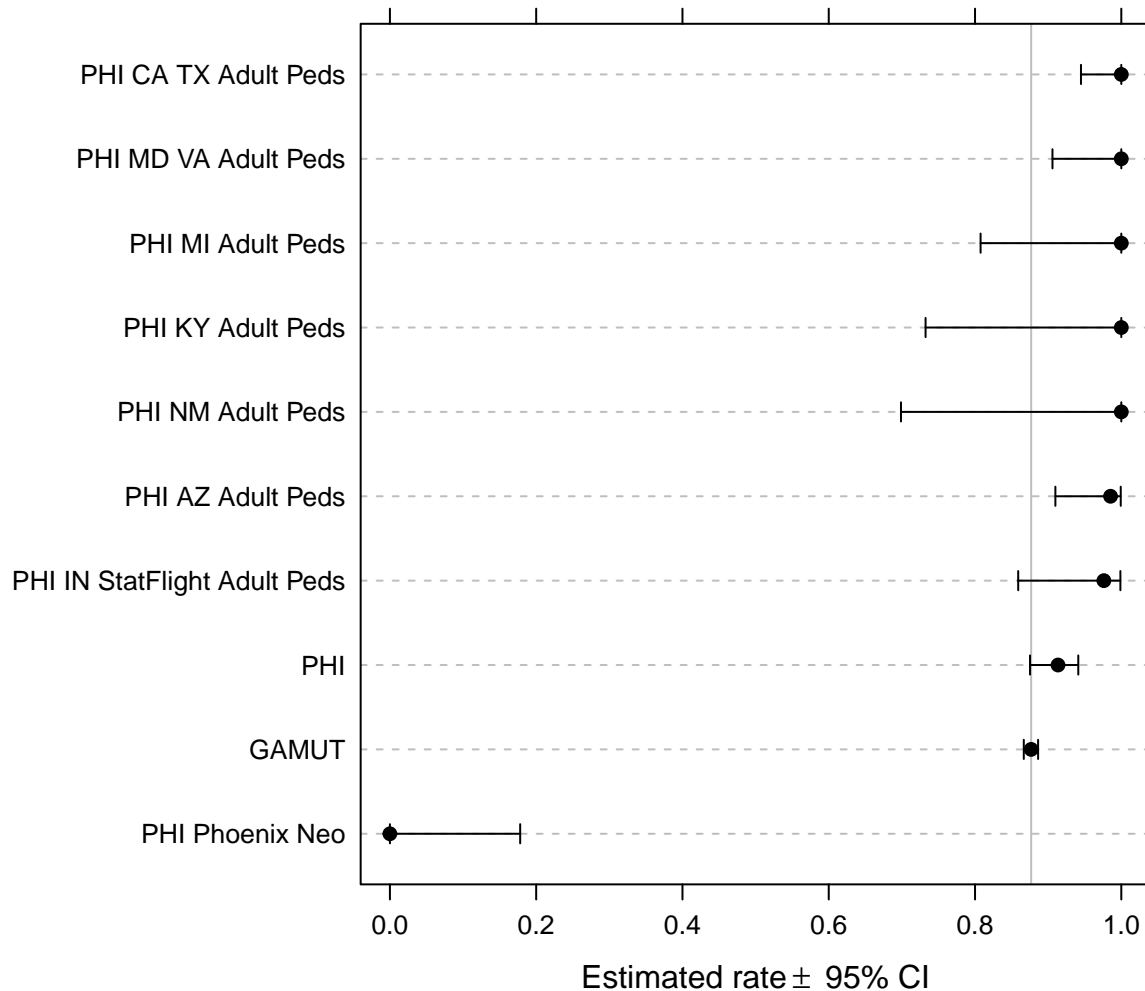
*Percent of Neonatal patient transport contacts with advanced airways in whom continuous waveform capnography was used.*



group	num	den	prop
GAMUT	1174	2742	0.4281546
PHI	5	115	0.0434783
PHI Phoenix Neo	0	91	0.0000000
PHI Tucson Neo	0	16	0.0000000

## Waveform capnography - Pediatric

*Percent of Pediatric patient transport contacts with advanced airways in whom continuous waveform capnography was used*

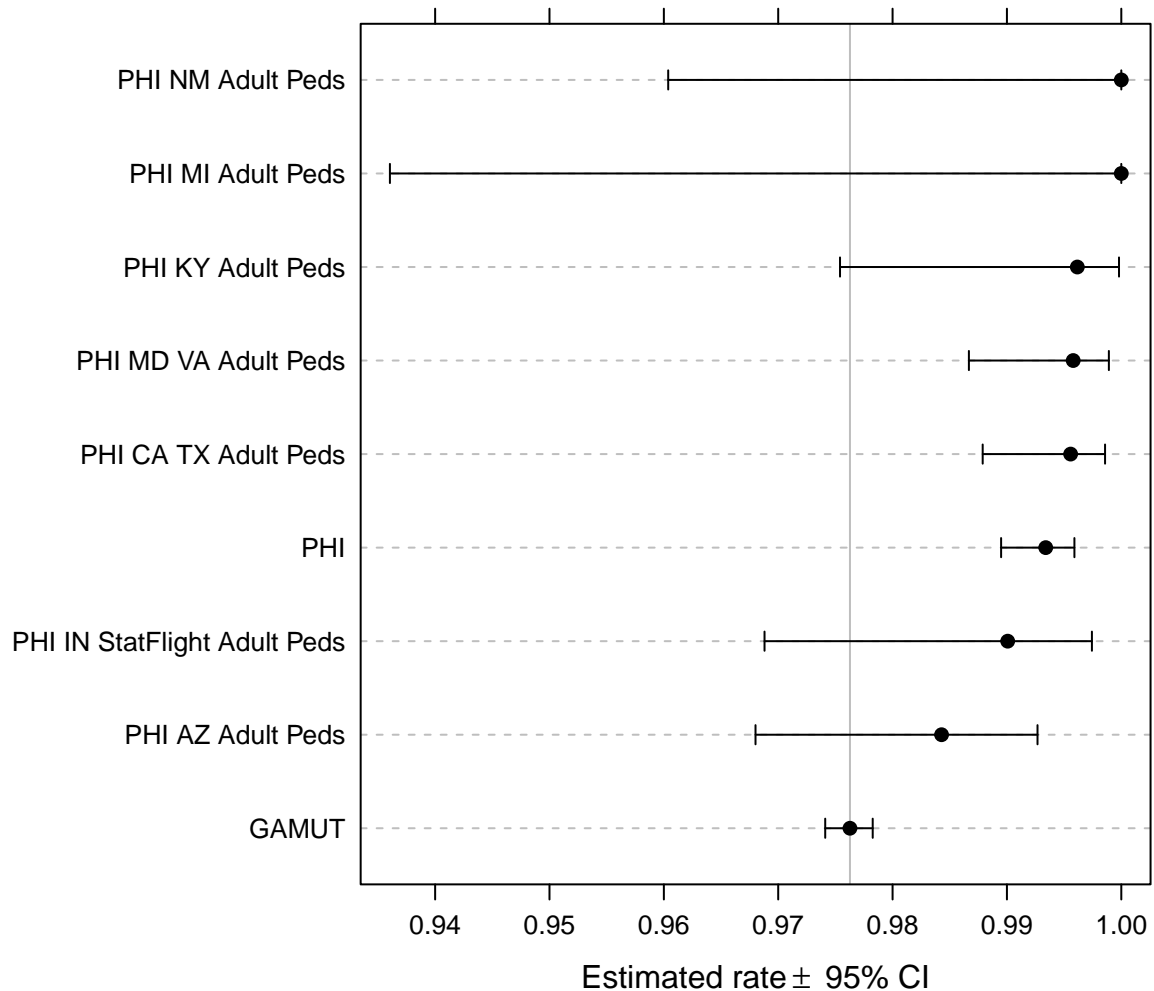


group	num	den	prop
PHI CA TX Adult Peds	83	83	1.0000000
PHI KY Adult Peds	14	14	1.0000000
PHI MD VA Adult Peds	47	47	1.0000000
PHI MI Adult Peds	21	21	1.0000000
PHI NM Adult Peds	12	12	1.0000000
PHI AZ Adult Peds	67	68	0.9852941
PHI IN StatFlight Adult Peds	41	42	0.9761905
PHI	285	312	0.9134615
GAMUT	3892	4439	0.8767740
PHI Phoenix Neo	0	23	0.0000000



**Waveform capnography - Adult**

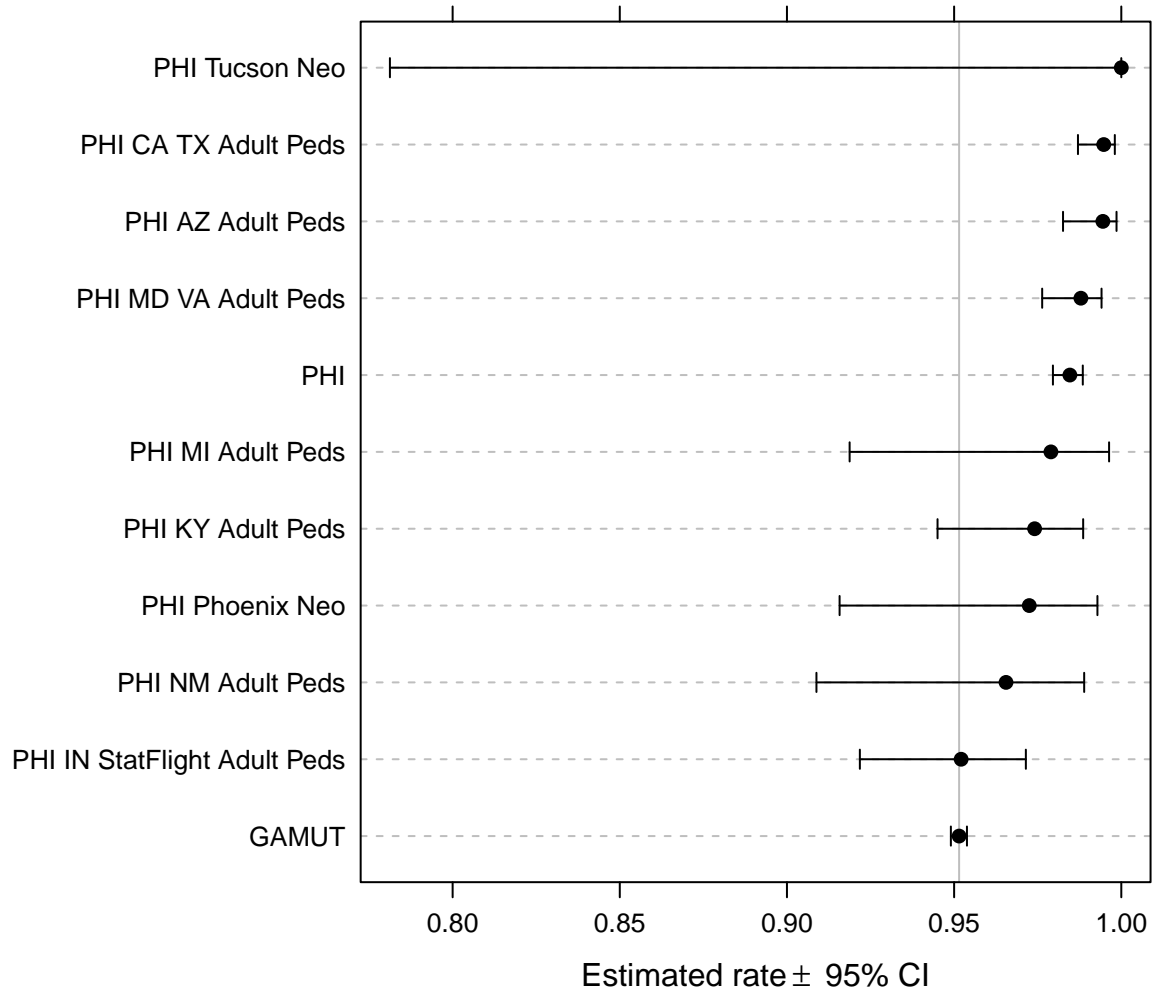
*Percent of Adult patient transport contacts with advanced airways  
in whom continuous waveform capnography was used*



group	num	den	prop
PHI MI Adult Peds	71	71	1.0000000
PHI NM Adult Peds	117	117	1.0000000
PHI KY Adult Peds	259	260	0.9961538
PHI MD VA Adult Peds	710	713	0.9957924
PHI CA TX Adult Peds	899	903	0.9955703
PHI	2856	2875	0.9933913
PHI IN StatFlight Adult Peds	299	302	0.9900662
PHI AZ Adult Peds	501	509	0.9842829
GAMUT	20656	21158	0.9762737

## Tracheal tube confirmation

*Percent of intubated patient transport contacts with documentation of confirmed tracheal tube placement.*

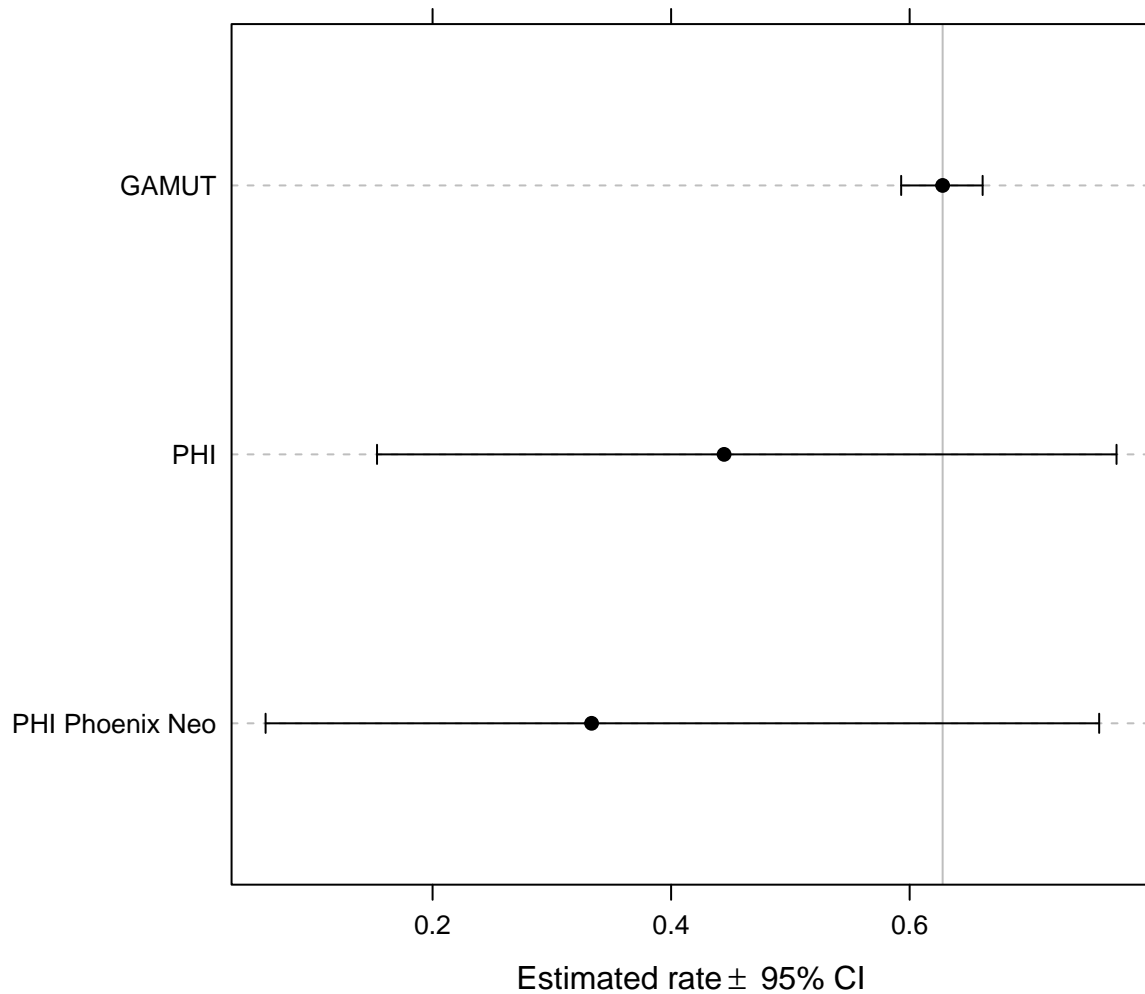


group	num	den	prop
PHI Tucson Neo	18	18	1.0000000
PHI CA TX Adult Peds	947	952	0.9947479
PHI AZ Adult Peds	541	544	0.9944853
PHI MD VA Adult Peds	736	745	0.9879195
PHI	3137	3186	0.9846202
PHI MI Adult Peds	93	95	0.9789474
PHI KY Adult Peds	263	270	0.9740741
PHI Phoenix Neo	106	109	0.9724771
PHI NM Adult Peds	112	116	0.9655172
PHI IN StatFlight Adult Peds	318	334	0.9520958
GAMUT	29558	31065	0.9514888

## Intubation metrics

### First Attempt Success - Neonatal

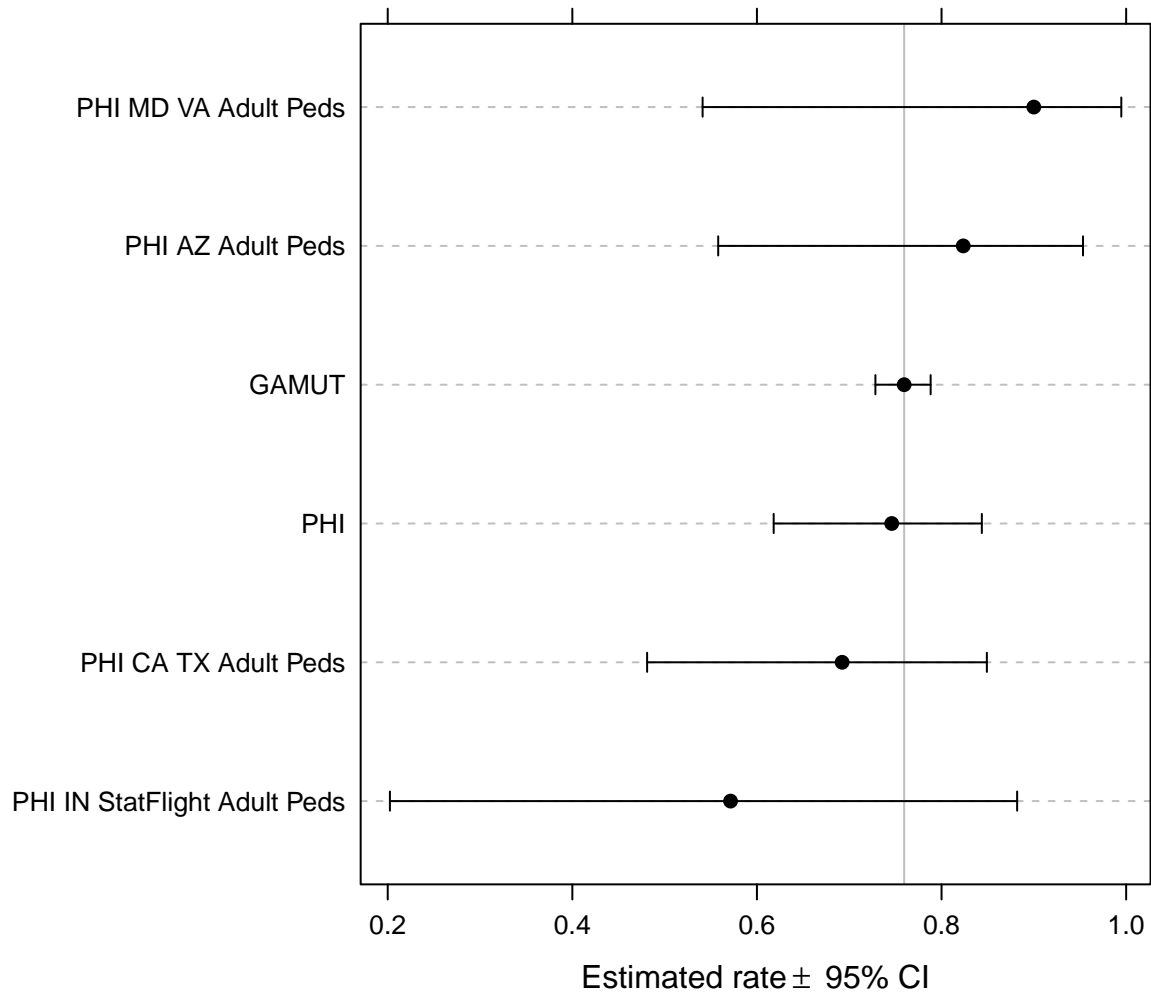
*Percent of Neonatal transport contacts successfully intubated on the 1st attempt by the transport team*



group	num	den	prop
GAMUT	499	795	0.6276730
PHI	4	9	0.4444444
PHI Phoenix Neo	2	6	0.3333333

**First Attempt Success - Pediatric**

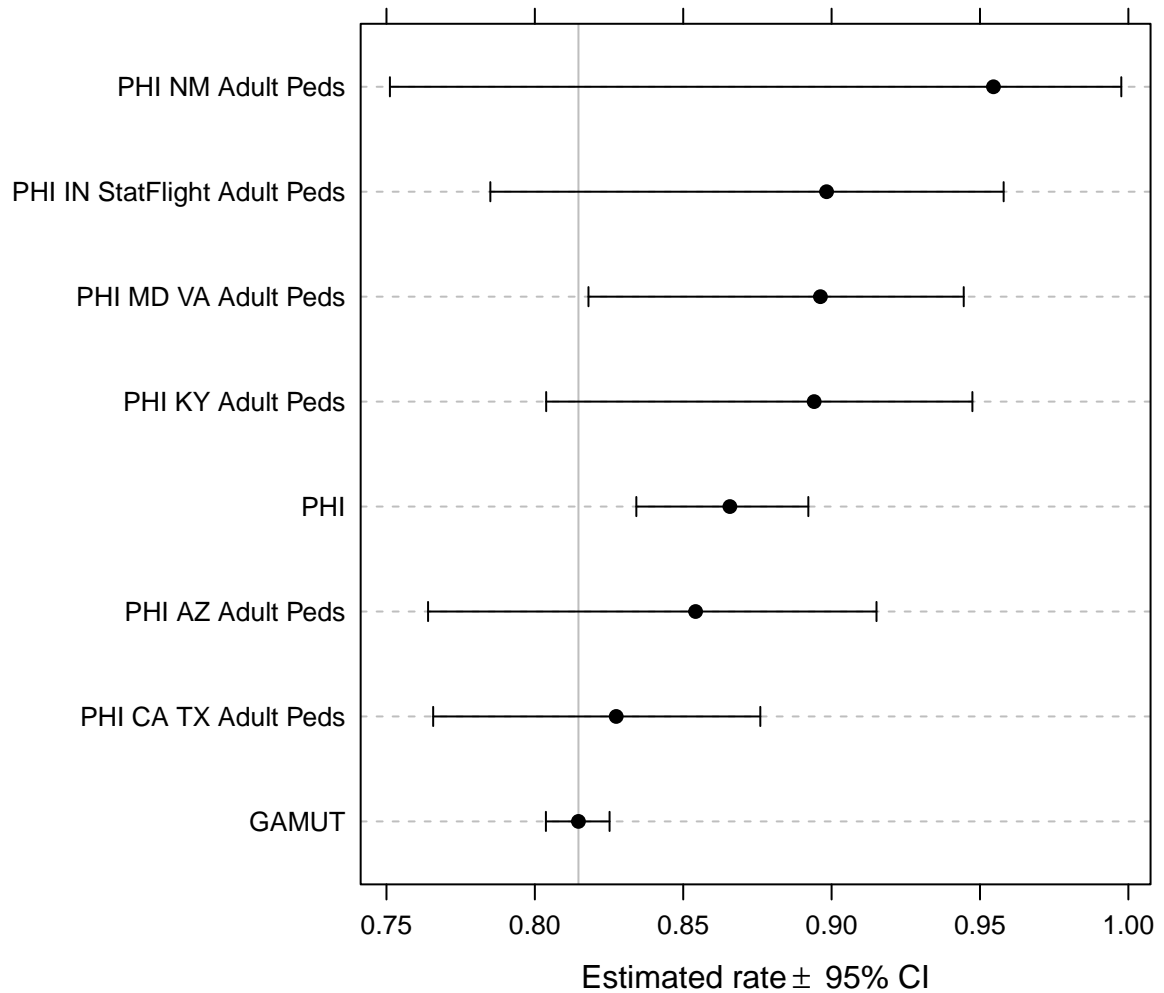
*Percent of Pediatric transport contacts successfully intubated on the 1st attempt by the transport team*



group	num	den	prop
PHI MD VA Adult Peds	9	10	0.900000
PHI AZ Adult Peds	14	17	0.8235294
GAMUT	619	815	0.7595092
PHI	47	63	0.7460317
PHI CA TX Adult Peds	18	26	0.6923077
PHI IN StatFlight Adult Peds	4	7	0.5714286

**First Attempt Success - Adult**

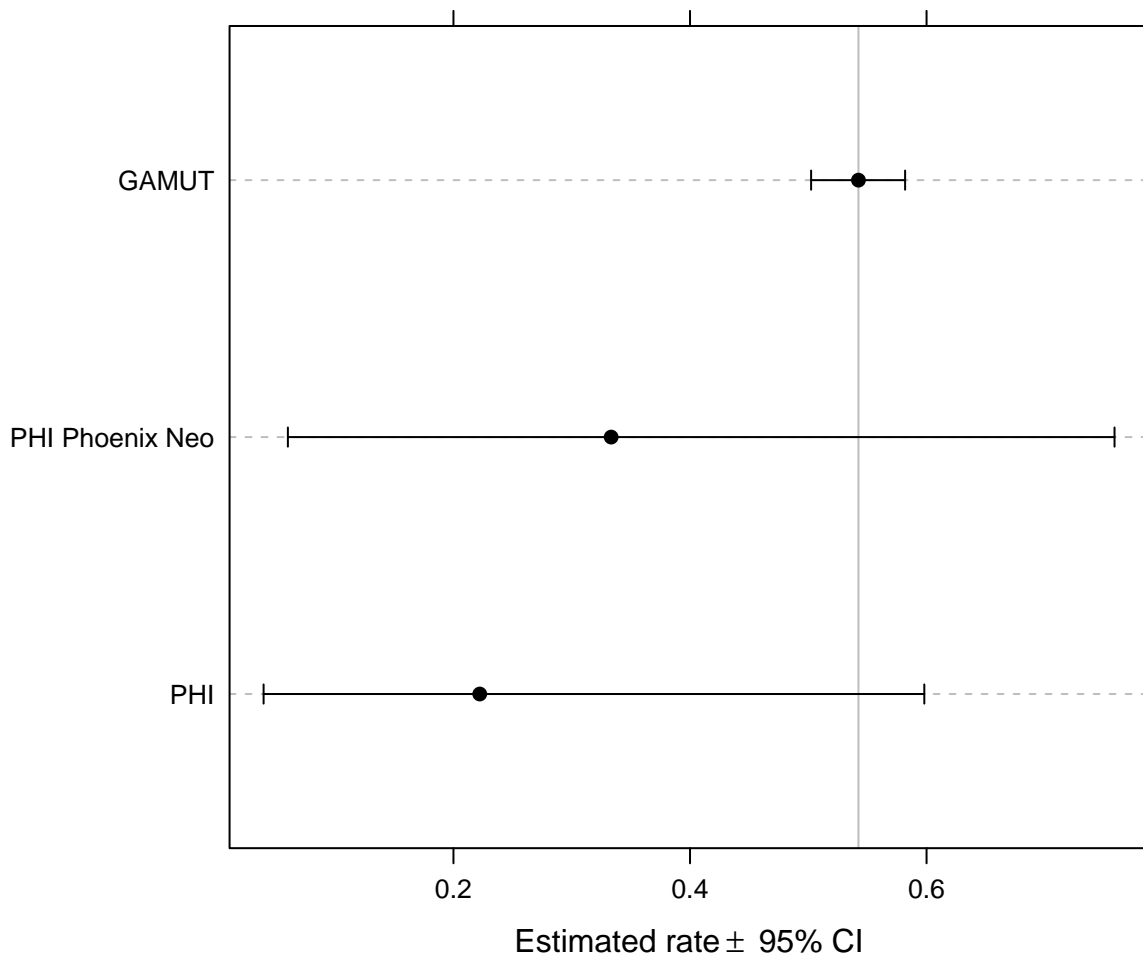
*Percent of Adult transport contacts successfully intubated on the 1st attempt by the transport team*



group	num	den	prop
PHI NM Adult Peds	21	22	0.9545455
PHI IN StatFlight Adult Peds	53	59	0.8983051
PHI MD VA Adult Peds	95	106	0.8962264
PHI KY Adult Peds	76	85	0.8941176
PHI	490	566	0.8657244
PHI AZ Adult Peds	82	96	0.8541667
PHI CA TX Adult Peds	163	197	0.8274112
GAMUT	4181	5132	0.8146921

**DASH1A - Neonatal**

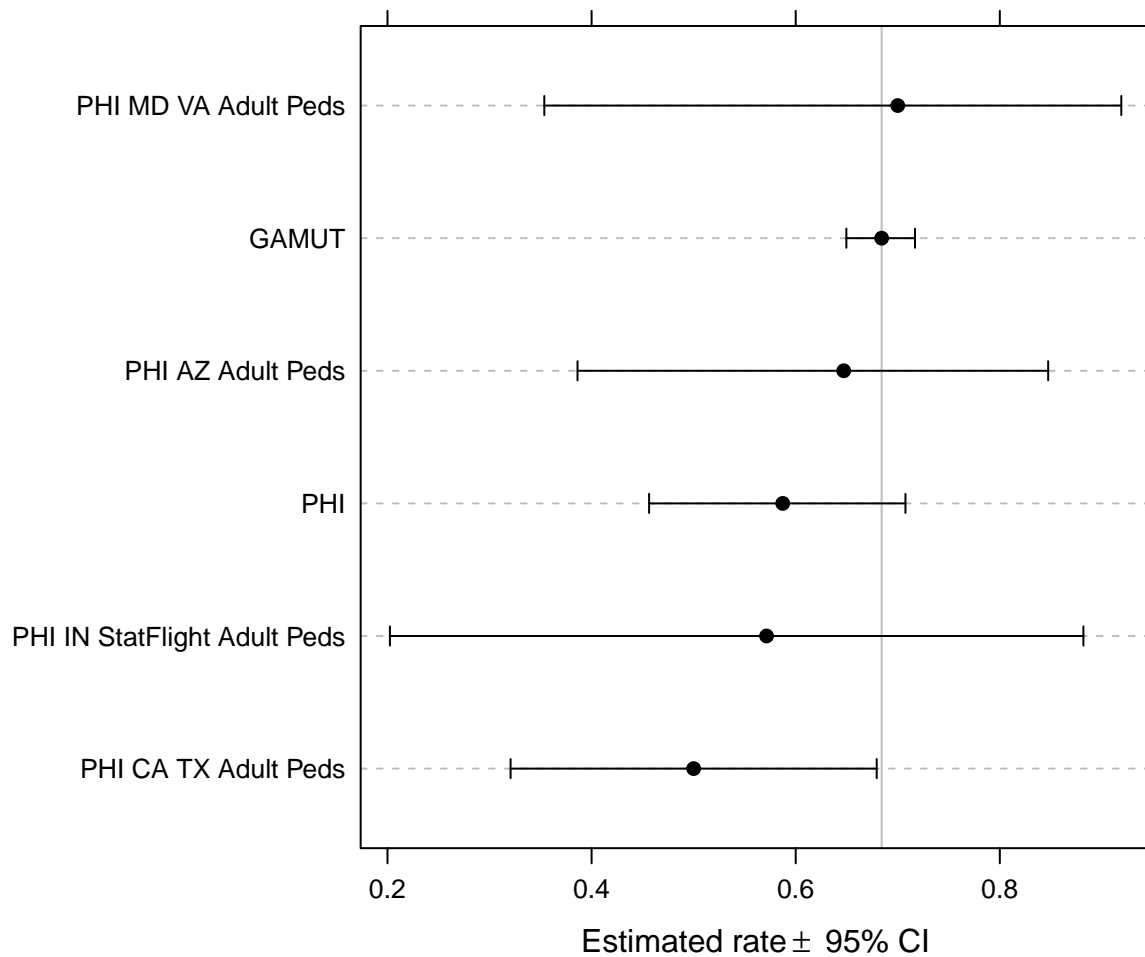
*Percent of Neonatal patients with definitive airway during the 1st attempt by the transport team without suffering hypoxia or hypotension*



group	num	den	prop
GAMUT	339	625	0.5424000
PHI Phoenix Neo	2	6	0.3333333
PHI	2	9	0.2222222

**DASH1A - Pediatric**

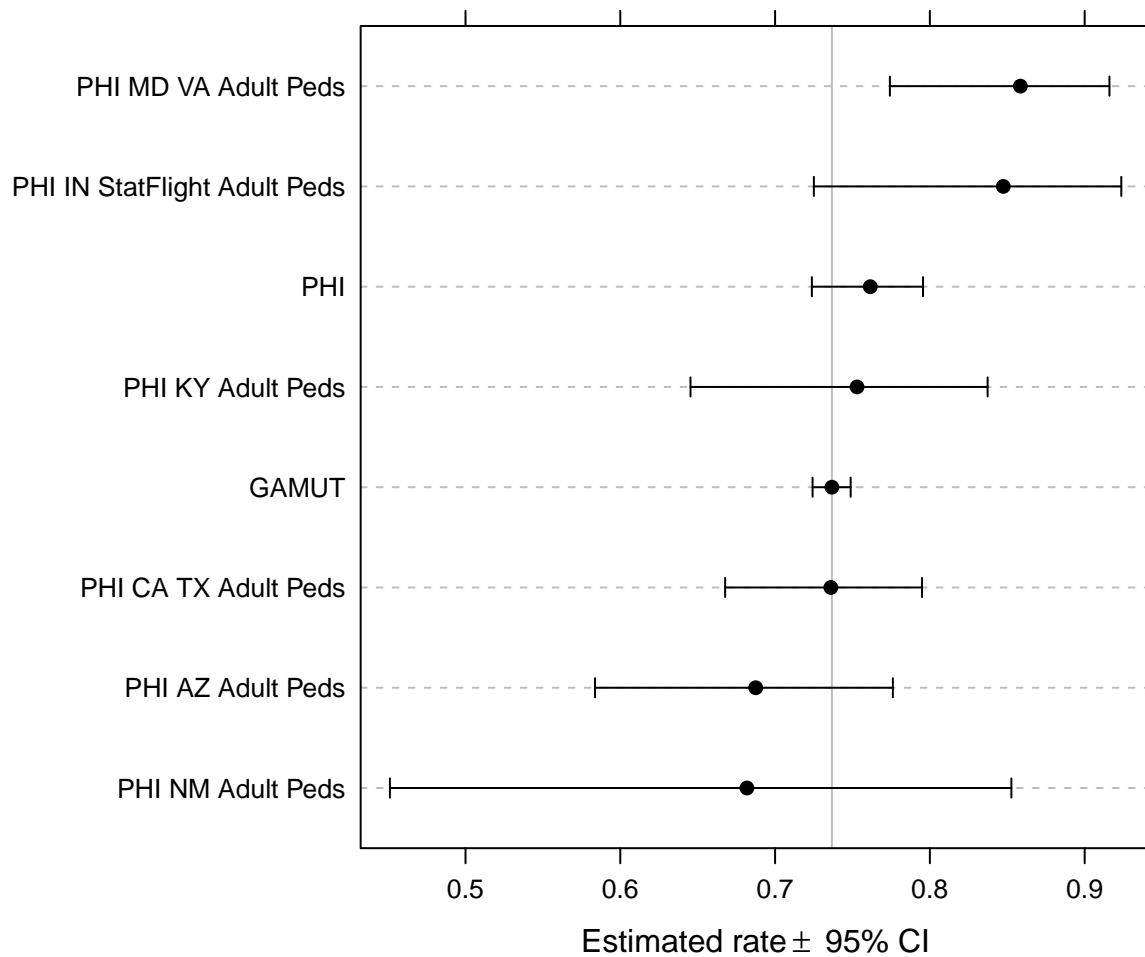
*Percent of Pediatric patients with definitive airway during the 1st attempt by the transport team without suffering hypoxia or hypotension*



group	num	den	prop
PHI MD VA Adult Peds	7	10	0.7000000
GAMUT	520	760	0.6842105
PHI AZ Adult Peds	11	17	0.6470588
PHI	37	63	0.5873016
PHI IN StatFlight Adult Peds	4	7	0.5714286
PHI CA TX Adult Peds	13	26	0.5000000

**DASH1A - Adult**

*Percent of Adult patients with definitive airway during the 1st attempt by the transport team without suffering hypoxia or hypotension*

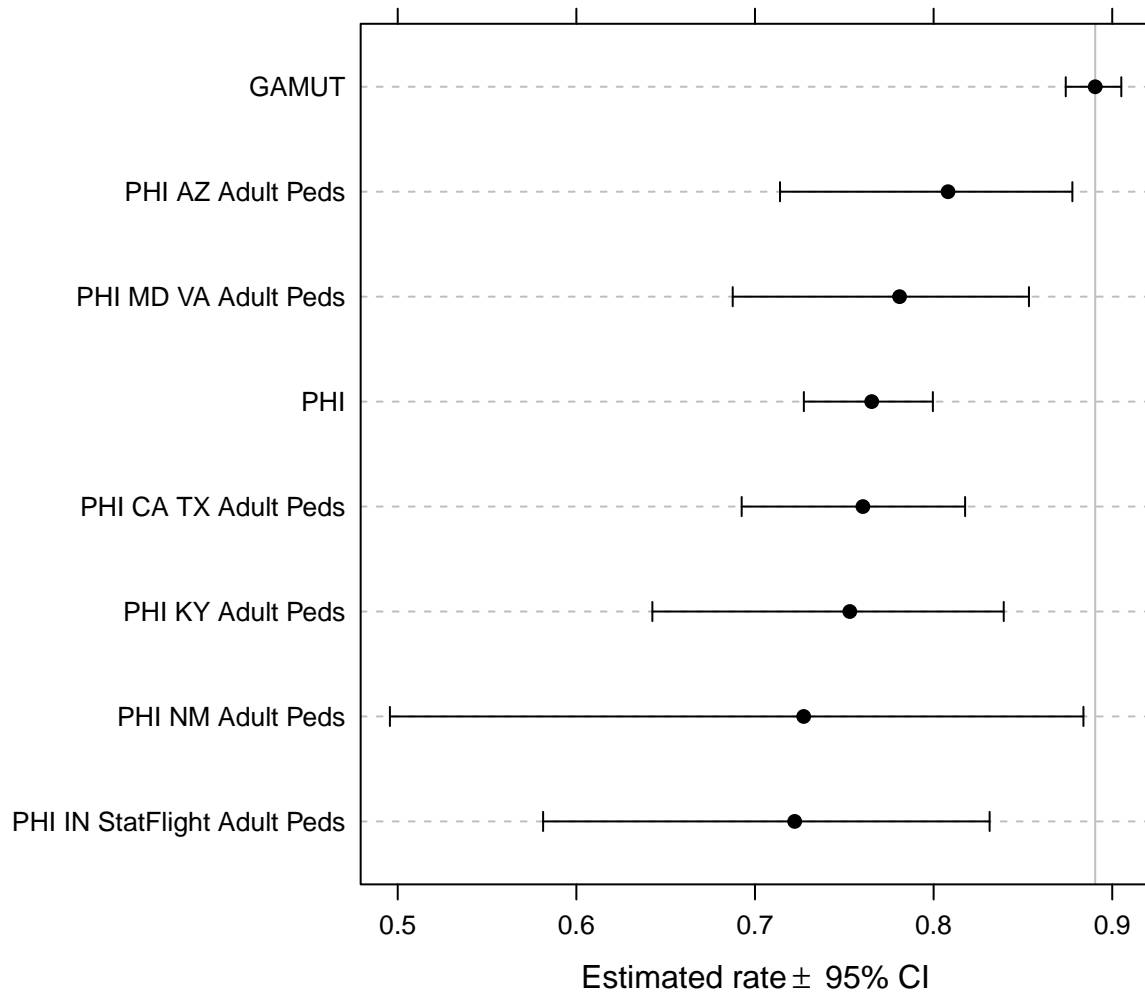


group	num	den	prop
PHI MD VA Adult Peds	91	106	0.8584906
PHI IN StatFlight Adult Peds	50	59	0.8474576
PHI	431	566	0.7614841
PHI KY Adult Peds	64	85	0.7529412
GAMUT	3685	5002	0.7367053
PHI CA TX Adult Peds	145	197	0.7360406
PHI AZ Adult Peds	66	96	0.6875000
PHI NM Adult Peds	15	22	0.6818182



## RSI Protocol Compliance

*Percent of patient transport contacts undergoing RSI where all indicated elements of the program's RSI protocol were completed.*

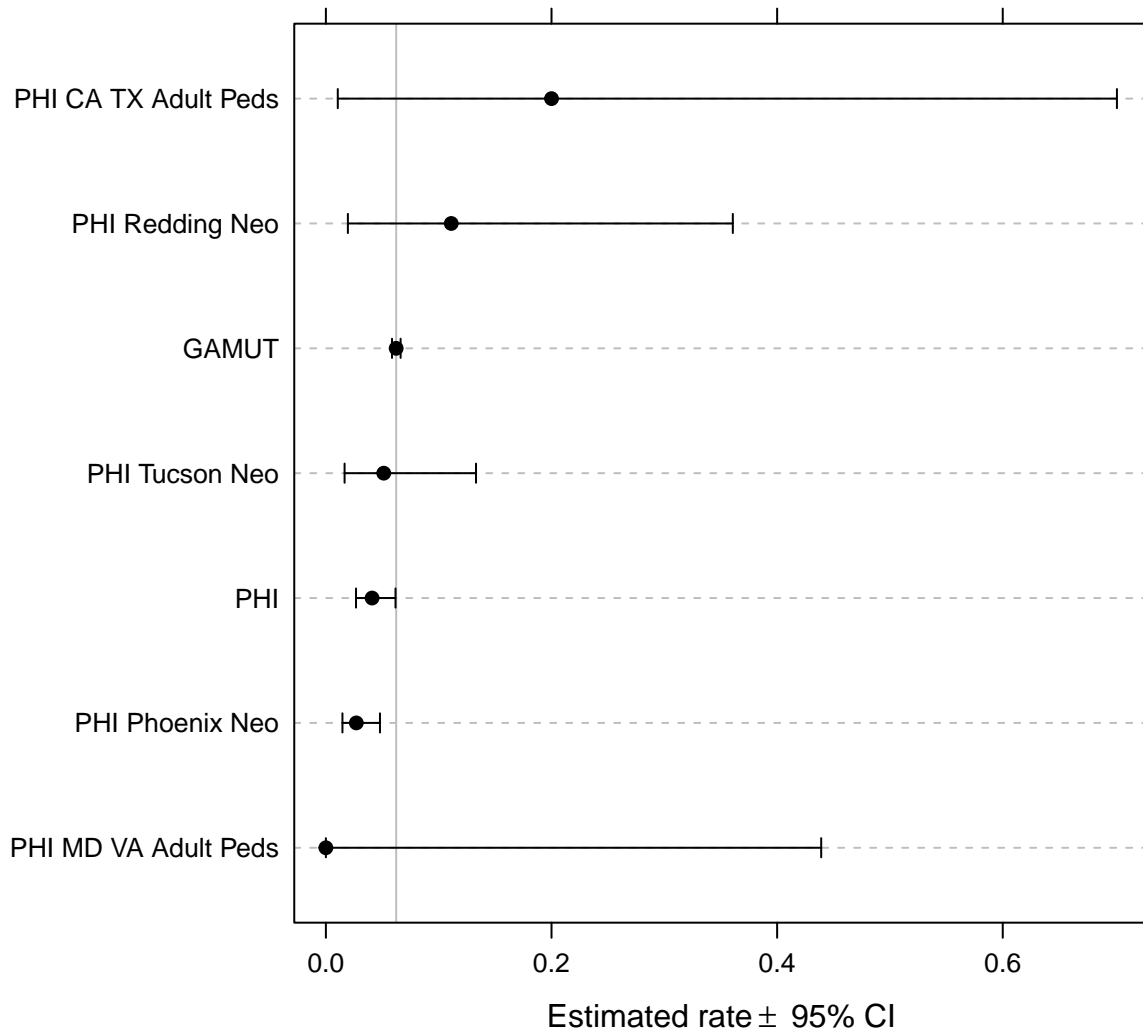


group	num	den	prop
GAMUT	1439	1616	0.8904703
PHI AZ Adult Peds	80	99	0.8080808
PHI MD VA Adult Peds	82	105	0.7809524
PHI	424	554	0.7653430
PHI CA TX Adult Peds	146	192	0.7604167
PHI KY Adult Peds	61	81	0.7530864
PHI NM Adult Peds	16	22	0.7272727
PHI IN StatFlight Adult Peds	39	54	0.7222222

## General Transport metrics

### Neonatal Hypothermia

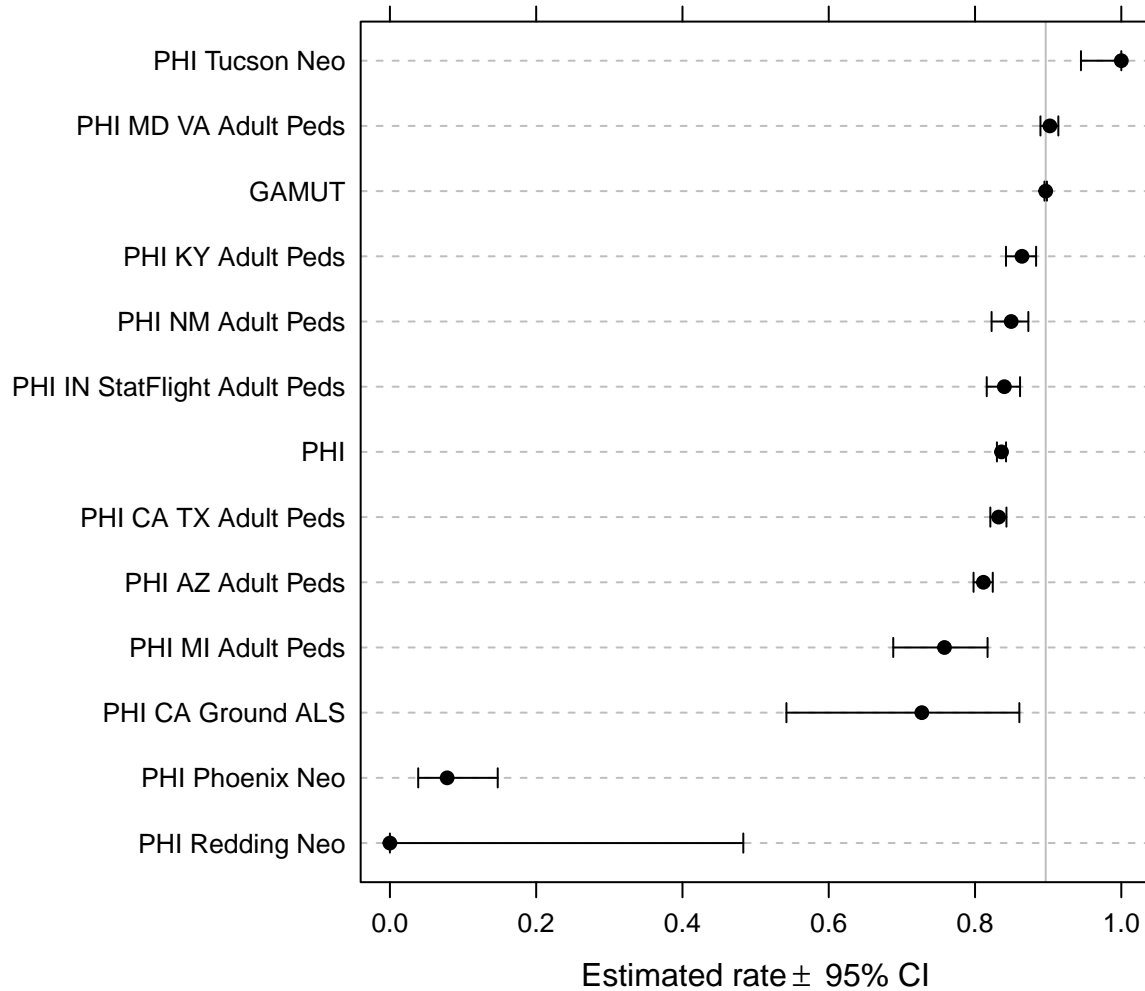
*Percent of neonates found hypothermic upon admission*



group	num	den	prop
PHI CA TX Adult Peds	1	5	0.2000000
PHI Redding Neo	2	18	0.1111111
GAMUT	980	15728	0.0623093
PHI Tucson Neo	4	78	0.0512821
PHI	23	562	0.0409253
PHI Phoenix Neo	12	445	0.0269663
PHI MD VA Adult Peds	0	7	0.0000000

## Pain Assessment

*Percent of patient transport contacts with a documented pain assessment*

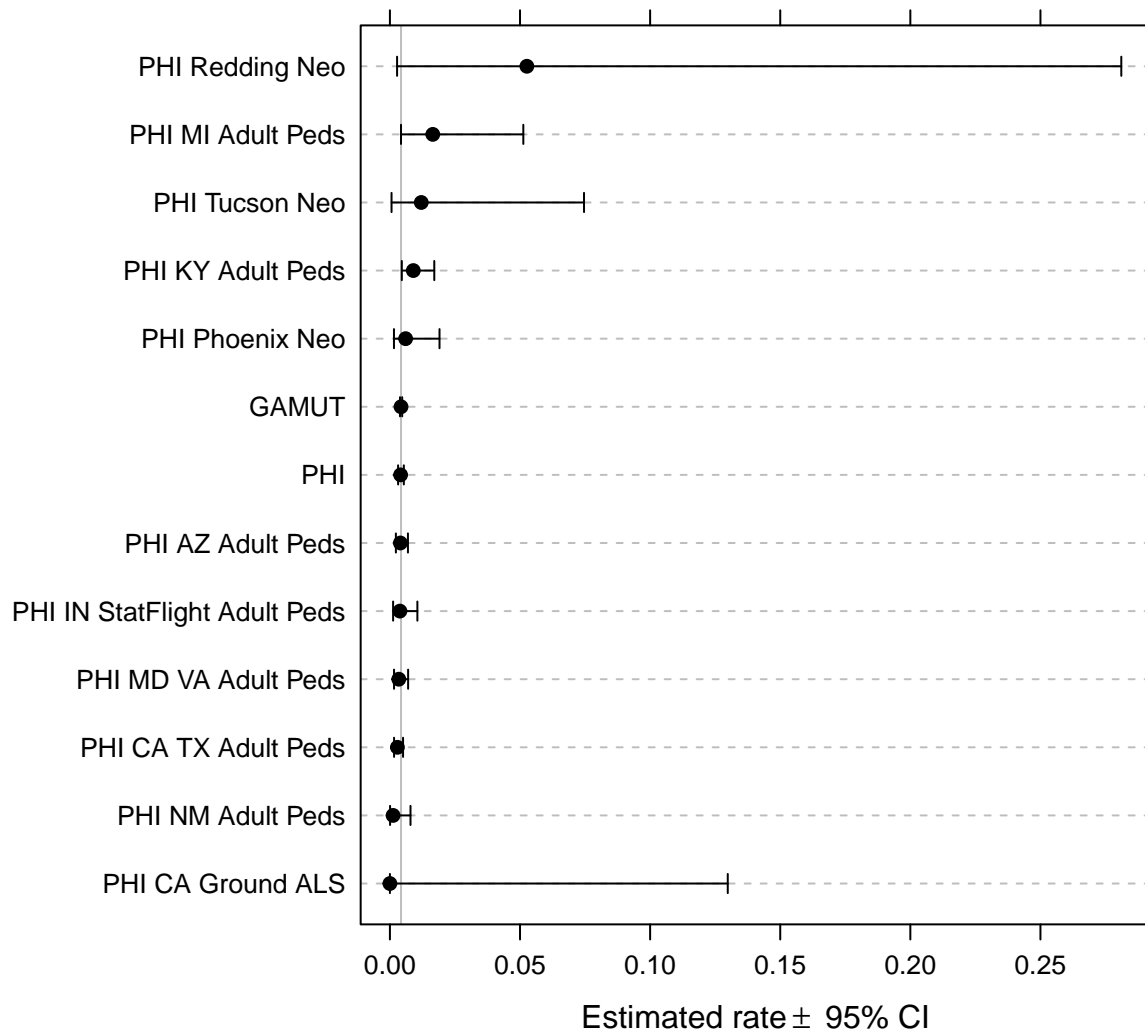


group	num	den	prop
PHI Tucson Neo	83	83	1.0000000
PHI MD VA Adult Peds	2116	2345	0.9023454
GAMUT	113171	126218	0.8966312
PHI KY Adult Peds	961	1112	0.8642086
PHI NM Adult Peds	694	817	0.8494492
PHI IN StatFlight Adult Peds	872	1038	0.8400771
PHI	11476	13723	0.8362603
PHI CA TX Adult Peds	3760	4518	0.8322266
PHI AZ Adult Peds	2819	3474	0.8114565
PHI MI Adult Peds	138	182	0.7582418
PHI CA Ground ALS	24	33	0.7272727
PHI Phoenix Neo	9	115	0.0782609
PHI Redding Neo	0	6	0.0000000

**HEMS Over-triage**

## insufficient data

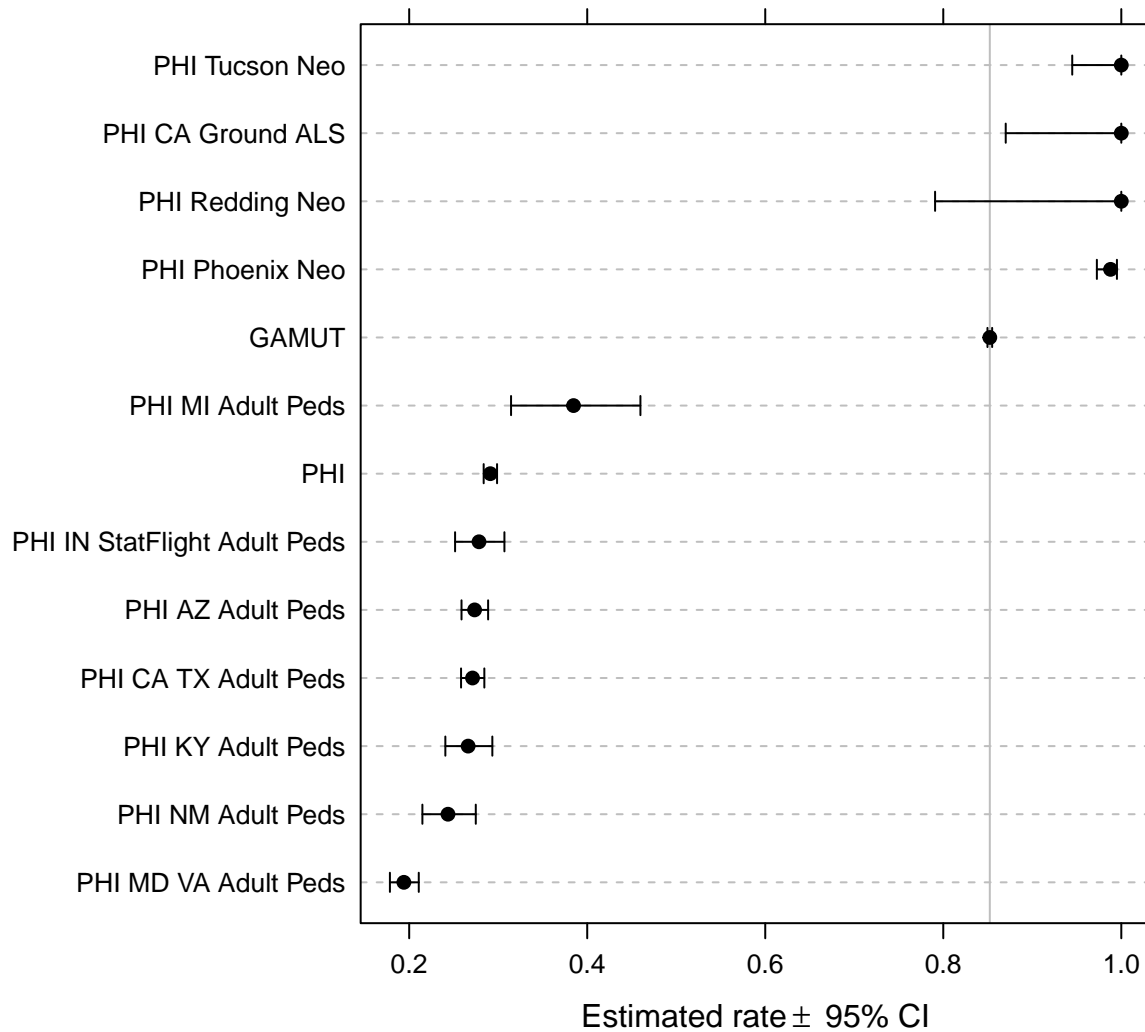
## CPR During transport

*CPR rate per 10,000 transports*

group	num	den	prop
PHI Redding Neo	1	19	0.0526316
PHI MI Adult Peds	3	182	0.0164835
PHI Tucson Neo	1	83	0.0120482
PHI KY Adult Peds	10	1112	0.0089928
PHI Phoenix Neo	3	497	0.0060362
GAMUT	398	93094	0.0042752
PHI	58	14118	0.0041082
PHI AZ Adult Peds	14	3474	0.0040299
PHI IN StatFlight Adult Peds	4	1038	0.0038536
PHI MD VA Adult Peds	8	2345	0.0034115
PHI CA TX Adult Peds	13	4518	0.0028774
PHI NM Adult Peds	1	817	0.0012240
PHI CA Ground ALS	0	33	0.0000000

## Standardized handoffs

*Percent of cases involving a standardized patient care hand-off*

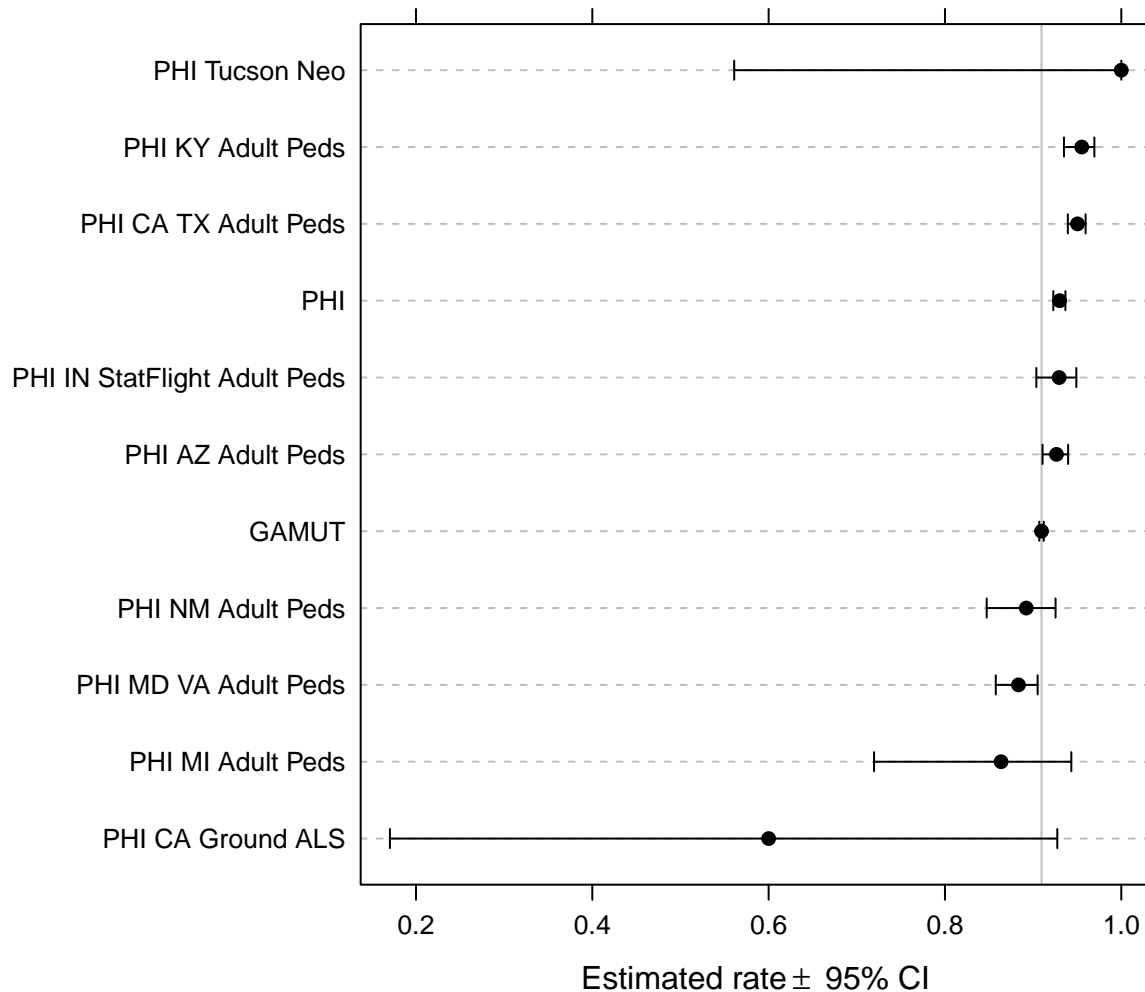


group	num	den	prop
PHI CA Ground ALS	33	33	1.0000000
PHI Redding Neo	19	19	1.0000000
PHI Tucson Neo	83	83	1.0000000
PHI Phoenix Neo	491	497	0.9879276
GAMUT	59773	70133	0.8522807
PHI MI Adult Peds	70	182	0.3846154
PHI	4110	14118	0.2911177
PHI IN StatFlight Adult Peds	289	1038	0.2784200
PHI AZ Adult Peds	950	3474	0.2734600
PHI CA TX Adult Peds	1225	4518	0.2711377
PHI KY Adult Peds	296	1112	0.2661871
PHI NM Adult Peds	199	817	0.2435741
PHI MD VA Adult Peds	455	2345	0.1940299

## Specific Clinical metrics

### Blood glucose checks with altered mentation

*Percent of patient transport contacts with altered mental status or focal neurologic deficit with a documented blood glucose check*



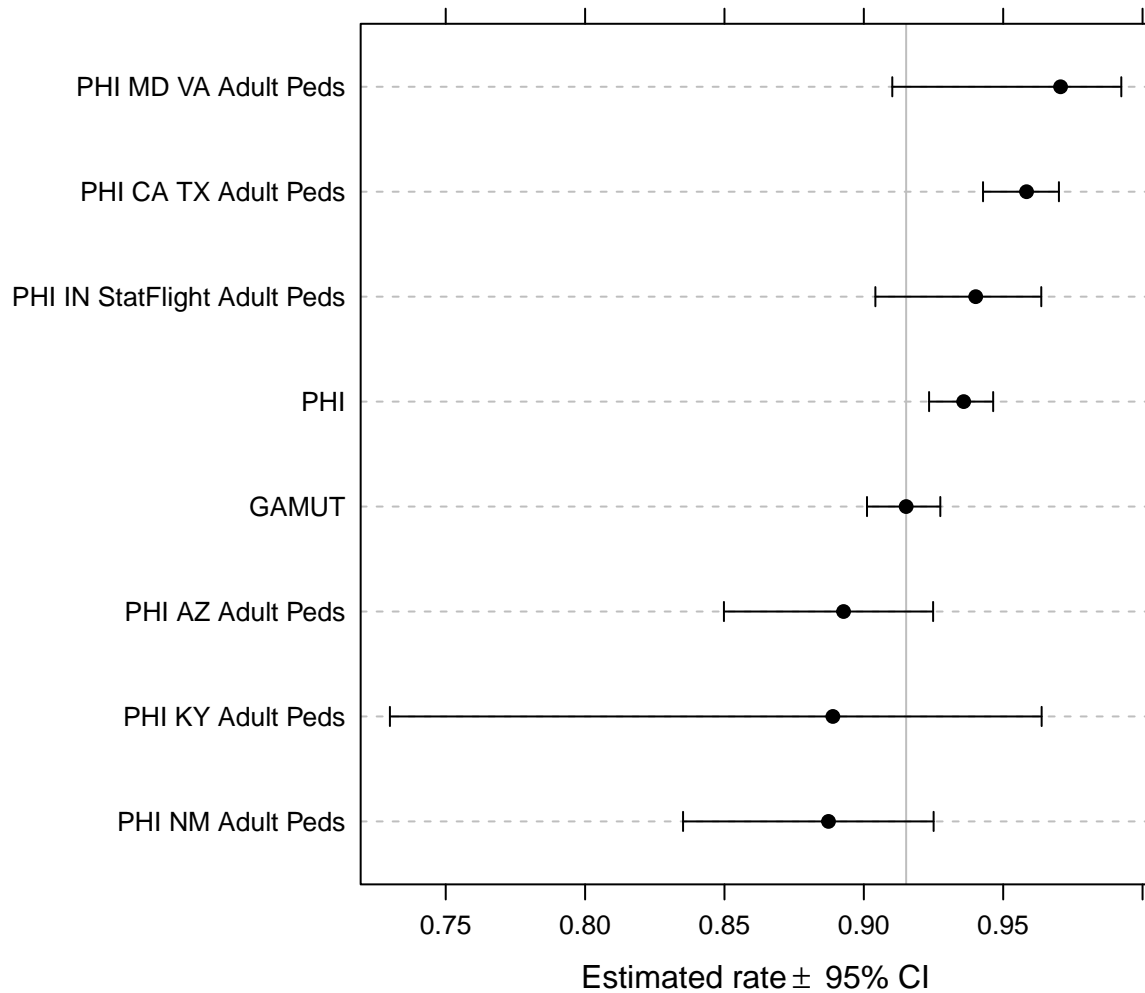
group	num	den	prop
PHI Tucson Neo	7	7	1.0000000
PHI KY Adult Peds	596	624	0.9551282
PHI CA TX Adult Peds	1800	1894	0.9503696
PHI	5066	5447	0.9300532
PHI IN StatFlight Adult Peds	501	539	0.9294991
PHI AZ Adult Peds	1222	1319	0.9264594
GAMUT	43785	48140	0.9095347
PHI NM Adult Peds	240	269	0.8921933
PHI MD VA Adult Peds	659	746	0.8833780
PHI MI Adult Peds	38	44	0.8636364
PHI CA Ground ALS	3	5	0.6000000

group	num	den	prop
-------	-----	-----	------



## Accurate 12-lead ECG interpretation

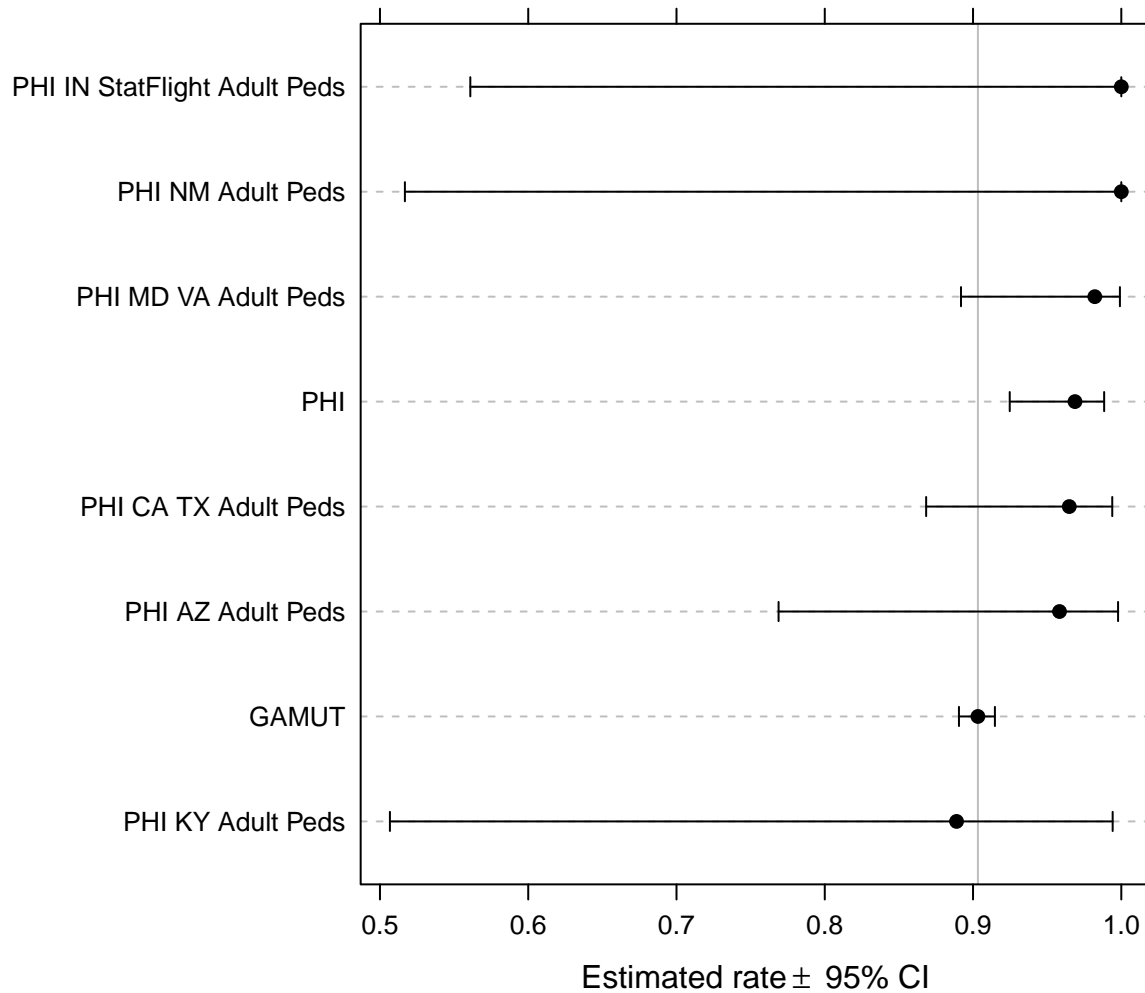
*Percent of transport patient contacts with accurately interpreted  
12-lead ECG evaluations*



group	num	den	prop
PHI MD VA Adult Peds	99	102	0.9705882
PHI CA TX Adult Peds	875	913	0.9583790
PHI IN StatFlight Adult Peds	267	284	0.9401408
PHI	1721	1839	0.9358347
GAMUT	1651	1804	0.9151885
PHI AZ Adult Peds	258	289	0.8927336
PHI KY Adult Peds	32	36	0.8888889
PHI NM Adult Peds	189	213	0.8873239

## Hemorrhagic Stroke

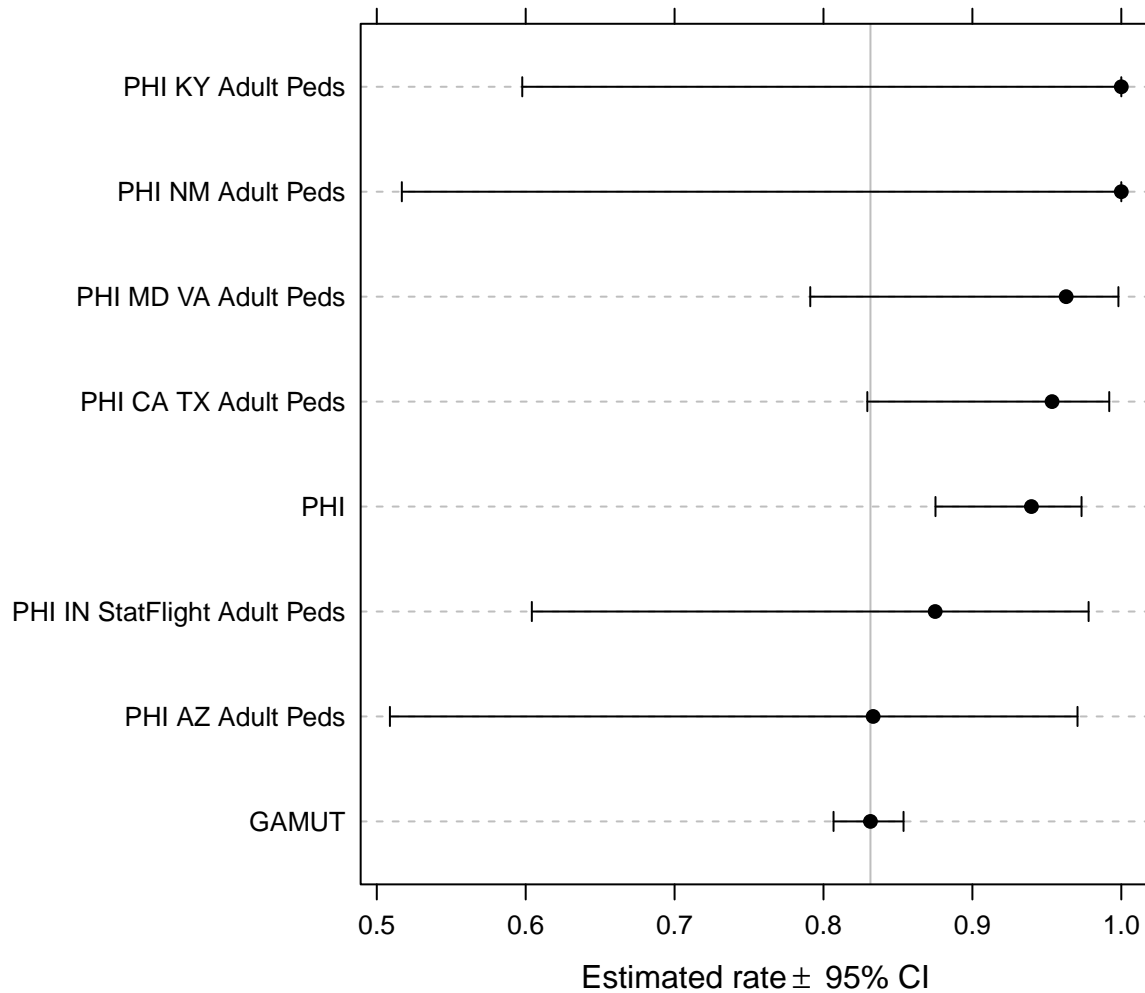
*Percent of transport patient contacts with hemorrhagic stroke and appropriate blood pressure management*



group	num	den	prop
PHI IN StatFlight Adult Peds	7	7	1.0000000
PHI NM Adult Peds	6	6	1.0000000
PHI MD VA Adult Peds	55	56	0.9821429
PHI	155	160	0.9687500
PHI CA TX Adult Peds	55	57	0.9649123
PHI AZ Adult Peds	23	24	0.9583333
GAMUT	2139	2368	0.9032939
PHI KY Adult Peds	8	9	0.8888889

## Hemorrhagic Shock

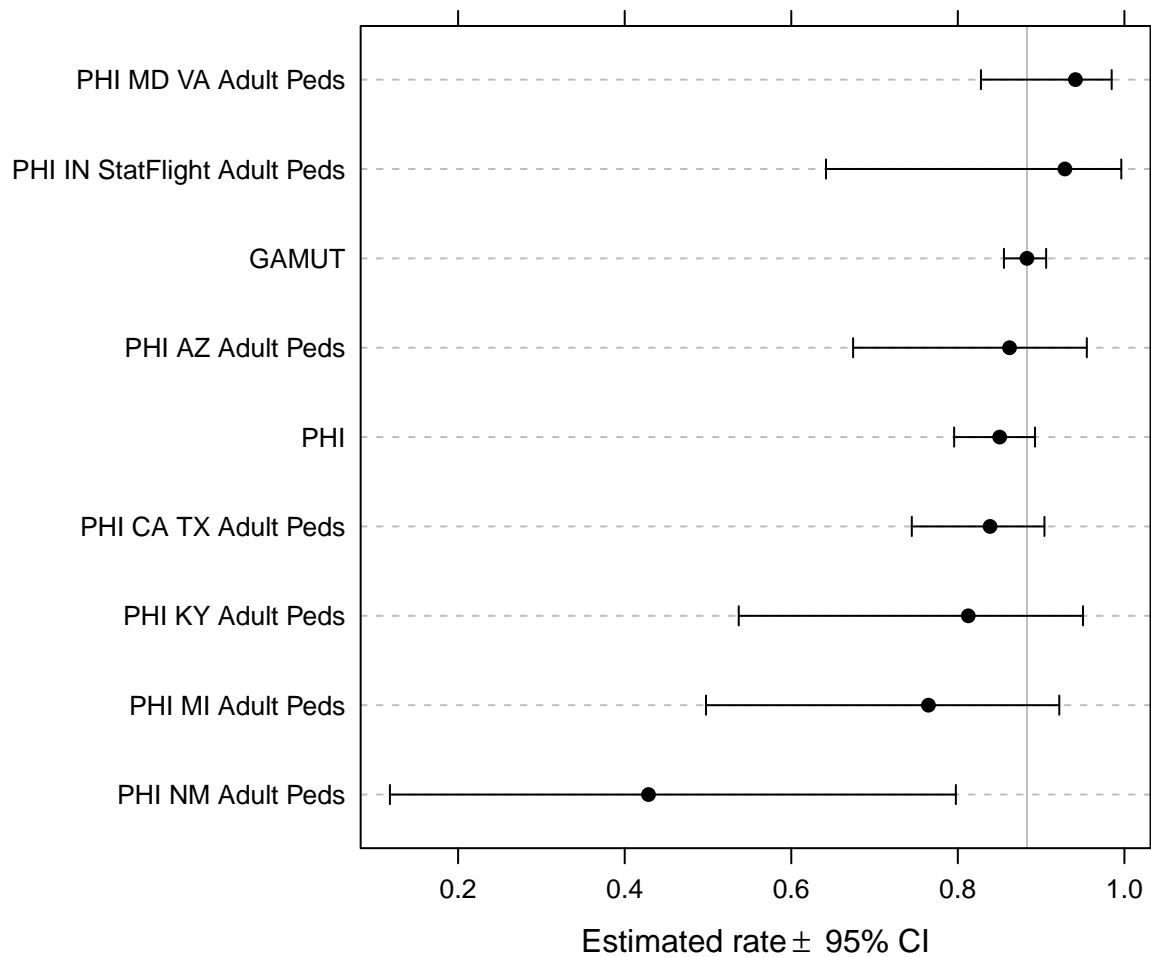
*Percent of patient transport contacts with hemorrhagic shock appropriately managed*



group	num	den	prop
PHI KY Adult Peds	8	8	1.0000000
PHI NM Adult Peds	6	6	1.0000000
PHI MD VA Adult Peds	26	27	0.9629630
PHI CA TX Adult Peds	41	43	0.9534884
PHI	109	116	0.9396552
PHI IN StatFlight Adult Peds	14	16	0.8750000
PHI AZ Adult Peds	10	12	0.8333333
GAMUT	844	1015	0.8315271

## Aortic Dissection

*Percent of patient transport contacts with known or suspected aortic dissection receiving indicated blood pressure and heart rate therapies*

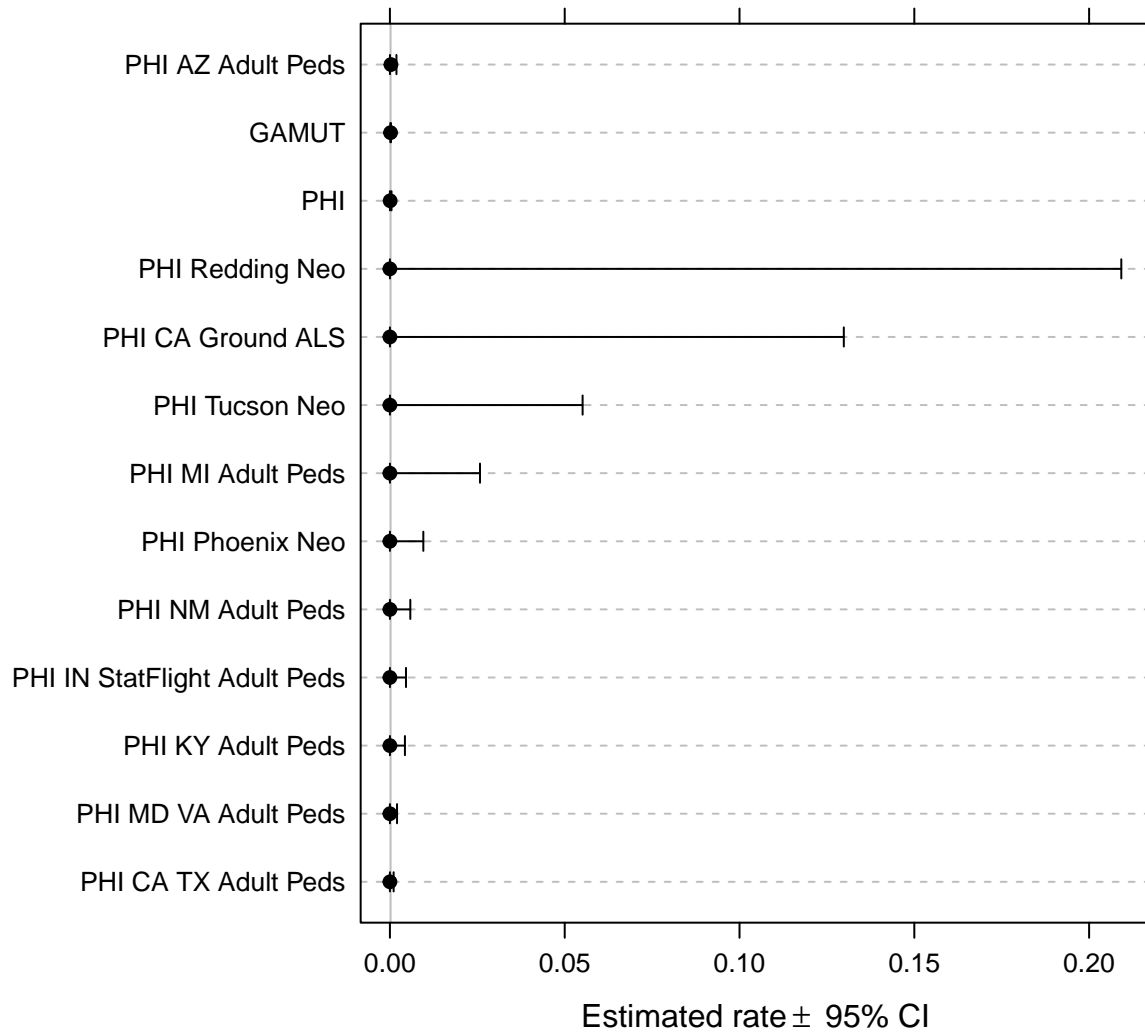


group	num	den	prop
PHI MD VA Adult Peds	48	51	0.9411765
PHI IN StatFlight Adult Peds	13	14	0.9285714
GAMUT	581	658	0.8829787
PHI AZ Adult Peds	25	29	0.8620690
PHI	193	227	0.8502203
PHI CA TX Adult Peds	78	93	0.8387097
PHI KY Adult Peds	13	16	0.8125000
PHI MI Adult Peds	13	17	0.7647059
PHI NM Adult Peds	3	7	0.4285714

## Safety Event metrrics

### Patient injuries

*Patient injuries per 10,000 patient transport contacts.*

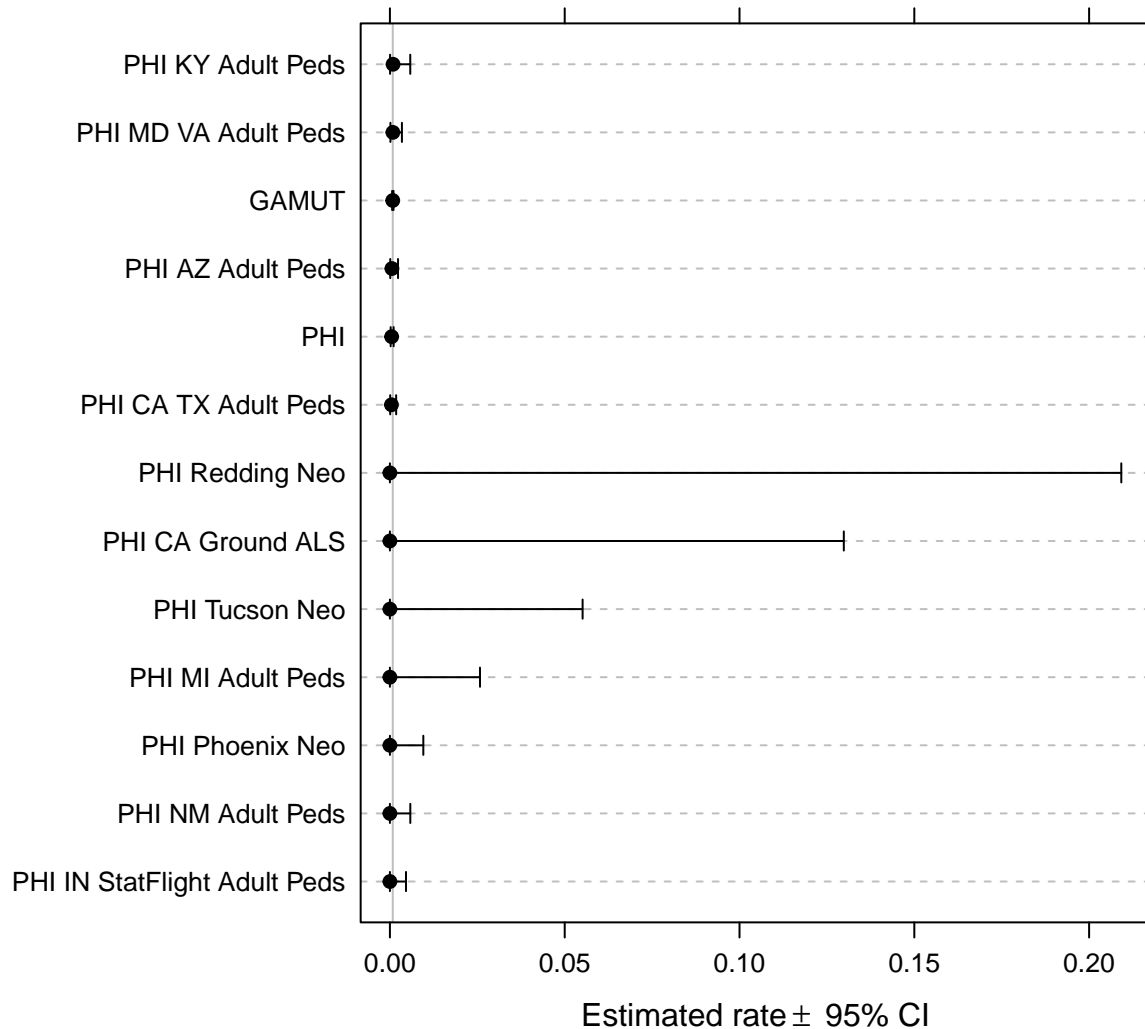


group	num	den	prop
PHI AZ Adult Peds	1	3474	0.0002879
GAMUT	17	91767	0.0001853
PHI	1	14118	0.0000708
PHI CA Ground ALS	0	33	0.0000000
PHI CA TX Adult Peds	0	4518	0.0000000
PHI IN StatFlight Adult Peds	0	1038	0.0000000
PHI KY Adult Peds	0	1112	0.0000000
PHI MD VA Adult Peds	0	2345	0.0000000
PHI MI Adult Peds	0	182	0.0000000
PHI NM Adult Peds	0	817	0.0000000
PHI Phoenix Neo	0	497	0.0000000

group	num	den	prop
PHI Redding Neo	0	19	0.0000000
PHI Tucson Neo	0	83	0.0000000

## Crew injuries

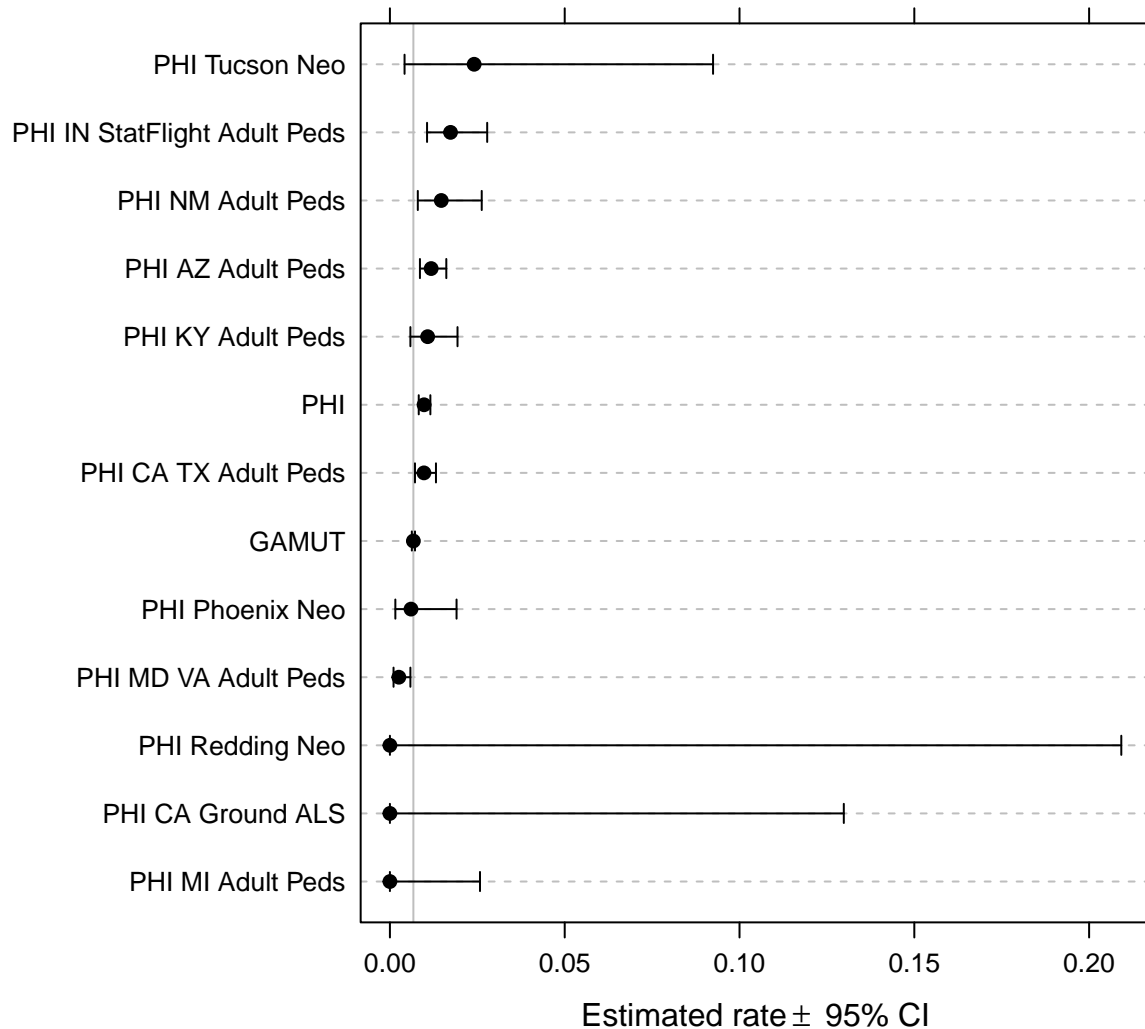
*Crew injuries per 10,000 patient transport contacts.*



group	num	den	prop
PHI KY Adult Peds	1	1112	0.0008993
PHI MD VA Adult Peds	2	2345	0.0008529
GAMUT	74	90764	0.0008153
PHI AZ Adult Peds	2	3474	0.0005757
PHI	7	14118	0.0004958
PHI CA TX Adult Peds	2	4518	0.0004427
PHI CA Ground ALS	0	33	0.0000000
PHI IN StatFlight Adult Peds	0	1038	0.0000000
PHI MI Adult Peds	0	182	0.0000000
PHI NM Adult Peds	0	817	0.0000000
PHI Phoenix Neo	0	497	0.0000000
PHI Redding Neo	0	19	0.0000000
PHI Tucson Neo	0	83	0.0000000

## Medical equipment failures

*Medical equipment failures per 1000 patient transport contacts.*

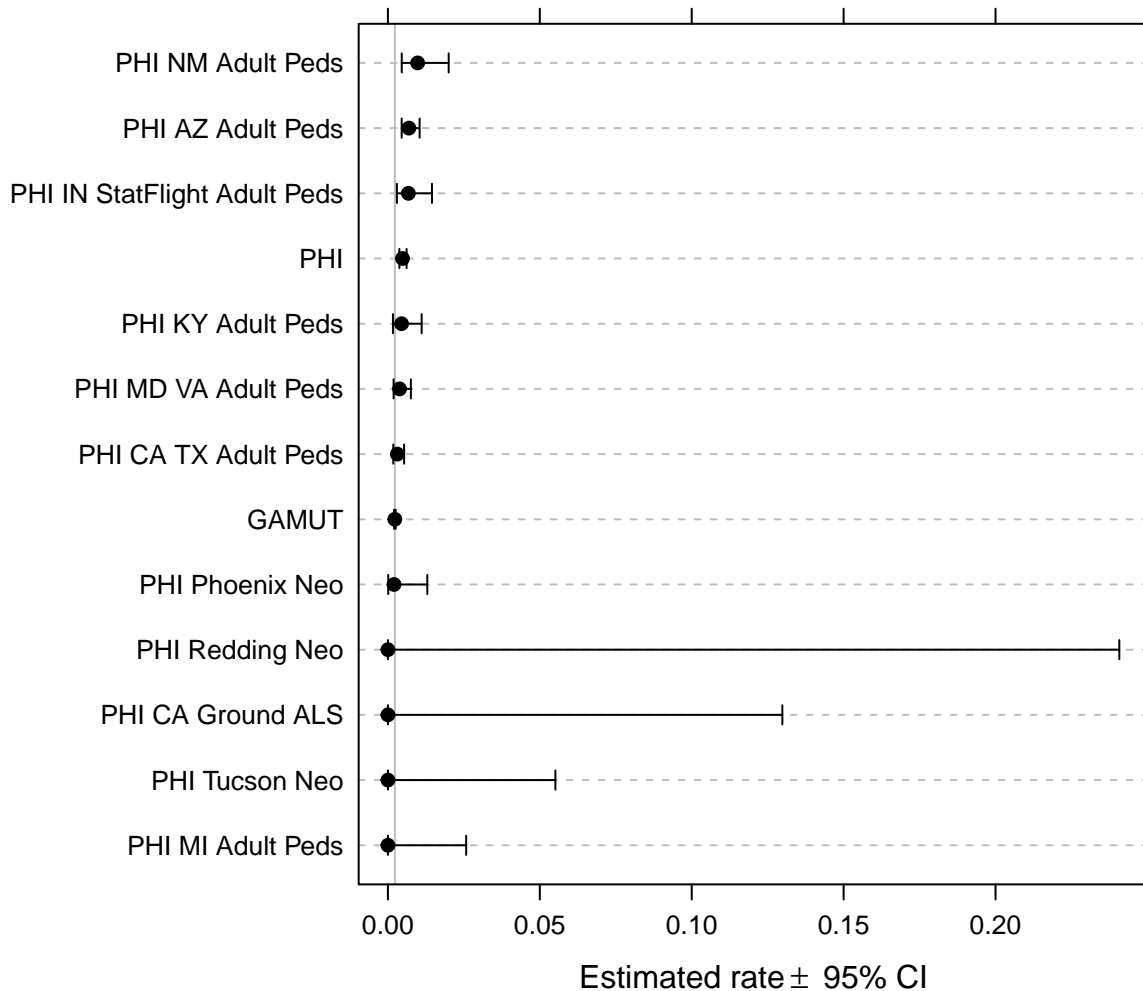


group	num	den	prop
PHI Tucson Neo	2	83	0.0240964
PHI IN StatFlight Adult Peds	18	1038	0.0173410
PHI NM Adult Peds	12	817	0.0146879
PHI AZ Adult Peds	41	3474	0.0118020
PHI KY Adult Peds	12	1112	0.0107914
PHI	138	14118	0.0097748
PHI CA TX Adult Peds	44	4518	0.0097388
GAMUT	855	127425	0.0067098
PHI Phoenix Neo	3	497	0.0060362
PHI MD VA Adult Peds	6	2345	0.0025586
PHI CA Ground ALS	0	33	0.0000000
PHI MI Adult Peds	0	182	0.0000000
PHI Redding Neo	0	19	0.0000000



## Device dislodgement

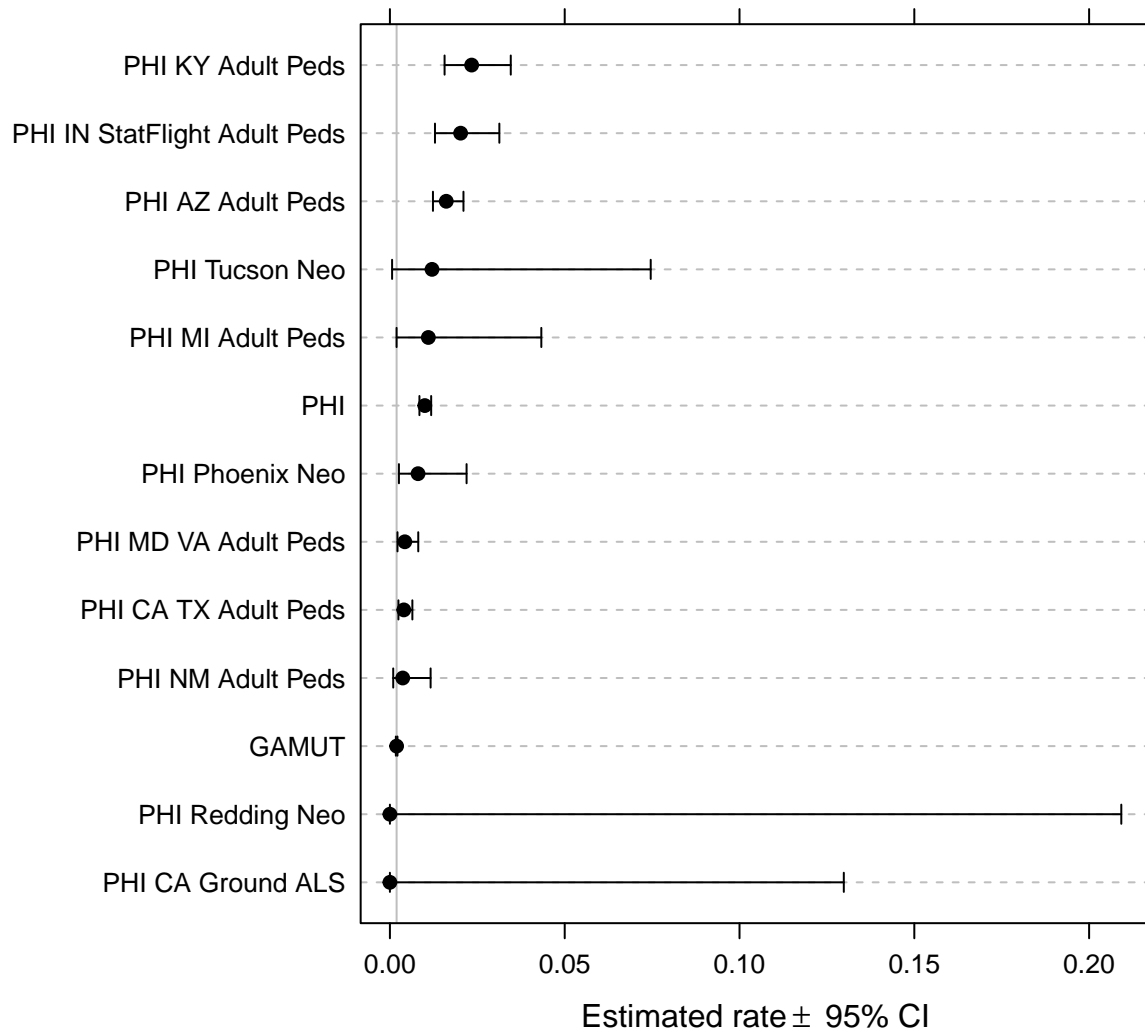
*Unplanned dislodgements of therapeutic devices per 1000 patient transport contacts*



group	num	den	prop
PHI NM Adult Peds	8	817	0.0097919
PHI AZ Adult Peds	24	3474	0.0069085
PHI IN StatFlight Adult Peds	7	1038	0.0067437
PHI	68	14115	0.0048176
PHI KY Adult Peds	5	1112	0.0044964
PHI MD VA Adult Peds	9	2345	0.0038380
PHI CA TX Adult Peds	14	4518	0.0030987
GAMUT	315	137937	0.0022837
PHI Phoenix Neo	1	497	0.0020121
PHI CA Ground ALS	0	33	0.0000000
PHI MI Adult Peds	0	182	0.0000000
PHI Redding Neo	0	16	0.0000000
PHI Tucson Neo	0	83	0.0000000

## Medication errors

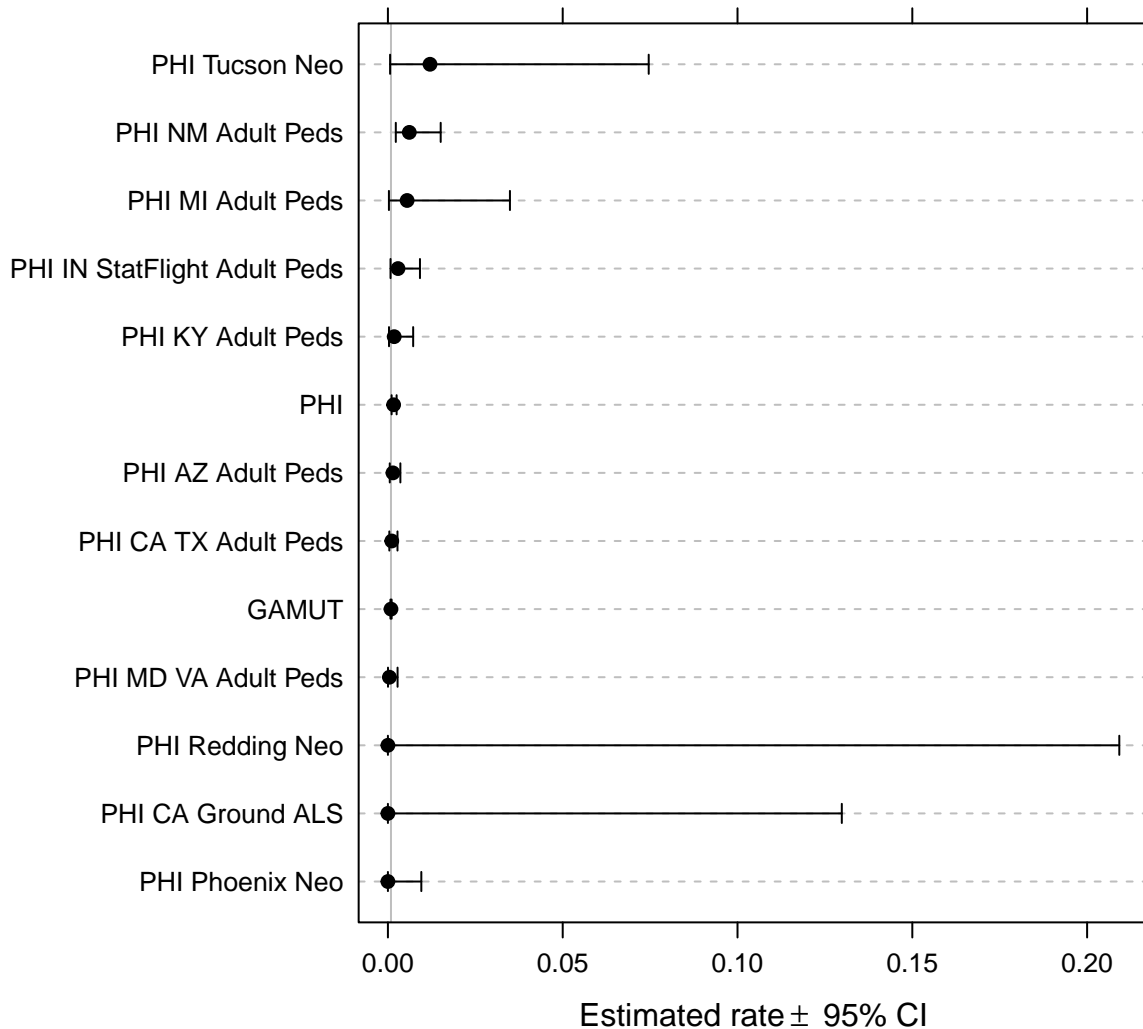
*Medication errors per 10,000 patient transport contacts.*



group	num	den	prop
PHI KY Adult Peds	26	1112	0.0233813
PHI IN StatFlight Adult Peds	21	1038	0.0202312
PHI AZ Adult Peds	56	3474	0.0161197
PHI Tucson Neo	1	83	0.0120482
PHI MI Adult Peds	2	182	0.0109890
PHI	141	14118	0.0099873
PHI Phoenix Neo	4	497	0.0080483
PHI MD VA Adult Peds	10	2345	0.0042644
PHI CA TX Adult Peds	18	4518	0.0039841
PHI NM Adult Peds	3	817	0.0036720
GAMUT	277	144614	0.0019154
PHI CA Ground ALS	0	33	0.0000000
PHI Redding Neo	0	19	0.0000000

## Serious Reportable Events

*Serious Reportable Events per 10,000 patient transport contacts*



group	num	den	prop
PHI Tucson Neo	1	83	0.0120482
PHI NM Adult Peds	5	817	0.0061200
PHI MI Adult Peds	1	182	0.0054945
PHI IN StatFlight Adult Peds	3	1038	0.0028902
PHI KY Adult Peds	2	1112	0.0017986
PHI	23	14118	0.0016291
PHI AZ Adult Peds	5	3474	0.0014393
PHI CA TX Adult Peds	5	4518	0.0011067
GAMUT	109	124371	0.0008764
PHI MD VA Adult Peds	1	2345	0.0004264
PHI CA Ground ALS	0	33	0.0000000
PHI Phoenix Neo	0	497	0.0000000
PHI Redding Neo	0	19	0.0000000

**Transport-related patient mishaps**

## insufficient data

**Adverse Drug Events**

## insufficient data

## References

GAMUT quality improvement data were collected and managed using REDCap electronic data capture tools hosted by AMPA. REDCap (Research Electronic Data Capture) is a secure, web-based application designed to support data capture for research studies and quality improvement projects, providing 1) an intuitive interface for validated data entry; 2) audit trails for tracking data manipulation and export procedures; 3) automated export procedures for seamless data downloads to common statistical packages; and 4) procedures for importing data from external sources (Harris et al. 2009).

The GAMUT summary report was produced using the R (R Core Team 2016) statistical programming language and RStudio (RStudio Team 2016) with the R packages REDCapR (Beasley 2015), knitr (Xie 2016), dplyr (Wickham and Francois 2016), rmarkdown (Allaire et al. 2016), beeswarm (Eklund 2016), and qicharts (Anhoej 2016).

---

Allaire, JJ, Joe Cheng, Yihui Xie, Jonathan McPherson, Winston Chang, Jeff Allen, Hadley Wickham, Aron Atkins, and Rob Hyndman. 2016. *Rmarkdown: Dynamic Documents for R*. <http://rmarkdown.rstudio.com>.

Anhoej, Jacob. 2016. *Qicharts: Quality Improvement Charts*. <https://CRAN.R-project.org/package=qicharts>.

Beasley, Will. 2015. *REDCapR: Interaction Between R and Redcap*. <https://CRAN.R-project.org/package=REDCapR>.

Eklund, Aron. 2016. *Beeswarm: The Bee Swarm Plot, an Alternative to Stripchart*. <https://CRAN.R-project.org/package=beeswarm>.

Harris, Paul A., Robert Taylor, Robert Thielke, Jonathon Payne, Nathaniel Gonzalez, and Jose G. Conde. 2009. "Research Electronic Data Capture (REDCap) "A Metadata-Driven Methodology and Workflow Process for Providing Translational Research Informatics Support." *Journal of Biomedical Informatics* 42 (2): 377–81. doi:10.1016/j.jbi.2008.08.010.

R Core Team. 2016. *R: A Language and Environment for Statistical Computing*. Vienna, Austria: R Foundation for Statistical Computing. <https://www.R-project.org/>.

RStudio Team. 2016. *RStudio: Integrated Development Environment for R*. Boston, MA: RStudio, Inc. <http://www.rstudio.com/>.

Wickham, Hadley, and Romain Francois. 2016. *Dplyr: A Grammar of Data Manipulation*. <https://CRAN.R-project.org/package=dplyr>.

Xie, Yihui. 2016. *Knitr: A General-Purpose Package for Dynamic Report Generation in R*. <http://yihui.name/knitr/>.