

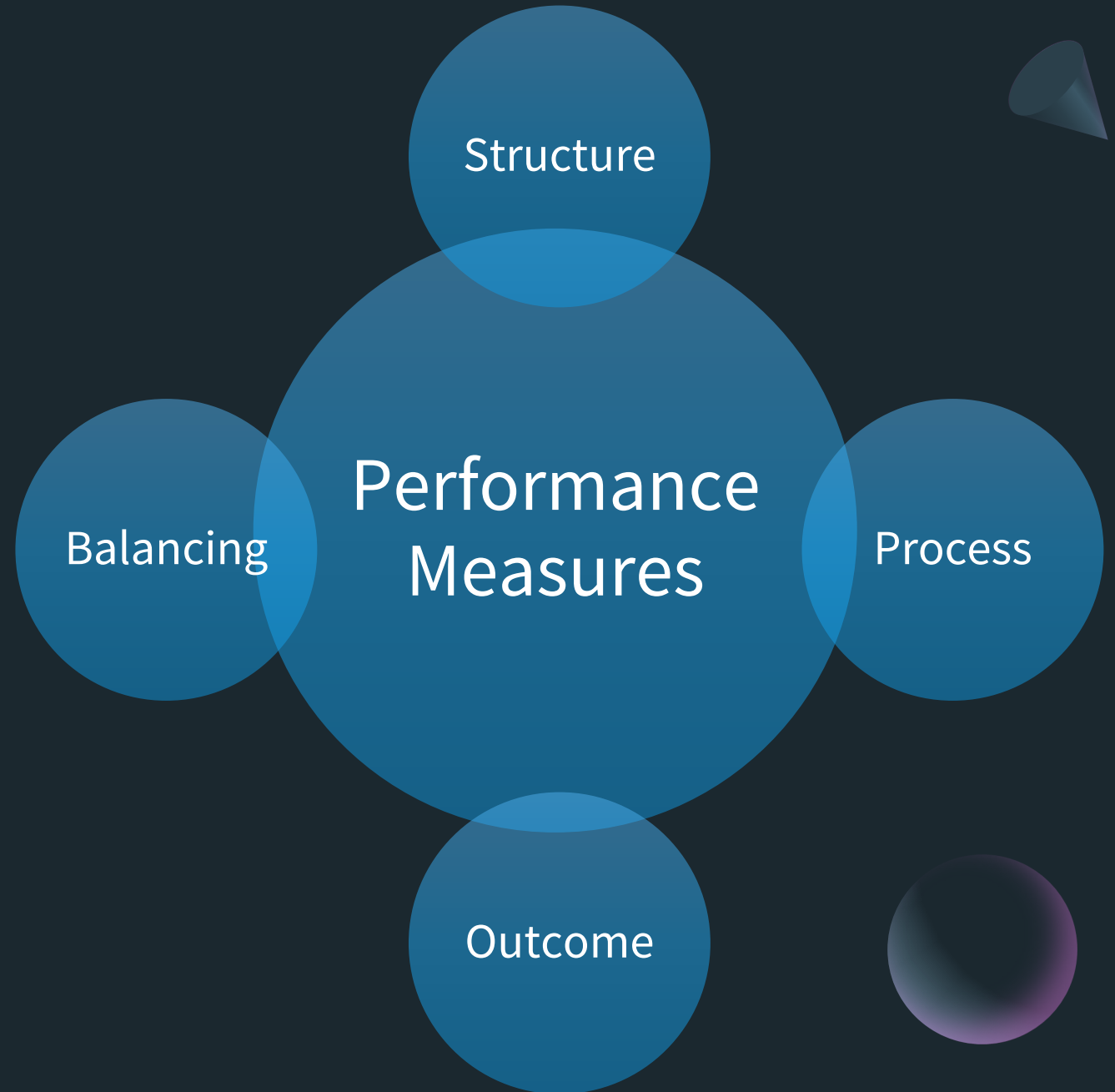
Benchmarking Clinical Performance with NEMSQA

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What's a Measure?



What makes a good measure?



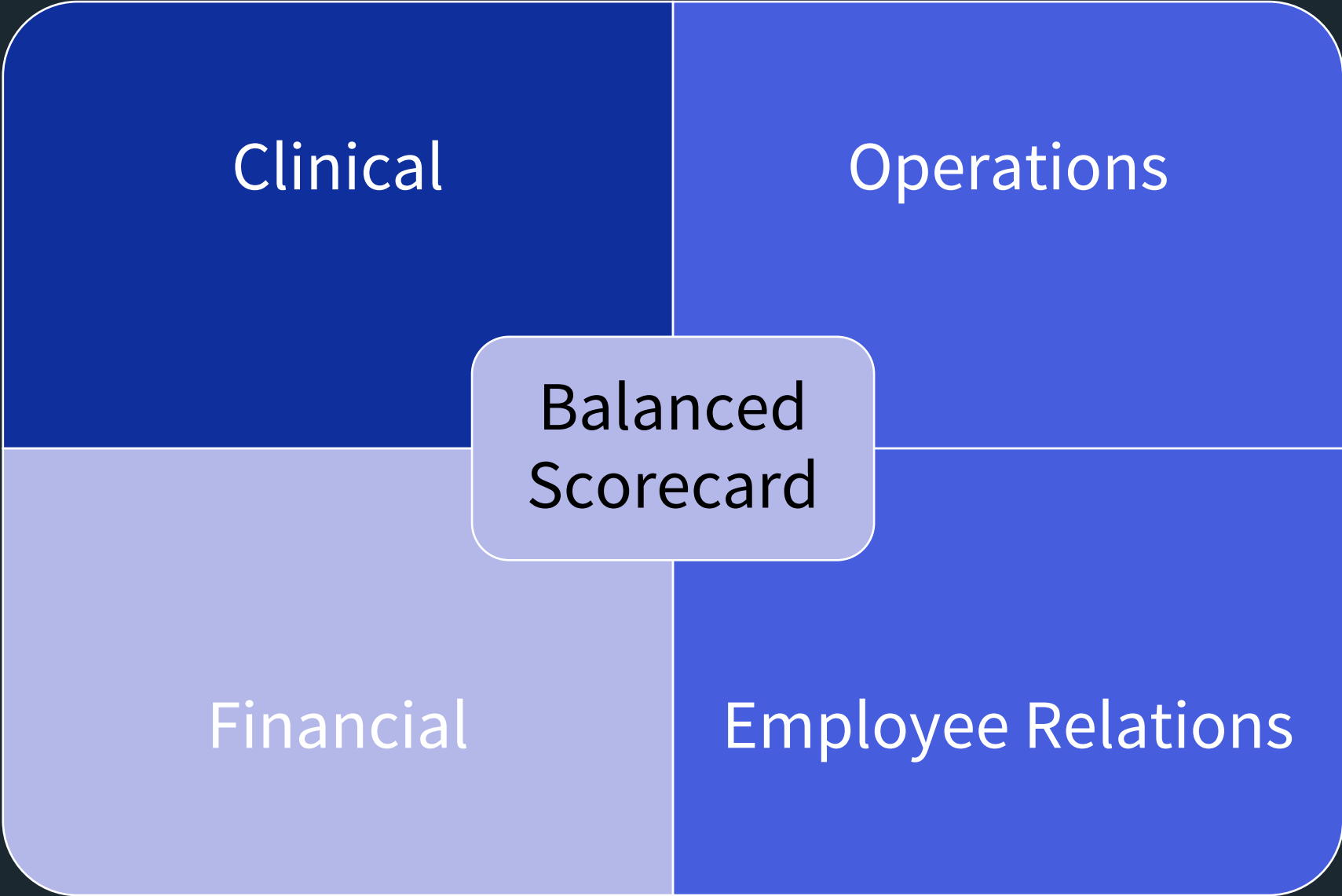
Measurable



Manageable

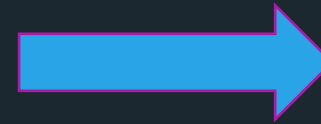


Meaningful



Benchmarking





Steering Committee

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International Association of Fire Chiefs, Chief Mike McEvoy, PhD, NRP, RN, CCRN,
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The Paramedic Foundation, Nick Nudell, MS, NRP, FACPE

NEMSQA Measures, 2019

Measure ID	Description	Type	National Quality Strategy Domain
Hypoglycemia-01	Treatment Administered for Hypoglycemia	Process	Clinical Process – Effectiveness
Pediatrics-01	Pediatric Respiratory Assessment	Process	Clinical Process – Effectiveness
Pediatrics-02	Administration of Beta Agonist for Pediatric Asthma	Process	Clinical Process – Effectiveness
Pediatrics-03	Documentation of Estimated Weight in Kilograms	Process	Patient Safety
Seizure-02	Patient with Status Epilepticus Receiving Intervention	Process	Clinical Process – Effectiveness
Stroke-01	Suspected Stroke Receiving Prehospital Stroke Assessment	Process	Clinical Process – Effectiveness
Trauma-01	Injured Patients Assessed for Pain	Process	Patient Experience
Trauma-03	Effectiveness of Pain Management for Injured Patients	Outcome	Patient Experience
Trauma-04	Trauma Patients Transported to a Trauma Center	Process	Clinical Process – Effectiveness
Safety-01	Use of Lights and Sirens During Response to Scene	Process	Patient Safety
Safety-02	Use of Lights and Sirens During Transport	Process	Patient Safety

2019 ESO Research Dataset

- January 1, 2019 to December 31, 2019
- Analysis limited to:
 - 911 Responses
 - Consenting agencies
 - NEMSIS v3 records
 - Record originated within ESO
- Metric-wise elimination of agencies with 0%



Dataset Description

- 5,987,715 911 Responses included
- Female 50.6%, median age 58 (36, 74), White 56.4%
- ALS 83%
- Response time 6.8 min (7.6, 18.9)
- Transport time 12.1 min (7.6, 18.9)
- Transported 60.4%, Refusal 5.5%, Cancelled 11.7%
- Medical 74.4%



Hypoglycemia 0-1

- Numerator:
 - Received some form of glucose
- Denominator:
 - Impression = Altered Mental Status + BGL < 60
 - OR
 - Impression = Hypoglycemia + GCS < 15



Definition of terms

AMS = c("altered level of consciousness", "altered mental status", "altered mental status, unspecified", "coma", "coma, unknown cause", "confusion/delirium", "disorientation, unspecified", "unconscious", "unspecified coma")

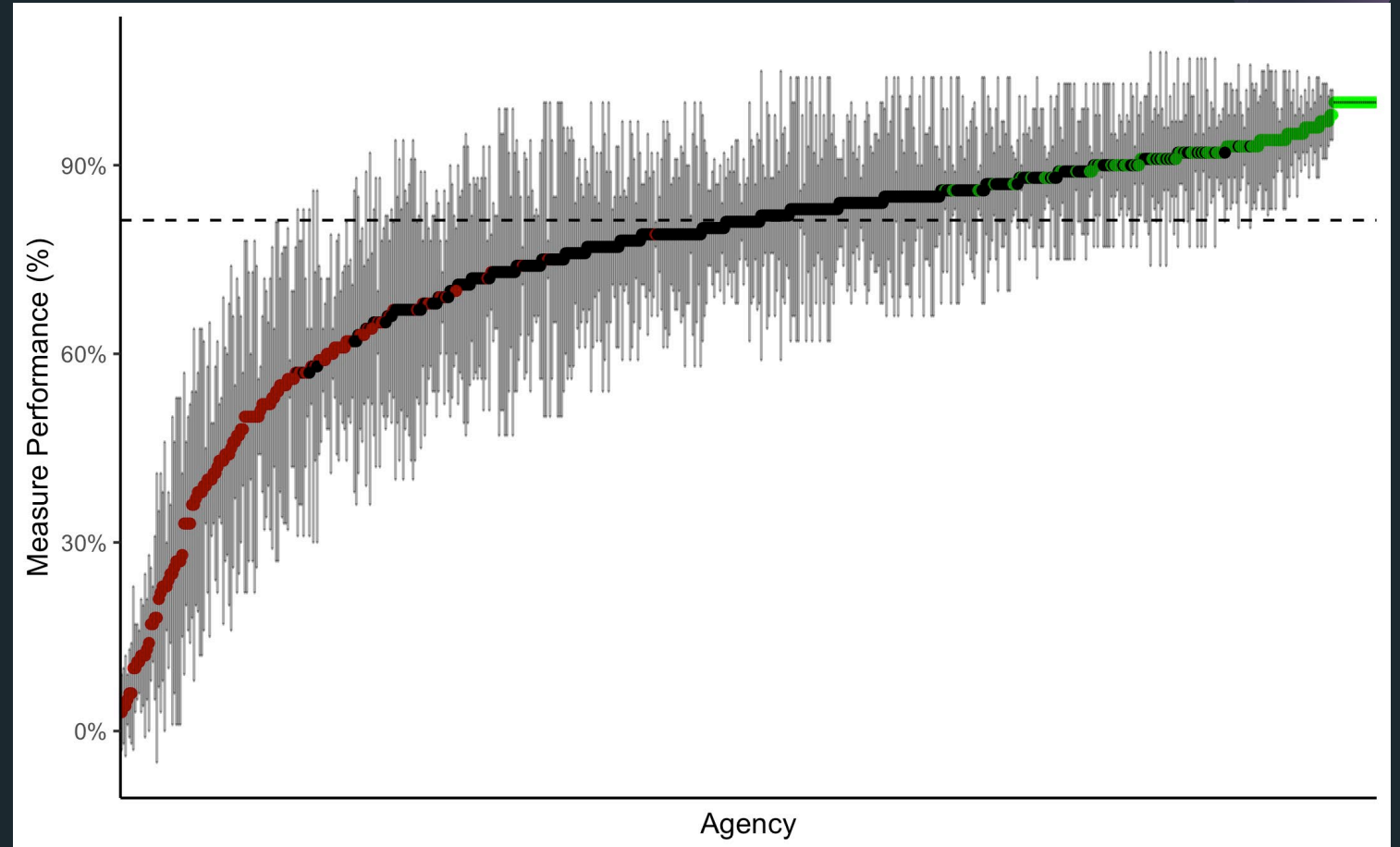
Hypoglycemia = c("diabetic hypoglycemia", "diabetic symptoms", "hypoglycemia (not diabetic)", "hypoglycemia, unspecified", "other specified diabetes mellitus with unspecified complications", "other specified diabetes mellitus with hypoglycemia")



Hypoglycemia

O-1

- Agencies: 991
- Patients: 49,301
- Median: 81.3% (66.7%, 91.3%)
- Mean: 76.2% (.21)



Pediatrics 0-1 (Respiratory Assessment)

- Numerator:
 - At least one RR and SpO2
- Denominator:
 - Impression = dsypnea
 - Age < 18

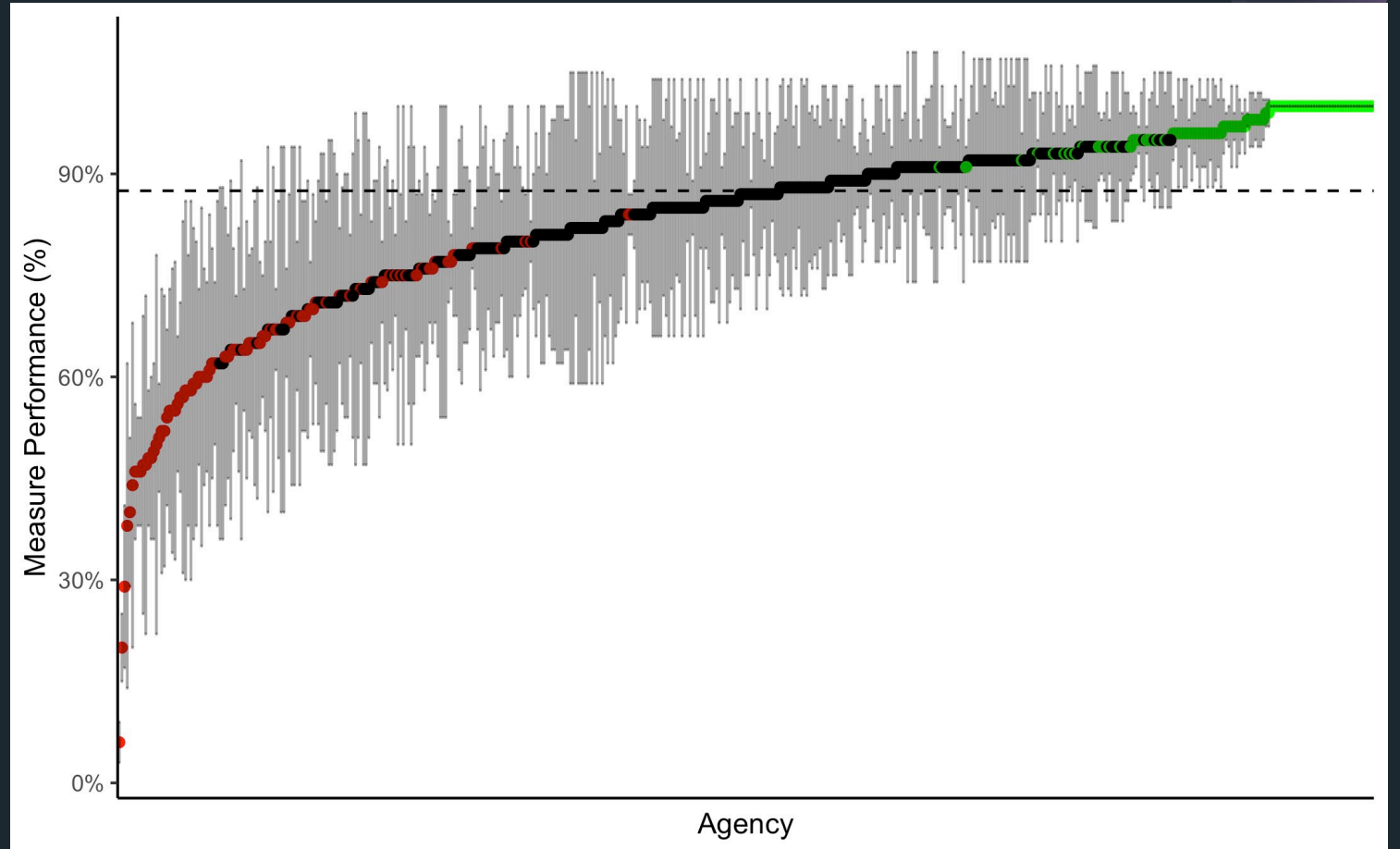


Definition of terms

Dyspnea = "abnormalities of breathing", "acute bronchitis", "acute bronchospasm", "acute epiglottitis", "acute epiglottitis without obstruction", "acute on chronic combined systolic (congestive) and diastolic (congestive) heart failure", "acute respiratory distress (dyspnea)", "acute upper respiratory infection, unspecified", "acute respiratory failure", "airway obstruction", "asthma", "atelectasis", "carbon monoxide poisoning", "chf (congestive heart failure)", "cough", "chronic obstructive pulmonary disease (copd)", "chronic obstructive pulmonary disease with (acute) exacerbation", "chronic obstructive pulmonary disease, unspecified", "congestive heart failure (chf)", "dyspnea", "dyspnea, unspecified", "emphysema/copd", "heart failure, unspecified", "laryngeal spasm", "laryngitis/croup", "other abnormalities of breathing", "other respiratory", "pneumonia", "pulmonary edema", "pulmonary edema, acute", "pulmonary embolism", "respiratory arrest", "respiratory condition due to chemicals, gases, fumes, and vapors", "respiratory disorder", "respiratory disorder, unspecified", "respiratory distress", "respiratory distress of newborn", "respiratory failure", "respiratory shock", "respiratory syncytial virus (rsv)", "severe acute respiratory syndrome (sars)", "shortness of breath", "wheezing", "foreign body in respiratory tract", "foreign body in trachea", "pneumonia", "pneumonia, unspecified organism", "pneumothorax", "pneumothorax (traumatic)"

Pediatric 0-1

- Agencies: 968
- Patients: 32,811
- Median: 87.5% (74.3%, 100%)
- Mean: 82.2% (.18)



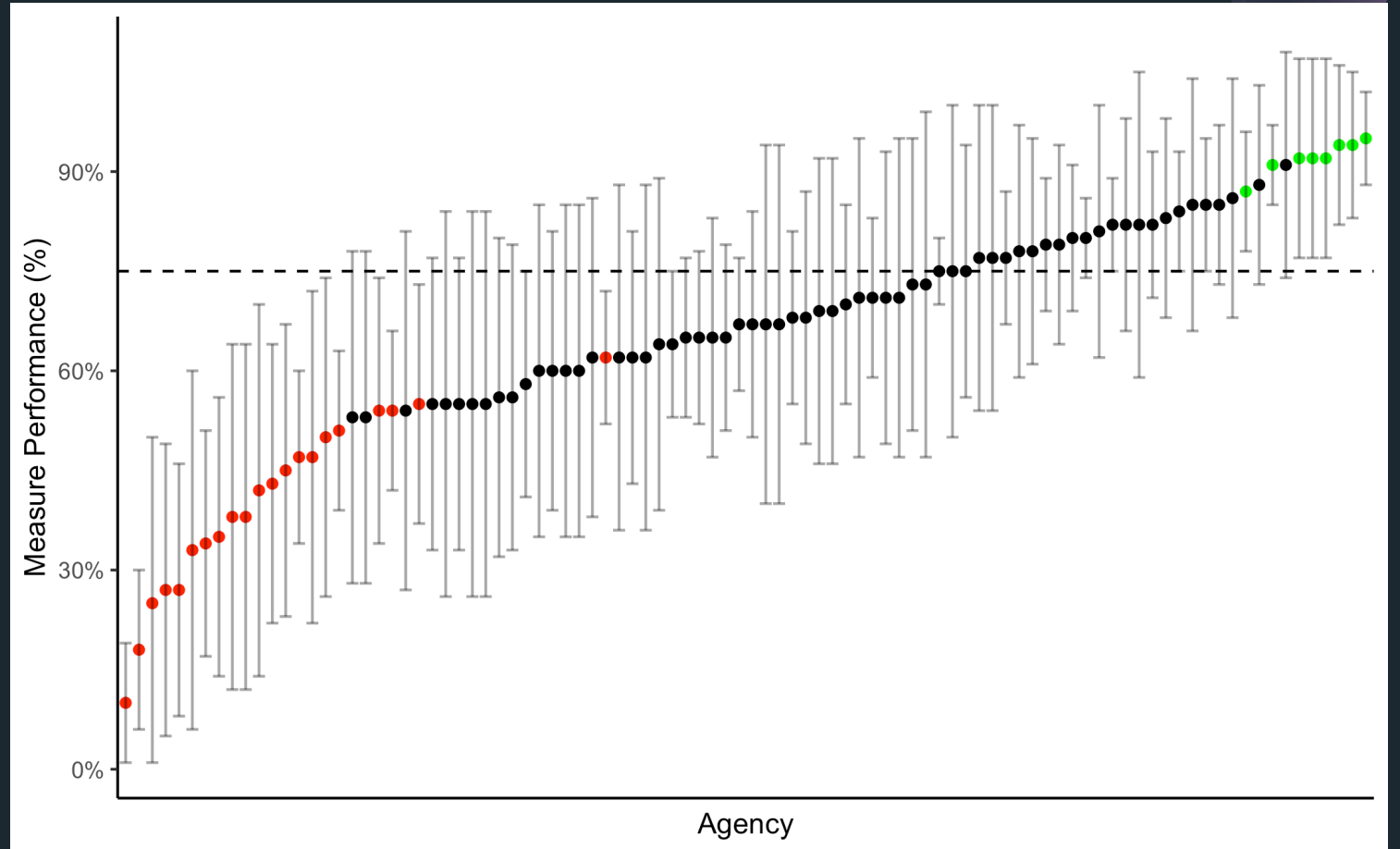
Pediatrics 0-2 (Asthma treatment)

- Numerator:
 - Received an inhaled beta-agonist medication
- Denominator:
 - Impression = asthma or bronchospasm
 - Age=> 2 and < 18



Pediatric 0-2

- Agencies: 496
- Patients: 4,447
- Median: 75% (50%, 100%)
- Mean: 73.3% (.25)



Pediatrics 0-3 (Weight documentation)

- Numerator:
 - Have a documented weight
- Denominator:
 - Received a weight-based medication
 - Age < 18

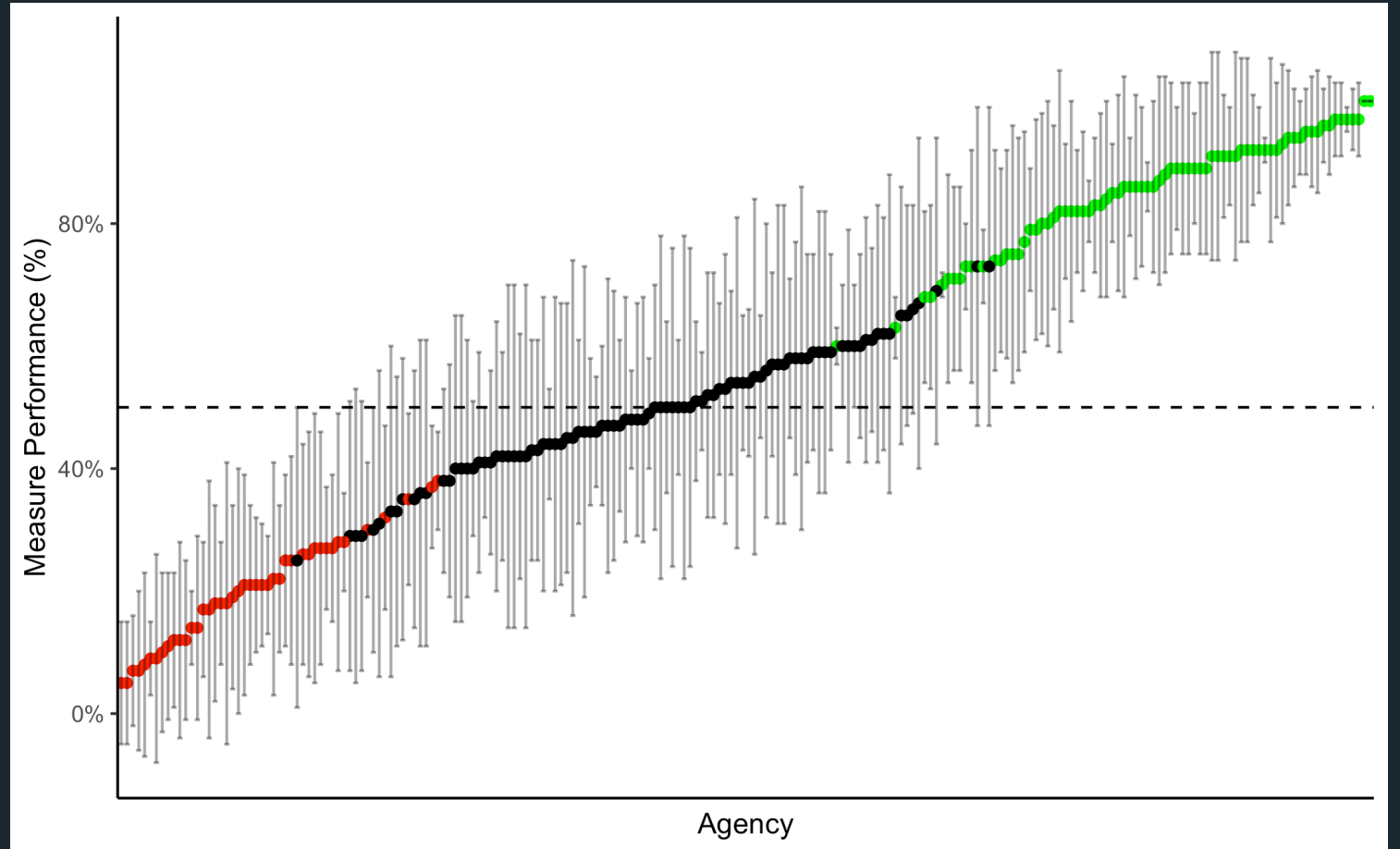


Definition of terms

Weight-based medication = "acetaminophen", "activated charcoal", "adenosine", "amidate", "aminophylline", "amiodarone", "amiodarone infusion", "ancef", "anectine", "aspirin", "ativan", "atropine", "benadryl", "blood", "calcium chloride", "calcium gluconate", "cardizem", "cefazolin", "clindamycin", "compazine", "decadron", "demerol", "dexamethasone", "dextrose 10%", "dextrose 25%", "dextrose 5%", "dextrose 50%", "diastat", "diazepam", "dilaudid", "diltiazem", "diphenhydramine", "diprivan infusion", "dopamine", "droperidol", "epi 1:100000", "epi pen", "epi pen jr", "epinephrine 0.1 mg/ml", "epinephrine 1:1", "epinephrine 1:10", "epinephrine infusion", "etomidate", "famotidine", "fentanyl", "geodon", "glucagon", "haloperidol", "hydroxocobalamin", "ibuprofen", "insulin", "insulin drip", "ketamine", "ketorolac", "labetalol", "lasix", "levetiracetam (keppra)", "levophed", "lidocaine", "lidocaine 2%", "lorazepam", "magnesium sulfate", "magnesium sulfate infusion", "methylprednisolone", "metoclopramide", "midazolam", "morphine", "naloxone", "narcain", "neosynephrine", "nitroglycerin", "norcuron", "norepinephrine", "nubain", "ofirmev", "ondansetron", "phenergan", "phenobarbital", "potassium", "potassium chloride", "prednisolone", "prednisone", "procainamide", "promethazine", "propofol", "protonix infusion", "racemic epinephrine", "ranitidine", "reglan", "rocephin", "rocuronium", "romazicon", "sodium bicarb 4.2%", "sodium bicarb 8.4%", "sodium bicarbonate 7.5%", "solu-medrol", "stadol", "succinylcholine", "terbutaline", "tetracaine", "thiamine", "toradol", "tramadol", "tranexamic acid (txa)", "triaminic", "tylenol", "valium", "vancomycin", "vecuronium", "verapamil", "versed", "versed drip", "whole blood", "zithromax", "zofran", "zosyn", "zyprexa"

Pediatric 0-3

- Agencies: 808
- Patients: 24,727
- Median: 100% (50%, 100%)
- Mean: 76.8% (.25)



Seizure 0-2 (Seizure treatment)

- Numerator:
 - Received a benzodiazepine
- Denominator:
 - Impression = “seizures with status epilepticus”



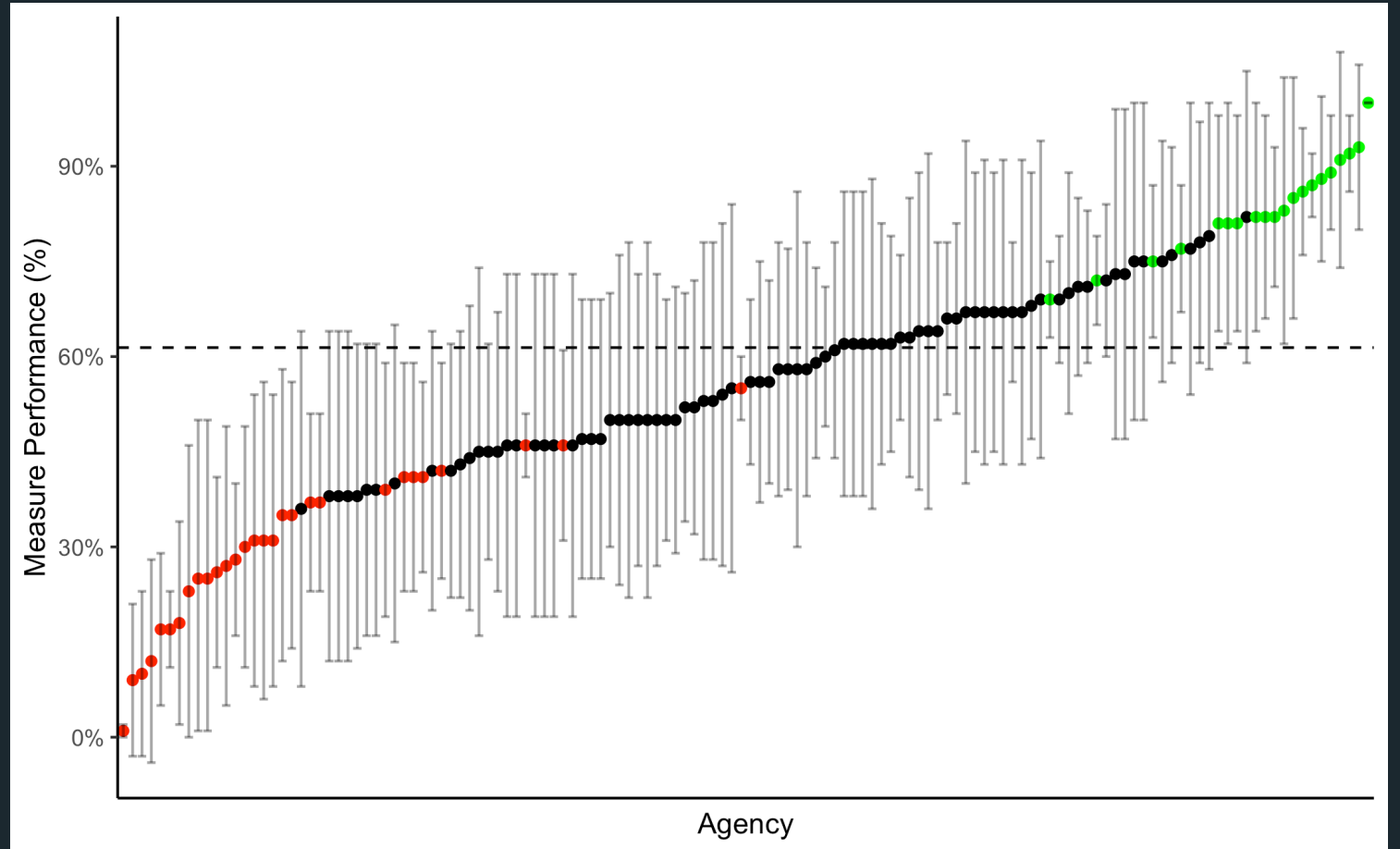
Definition of terms

Benzodiazepine = "ativan", "alprazolam", "diastat", "diazepam", "librium", "lorazepam", "midazolam", "valium", "versed"



Seizure 0-2

- Agencies: 556
- Patients: 6,521
- Median: 64.4% (46.2%, 100%)
- Mean: 63.9% (.27)



Stroke 0-1 (Stroke scale performed)

- Numerator:
 - Had any documented stroke scale
- Denominator:
 - Impression = stroke AND
 - Lowest GCS >9



Definition of terms

Stroke scale performed = any component of:

Cincinnati Stroke Scale

FAST

LAMS

LA Prehospital Stroke Scale

MENDS

RACE

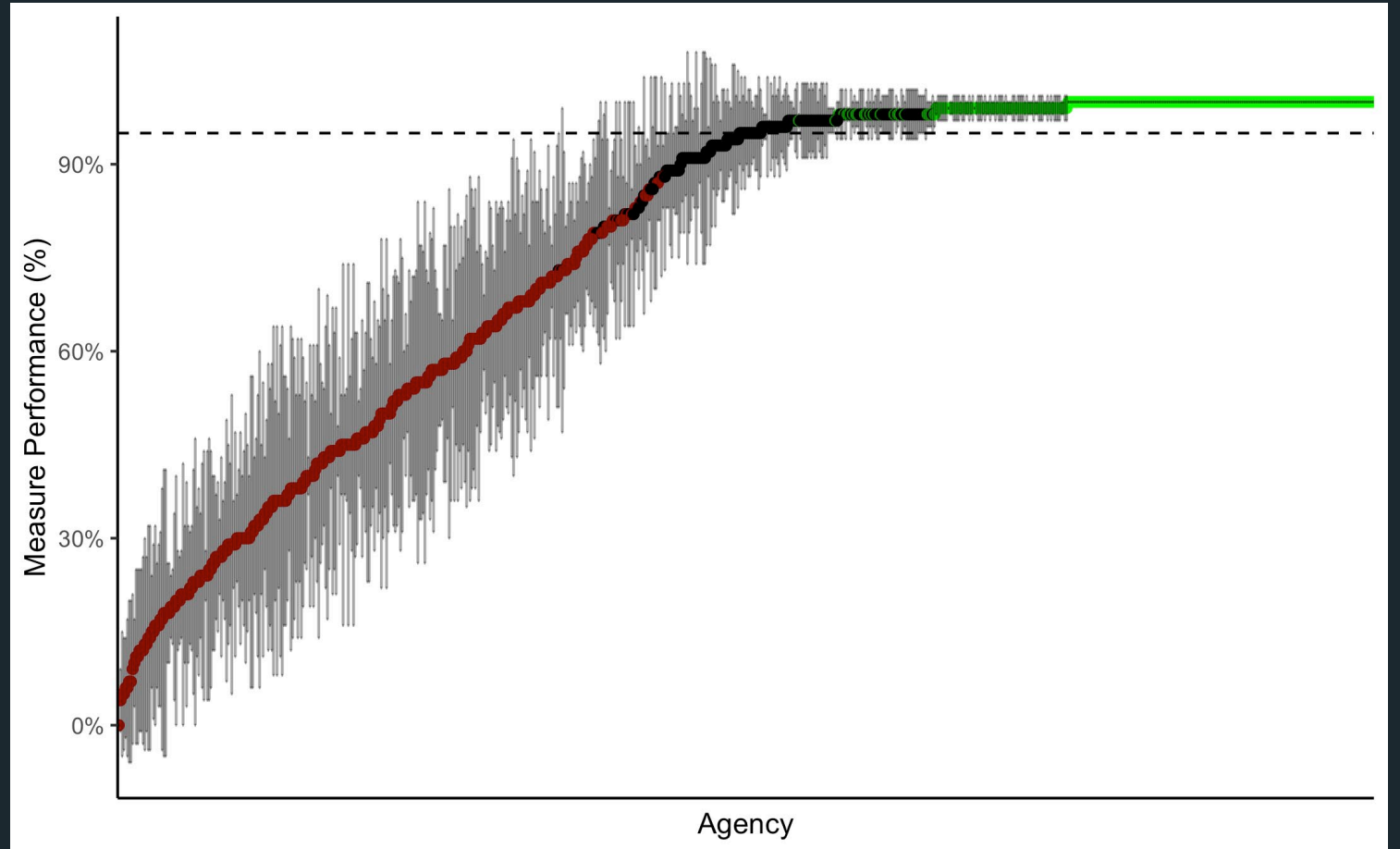
VAN

Stroke = "stroke", "stroke / cva", "tia", "transient cerebral ischemic attack (tia)", "transient cerebral ischemic attack, unspecified"



Stroke 0-1

- Agencies: 975
- Patients: 78,771
- Median: 95% (55.1%, 100%)
- Mean: 77.2% (.28)



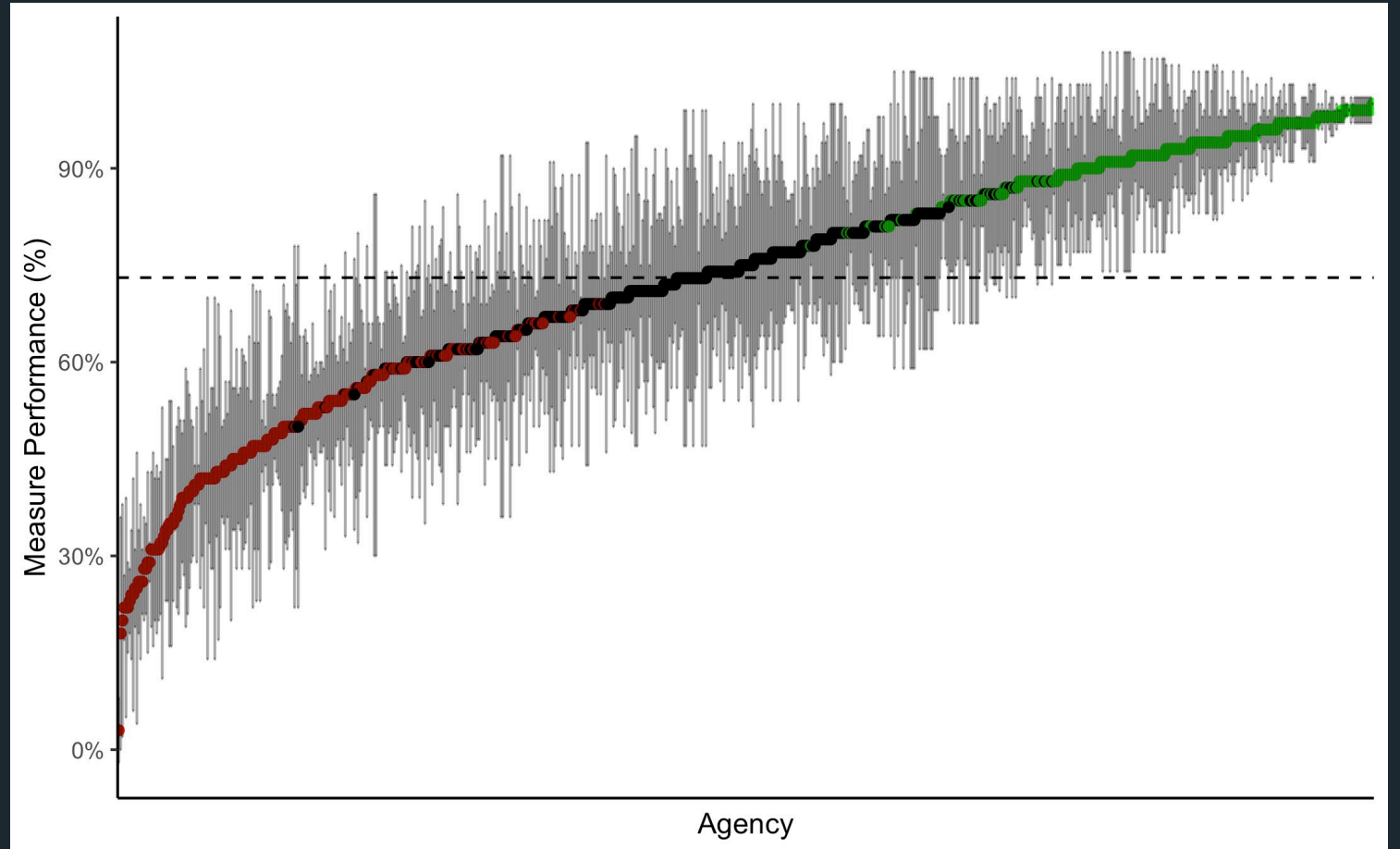
Trauma 0-1 (Pain assessment)

- Numerator:
 - Had at least one pain scale documented
- Denominator:
 - Injured OR narrative.medical_trauma = trauma
 - Lowest GCS = 15



Trauma 0-1

- Agencies: 1,011
- Patients: 99,026
- Median: 80% (62.5%,96.0%)
- Mean: 76.8% (0.2)



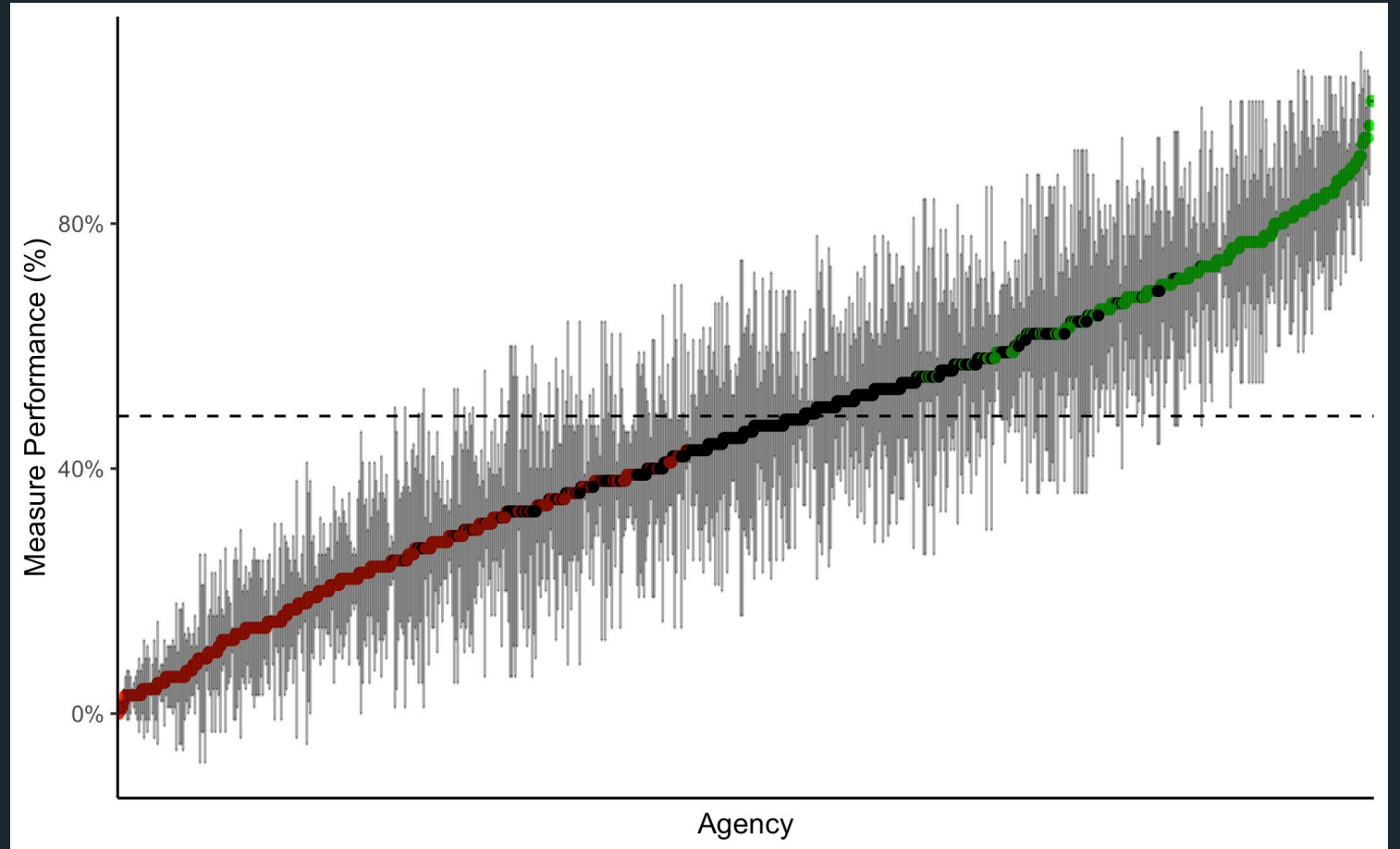
Trauma 0-2 (Pain reassessment)

- Numerator:
 - Had more than one pain scale documented
- Denominator:
 - Injured OR narrative.medical_trauma = trauma
 - Lowest GCS = 15



Trauma 0-2

- Agencies: 934
- Patients: 98,080
- Median: 48.6% (29.7%, 66.7%)
- Mean: 48.2% (.24)



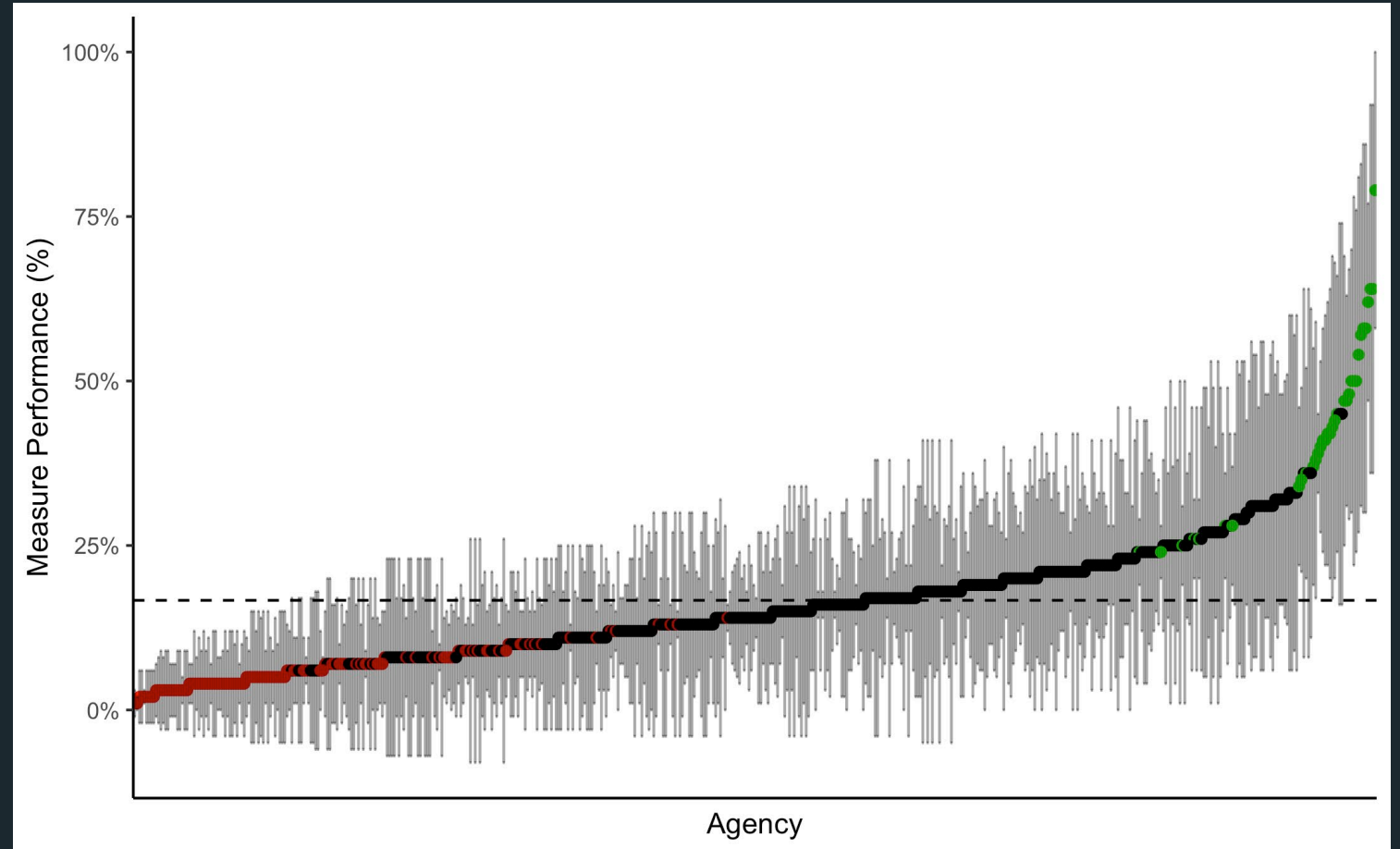
Trauma 0-3 (Pain reduction)

- Numerator:
 - Last pain score < first pain score
- Denominator:
 - Injured OR narrative.medical_trauma = trauma
 - Lowest GCS = 15
 - Transported



Trauma 0-3

- Agencies: 698
- Patients: 42,415
- Median: 16.7% (10%, 26.6%)
- Mean: 21.9% (.18)



Trauma 0-4 (Transport to trauma center)

- Numerator:
 - Transported to any level trauma center
- Denominator:
 - Injured OR narrative.medical_trauma = trauma
 - Transported
 - CDC Trauma Triage Step 1 or Step 2 positive



2011 Guidelines for Field Triage of Injured Patients

1

Measure vital signs and level of consciousness

Glasgow Coma Scale	≤13
Systolic Blood Pressure (mmHg)	<90 mmHg
Respiratory Rate	<10 or >29 breaths per minute, or need for ventilatory support (<20 in infant aged <1 year)

NO

Assess anatomy of injury

2

- All penetrating injuries to head, neck, torso, and extremities proximal to elbow or knee
- Chest wall instability or deformity (e.g. flail chest)
- Two or more proximal long-bone fractures
- Crushed, degloved, mangled, or pulseless extremity
- Amputation proximal to wrist or ankle
- Pelvic fractures
- Open or depressed skull fracture
- Paralysis

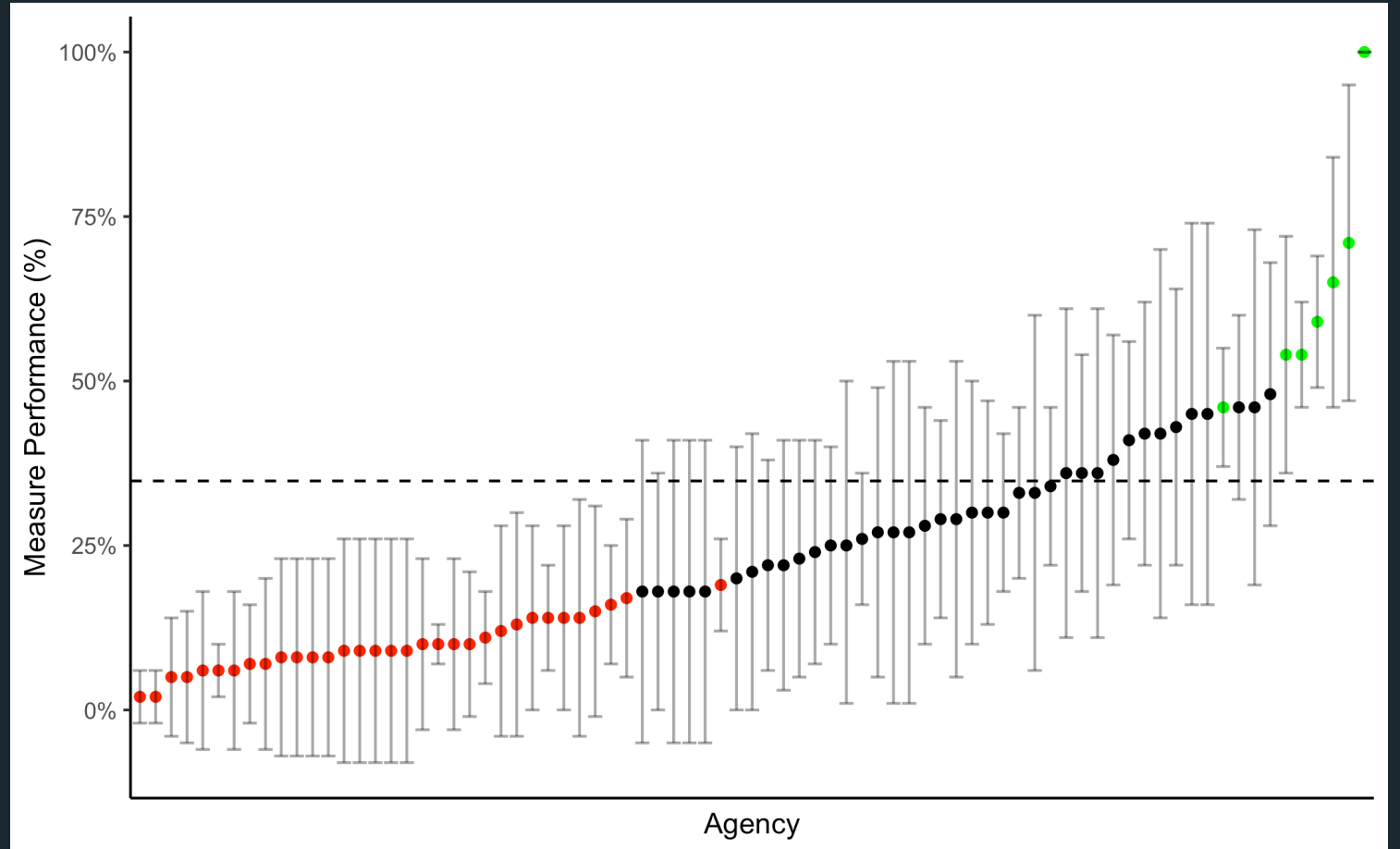
NO

YES

Transport to a trauma center. Steps 1 and 2 attempt to identify the most seriously injured patients. These patients should be transported preferentially to the highest level of care within the defined trauma system.

Trauma 0-4

- Agencies: 244
- Patients: 3,424
- Median: 34.8% (20%, 56.0%)
- Mean: 43.6% (.3%)



Safety 0-1 (Scene response without RLS)

- Numerator:
 - Priority = Non-emergent response
- Denominator:
 - All 911 Responses



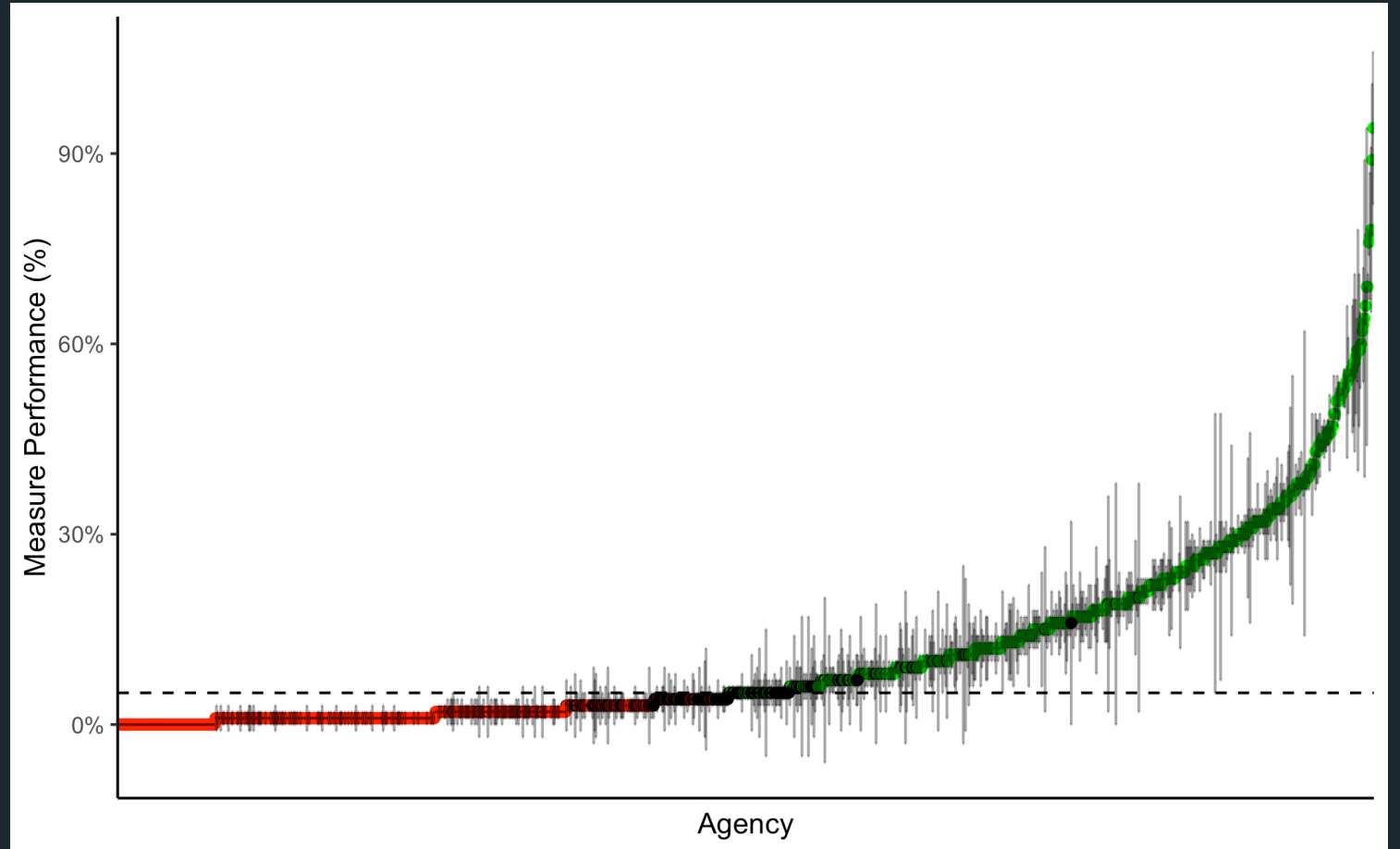
Definition of terms

Non-emergent response = "emergent", "emergent downgraded to non-emergent", "lights/sirens", "lights/sirens, downgraded", "non-emergent upgraded to emergent"



Safety 0-1

- Agencies: 1,172
- Patients: 5,983,866
- Median: 5% (1.5%, 16.7%)
- Mean: 12.% (.16)



Safety 0-2 (Transport without RLS)

- Numerator:
 - Disposition = Non-emergent response
- Denominator:
 - All 911 Responses that are transported



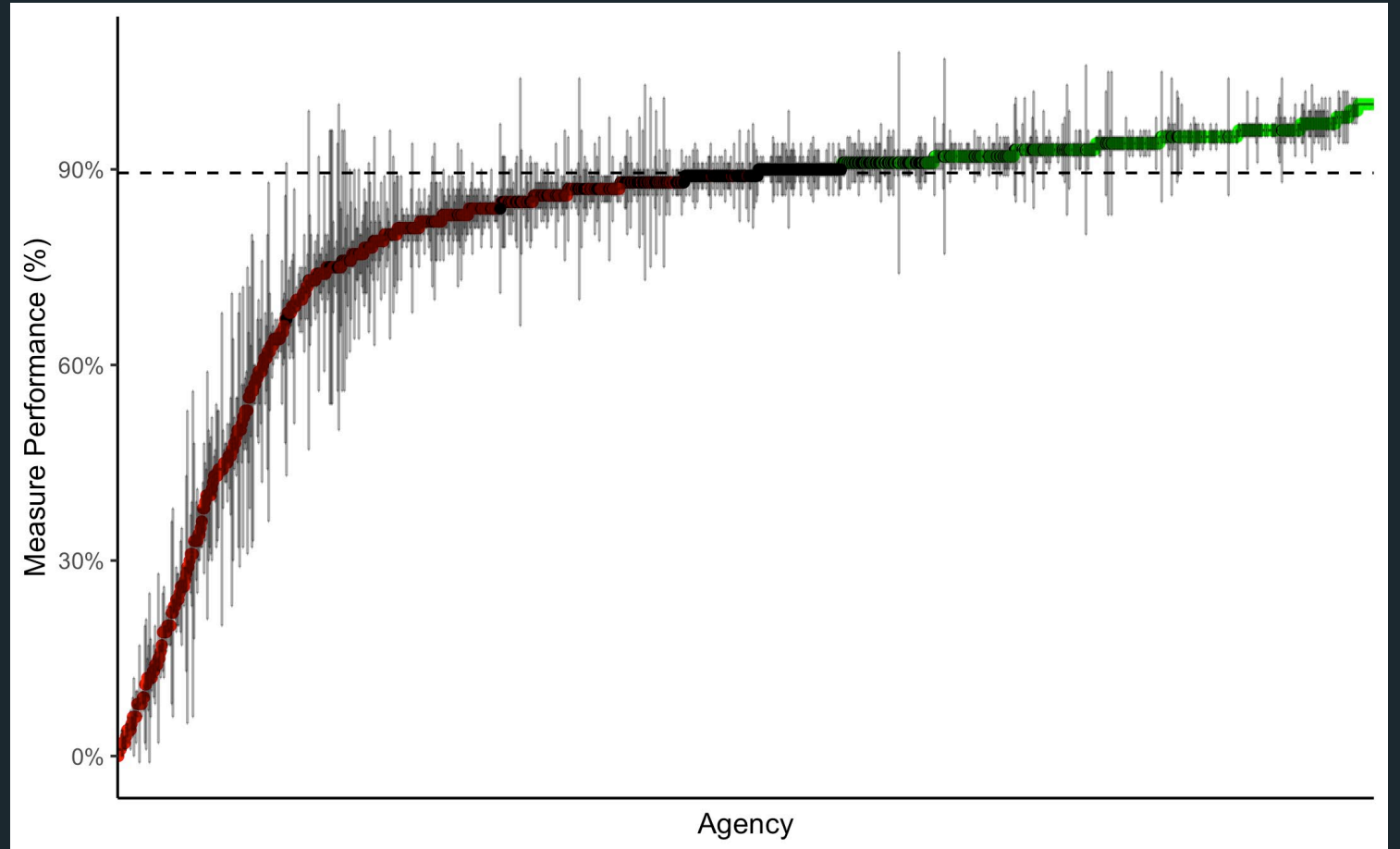
Definition of terms

Non-emergent transports = "transported lights/siren", "transported lights/siren, downgraded",
"transported no lights/siren, upgraded"



Safety 0-2

- Agencies: 1,174
- Patients: 3,612,489
- Median: 89.5% (82.1%, 93.3%)
- Mean: 82.0% (.21)



Next steps

- Continue to improve existing measures
 - Seizures
 - RLS transports
- Develop new measures
 - FAIR project underway now





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