The Pursuit of Excellence: Quality Improvement in EMS

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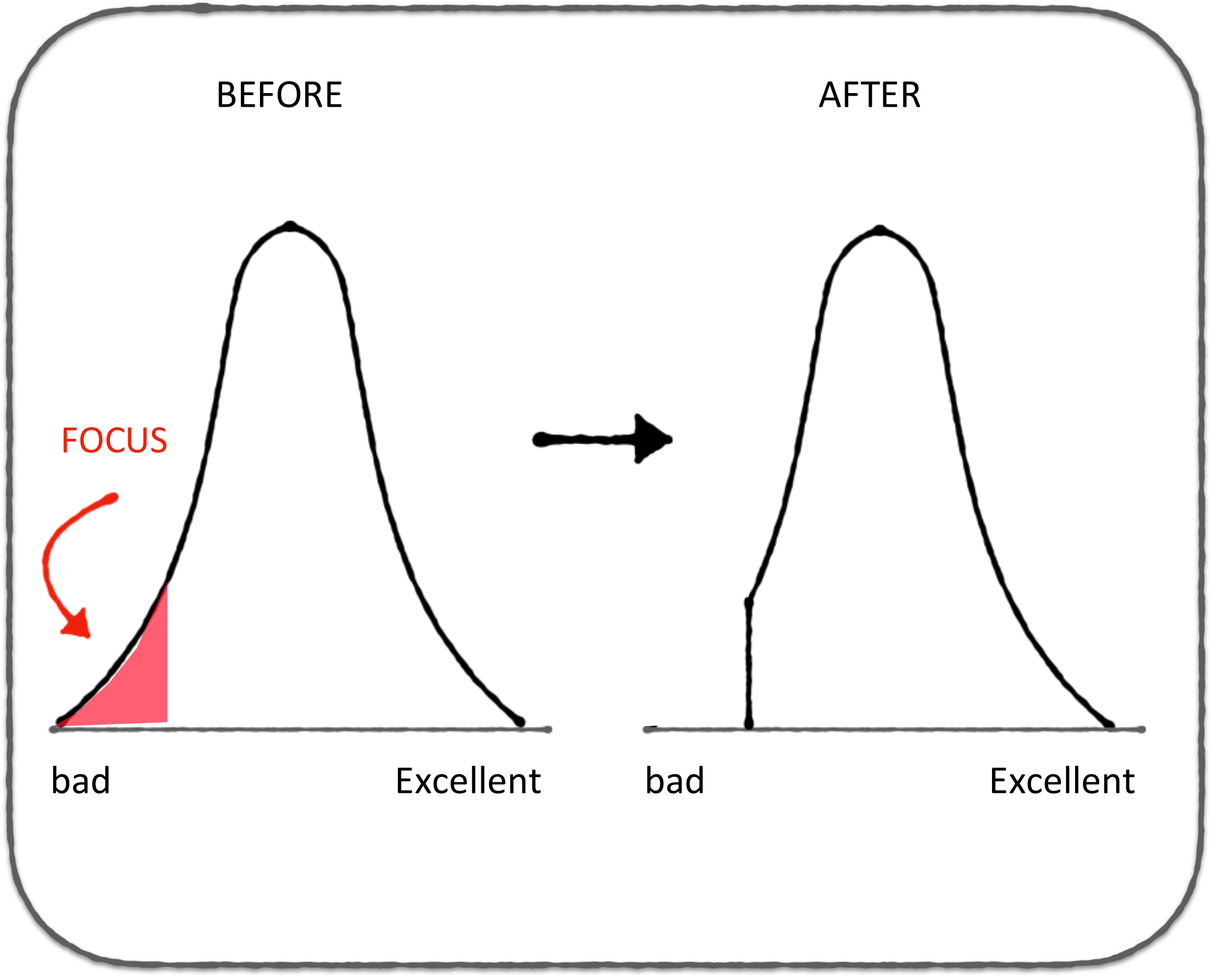
QI System

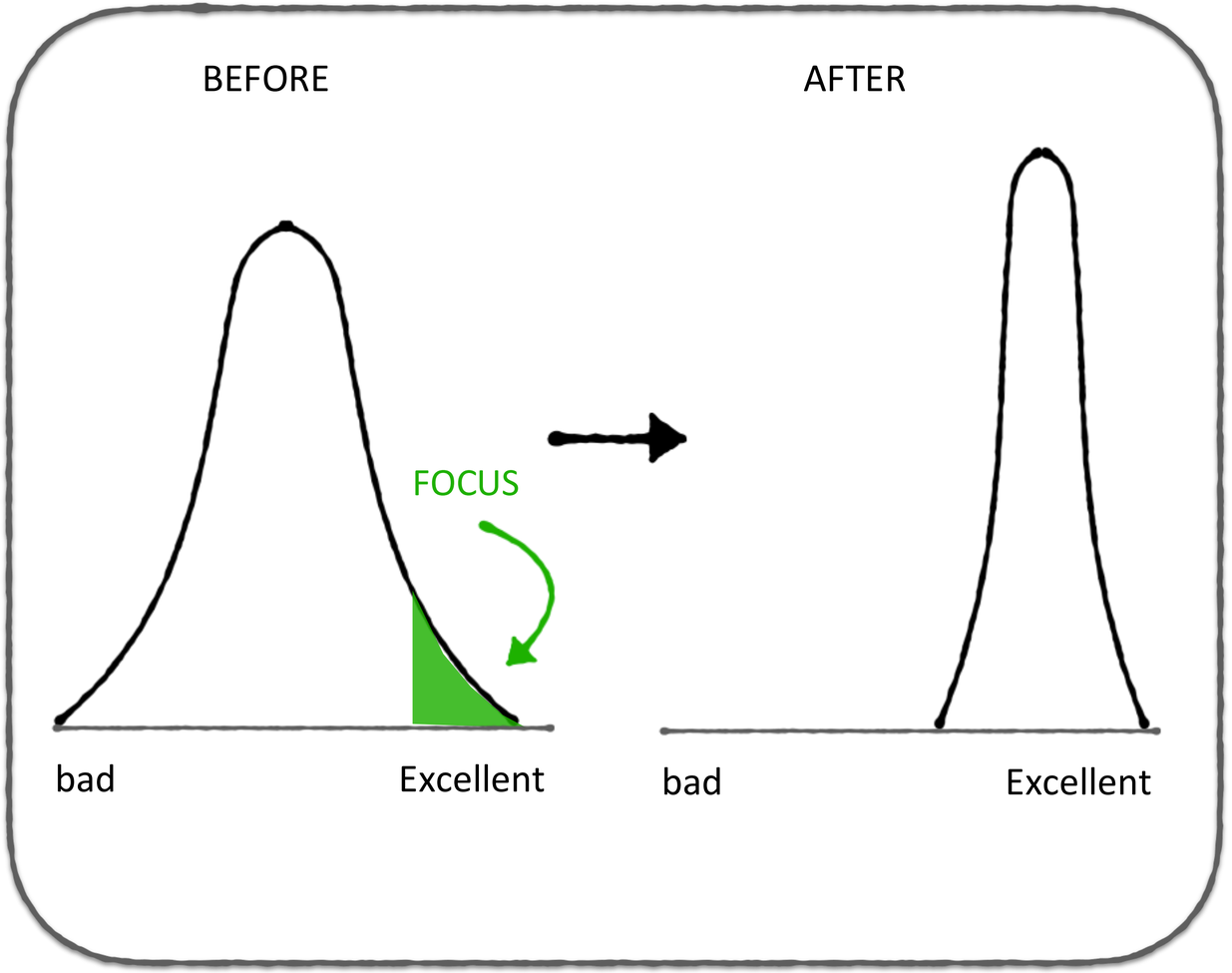
Complaints
Investigations
Etc.

To which bucket have you been devoting your time and energy?

How much improvement have you seen as a result?

Quality Assurance vs. Quality Improvement





Quality Assurance vs. Quality Improvement

Why do we have quality measures in EMS?

How do we know if we are doing a good job?

American Heart Association®
Mission:Lifeline®
EMS

GAMUT™
Ground & Air Medical Quality in Transport

NEMSQA
National EMS Quality Alliance

NEMSQA

National EMS Quality Alliance

www.nemsqa.org

New 2023	Measure ID	Description	Type	National Quality Strategy Domain
*	**Airway-01**	Percentage of EMS responses originating from a 911 request for who receive a successful advanced airway placement on first attempt without documented hypotension or hypoxia during the peri-intubation period.	Outcome	Clinical Process – Effectiveness
*	**Airway-05**	Percentage of intubation procedures performed during an EMS response originating from a 911 request in which adequate patient oxygen levels were achieved prior to intubation procedure.	Process	Patient-Safety
*	**Airway-18**	Percentage of successful advanced airway procedures performed during an EMS response originating from a 911 request in which waveform capnography is used for tube placement confirmation and monitoring.	Process	Clinical Process – Effectiveness
	Asthma-01 *previously Pediatrics-02*	Percentage of EMS responses originating from a 911 request for patients with a diagnosis of asthma who had an aerosolized beta agonist administered.	Process	Clinical Process – Effectiveness
	Hypoglycemia-01	Percentage of EMS responses originating from a 911 request for patients with symptomatic hypoglycemia who receive treatment to correct their hypoglycemia.	Process	Clinical Process – Effectiveness
	Respiratory-01 *previously Pediatrics-01*	Percentage of EMS responses originating from a 911 request for patients with primary or secondary impression of respiratory distress who had a respiratory assessment.	Process	Clinical Process – Effectiveness
*	**Respiratory-02**	Percentage of EMS responses originating from a 911 request for patients with hypoxia during which oxygen is administered.	Process	Clinical Process – Effectiveness
	Pediatrics-03b	Percentage of EMS responses originating from a 911 request for patients less than 18 years of age who received a weight-based medication and had a documented weight in kilograms or lengthbased weight estimate documented during the EMS response.	Process	Patient Safety
	Safety-01	Percentage of EMS responses originating from a 911 request in which lights and sirens were not used during response.	Process	Patient Safety
	Safety-02	Percentage of EMS transports originating from a 911 request during which lights and sirens were not used during patient transport.	Process	Patient Safety
*	**Safety-04**	Percentage of EMS transports originating from a 911 request or interfacility request for patients less than 8 years of age during which patients are transported using a pediatric restraint device.	Process	Patient Safety
	Seizure-02	Percentage of EMS responses originating from a 911 request for patients with status epilepticus who received benzodiazepine during the EMS response.	Process	Clinical Process – Effectiveness
	Stroke-01	Percentage of EMS responses originating from a 911 request for patients suffering from a suspected stroke who had a stroke assessment performed during the EMS response.	Process	Clinical Process – Effectiveness
*	**Syncope-01**	Percentage of EMS responses originating from a 911 request for patients with syncope during which a 12-lead (or greater) ECG is performed.	Process	Clinical Process – Effectiveness
*	**TBI-01**	Percentage of EMS transports originating from a 911 request for patients with suspected traumatic brain injury during which oxygen level, ETCO2, and systolic blood pressure are documented.	Process	Clinical Process – Effectiveness
	Trauma-01	Percentage of EMS responses originating from a 911 request for patients with injury who were assessed for pain.	Process	Patient Experience
	Trauma-03	Percentage of EMS transports originating from a 911 request for patients whose pain score was lowered during the EMS encounter.	Outcome	Patient Experience
	Trauma-04	Percentage of EMS responses originating from a 911 request for patients who meet CDC criteria for trauma and are transported to a trauma center.	Process	Clinical Process – Effectiveness
*	**Trauma-08**	Percentage of EMS transports originating from a 911 request for patients with trauma during which GCS, systolic blood pressure, and respiratory rate are documented.	Process	Clinical Process – Effectiveness
*	**Trauma-14**	Percentage of EMS transports originating from a 911 request for patients meeting Step 1 or Step 2 prehospital field triage criteria for trauma during which a pre-arrival trauma alert is initiated.	Process	Clinical Process – Effectiveness
*	**TTR-01**	Percentage of EMS responses originating from a 911 request for patients not transported by EMS during which a basic set of vital signs is documented.	Process	Clinical Process – Effectiveness

Operational Definitions

NEMSQA
National EMS Quality Alliance

National EMS Quality Alliance
Florida F.A.I.R

2023 TTR-01 Measure Package

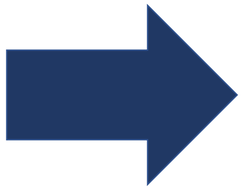
TTR-01: Vital Signs Documented

Measure Score Interpretation: For this measure, a higher score indicates better quality.

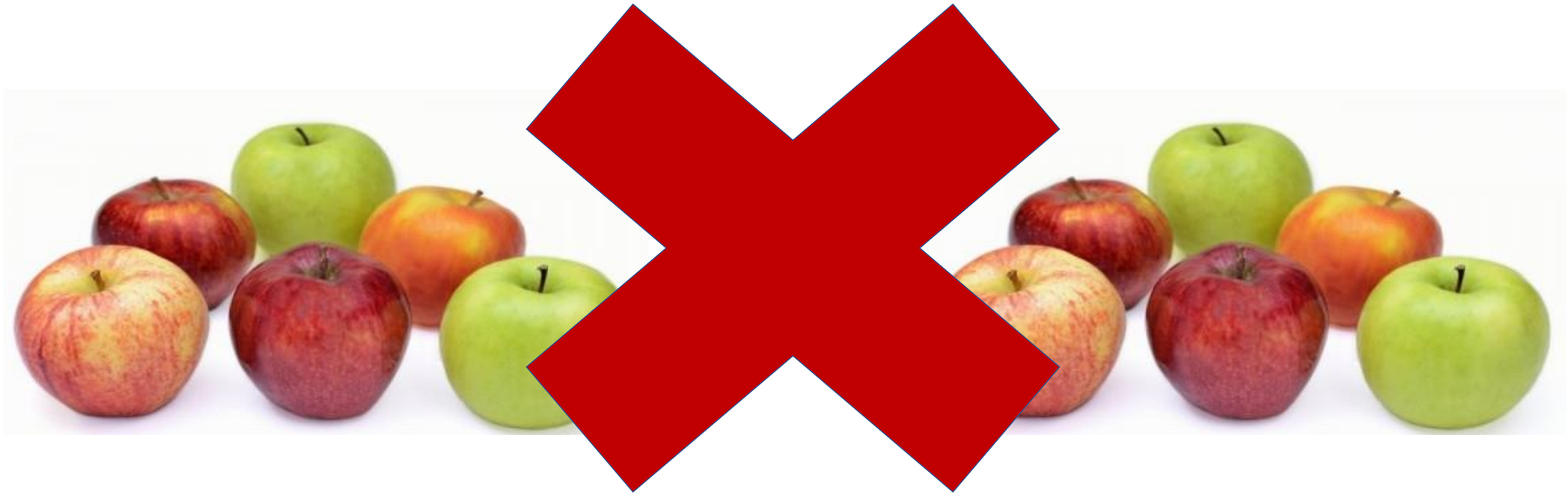
Measure Description	
Percentage of EMS responses originating from a 911 request for patients not transported by EMS during which a basic set of vital signs is documented	
Measure Components	
Initial Population	All EMS responses originating from a 911 request for patients not transported by EMS
Initial Population Pseudocode	**NEMSIS** (eResponse.05 Type of Service Requested is in (2205001 ("Emergency Response (Primary Response Area)"), 2205003 ("Emergency Response (Intercept)"), 2205009 ("Emergency Response (Mutual Aid)")) and eDisposition.30 Transport Disposition is in (4230009 ("Patient refused Transport"), 4230013 ("No Transport")))
Denominator Statement	**Population 1**: EMS responses in the initial population for patients less than 18 years of age **Population 2**: EMS responses in the initial population for patients greater than or equal to 18 years of age
Denominator Pseudocode	**NEMSIS** **Population 1:** (Initial Population and ((ePatient.15 Age is less than 18 and ePatient.16 Age Units is 2516009 ("Years")) or (ePatient.15 Age is less than or equal to 120 and ePatient.16 Age Units is in (2516001 ("Days"),

	2516003 ("Hours"), 2516005 ("Minutes"), 2516007 ("Months")))) **Population 2:** (Initial Population and (ePatient.15 Age is greater than or equal to 18 and ePatient.16 Age Units is 2516009 ("Years")))
Denominator Exclusions	**Denominator Exclusion for Populations 1 and 2:** EMS responses for patients in cardiac arrest prior to EMS arrival
Denominator Exclusion Pseudocode	**NEMSIS** **Apply Denominator Exclusion to Populations 1-2:** eArrest.01 Cardiac Arrest is 3301003 ("Yes, Prior to Any EMS Arrival (includes Transport EMS & Medical First Responders)")
Denominator Exceptions	None
Numerator Statement	**Numerator for Populations 1-2:** EMS responses during which a basic set of vital signs (SBP, DBP, heart rate, pulse oximetry, respiratory rate, and GCS or AVPU) is documented
Numerator Pseudocode	**NEMSIS** **Numerator for Populations 1-2 (Calculate 2 Rates):** (eVitals.06 SBP (Systolic Blood Pressure) is not in (Null, 7701001 ("Not Applicable"), 7701003 ("Not Recorded"), 8801005 ("Exam Finding Not Present"), 8801019 ("Refused"), 8801023 ("Unable to Complete")) and eVitals.07 DBP (Diastolic Blood Pressure) is not in (Null, 7701001 ("Not Applicable"),

Operational Definitions

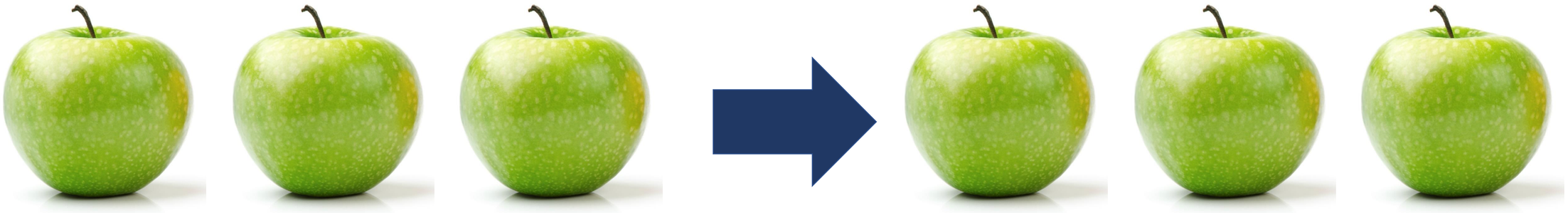


Operational Definitions



NOT GOOD ENOUGH

Operational Definitions



Operational Definitions

Measure	Numerator	Denominator

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Measure	Numerator	Denominator
Percentage of non-transported patients who have a full set of VS (SBP, DBP, RR, SpO2) and mental status (GCS or AVPU) documented.		

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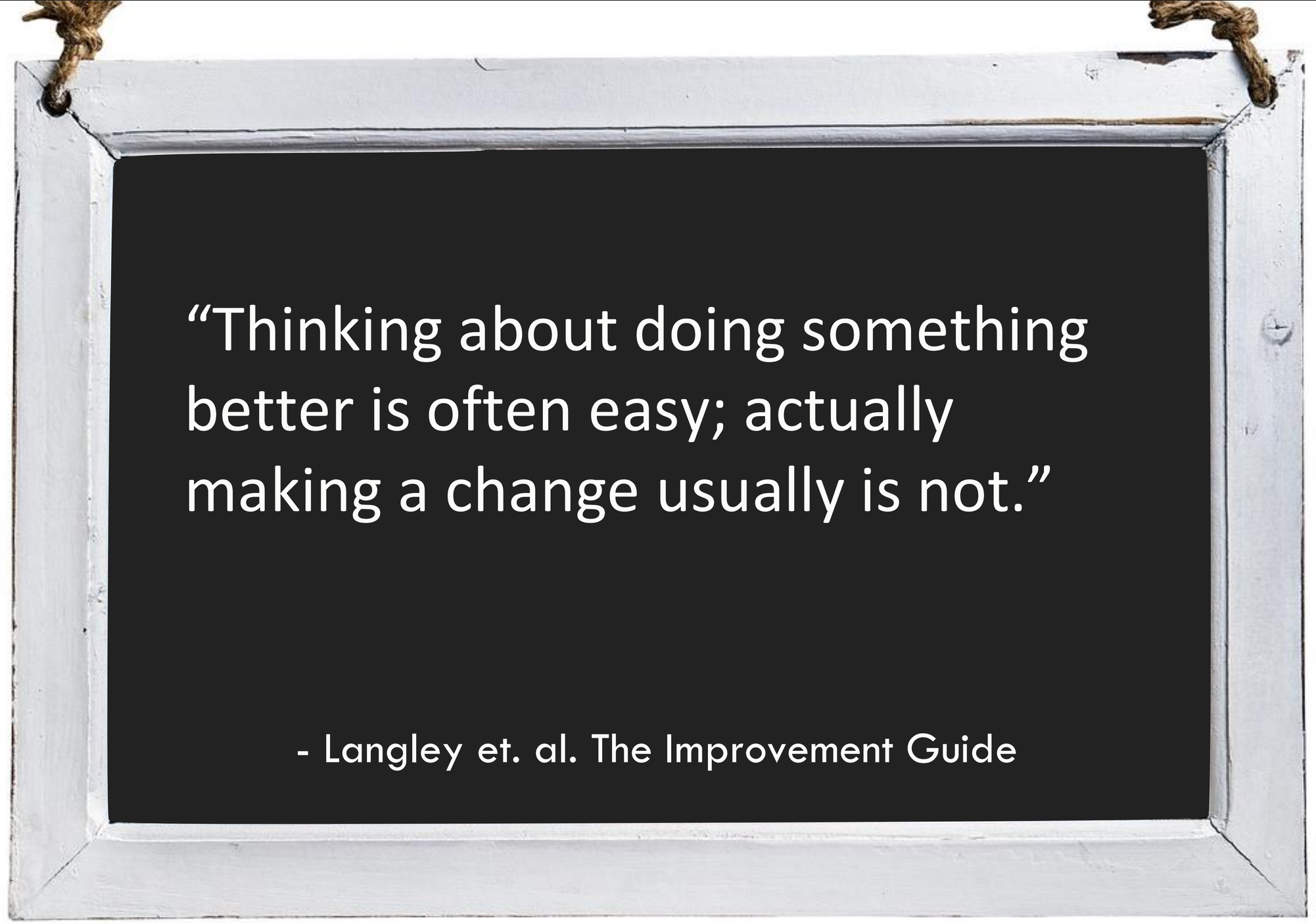
Operational Definitions

Measure	Numerator	Denominator
Percentage of non-transported patients who have a full set of VS (SBP, DBP, RR, SpO2) and mental status (GCS or AVPU) documented.	SBP, DBP, RR, SpO2 and (GCS or AVPU) documented	911 Response AND disposition = “Patient refused transport” or “No transport” Exclusion: cardiac arrest

EXERCISE 1

“Thinking about doing something better is often easy; actually making a change usually is not.”

- Langley et. al. The Improvement Guide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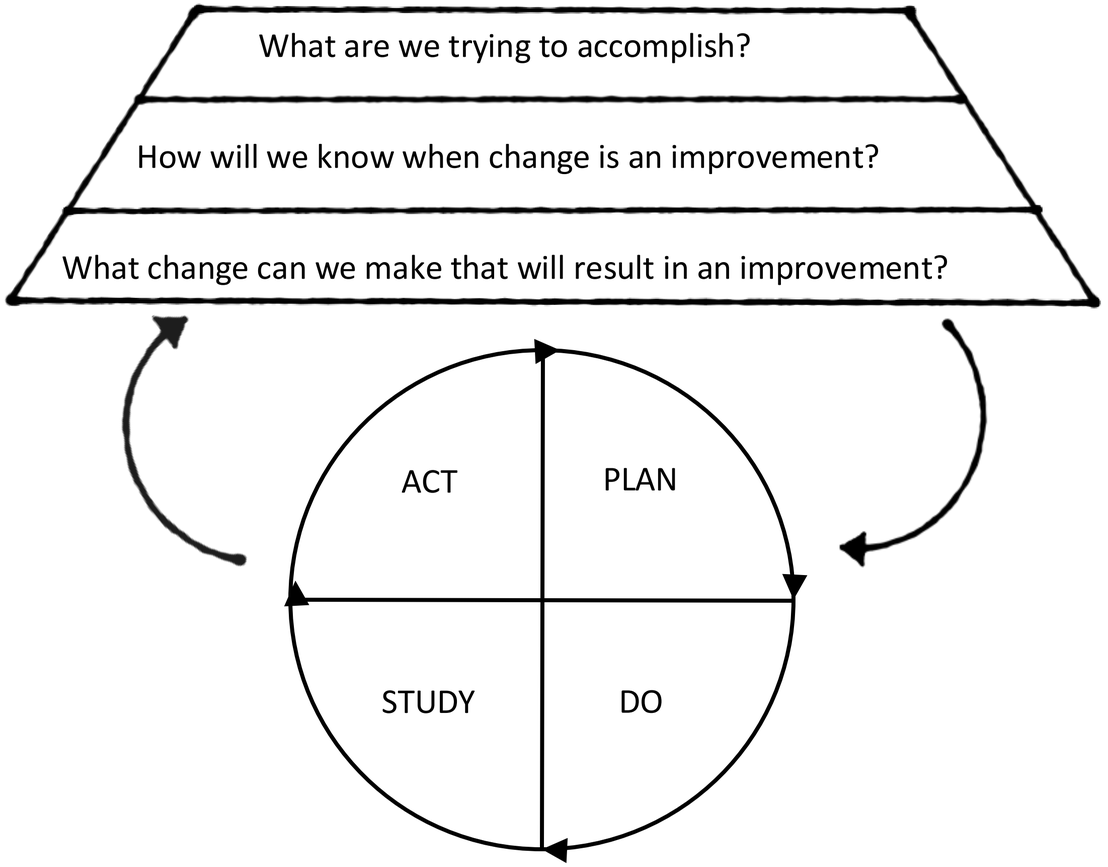
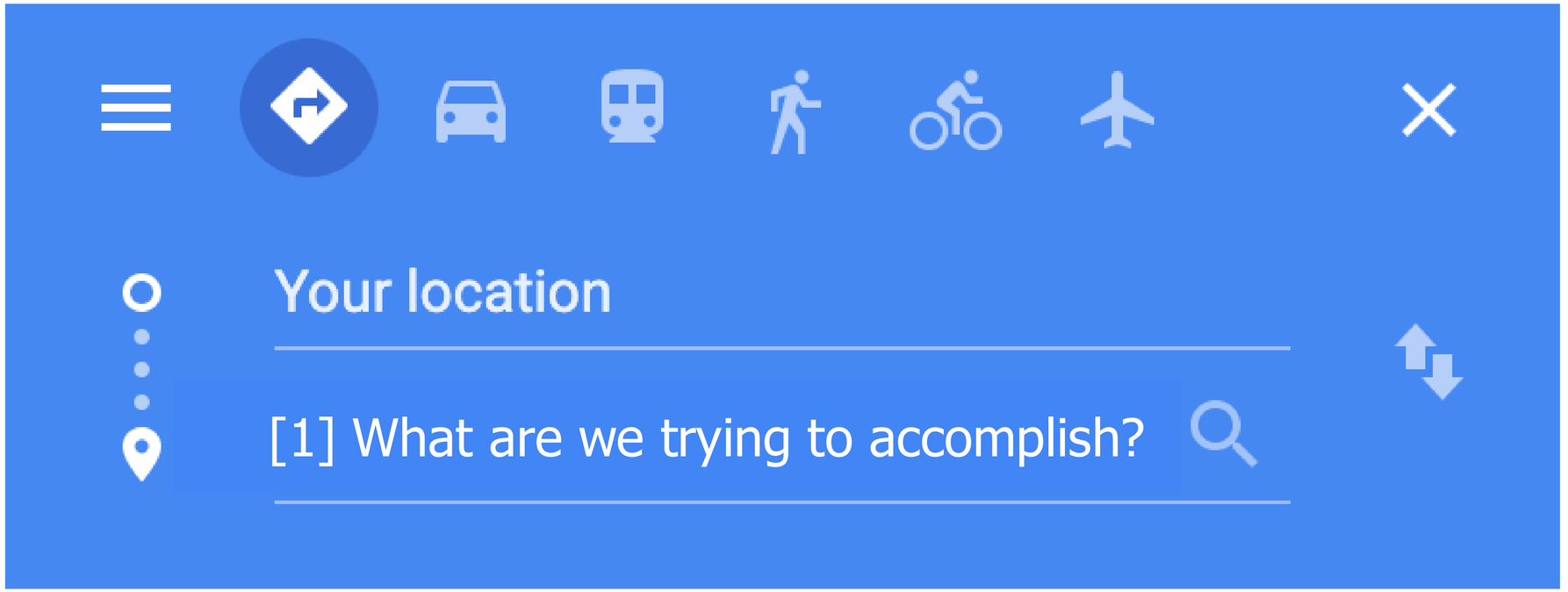
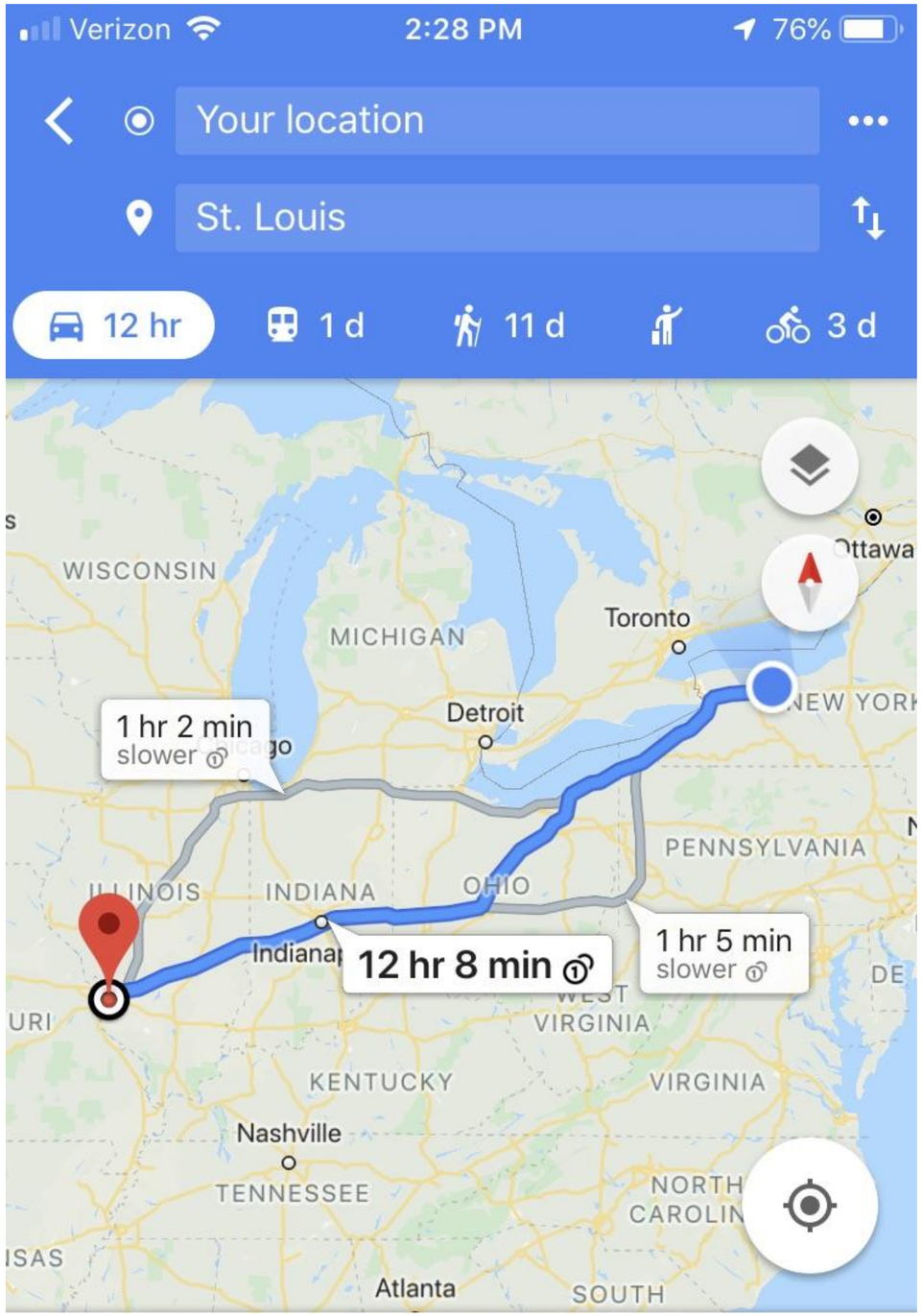
Model for Improvement



Google Maps



[2] How will we know when change is an improvement?



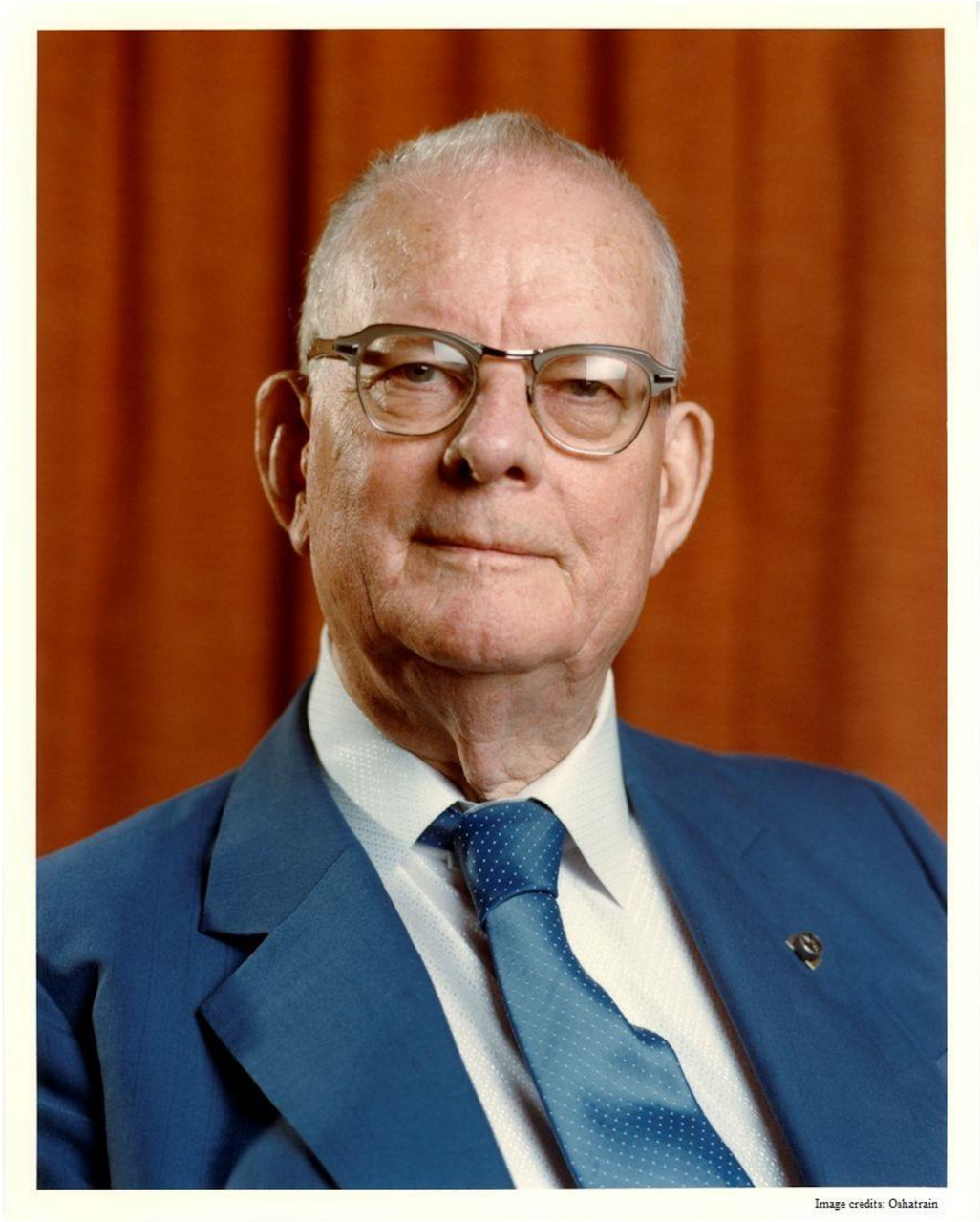


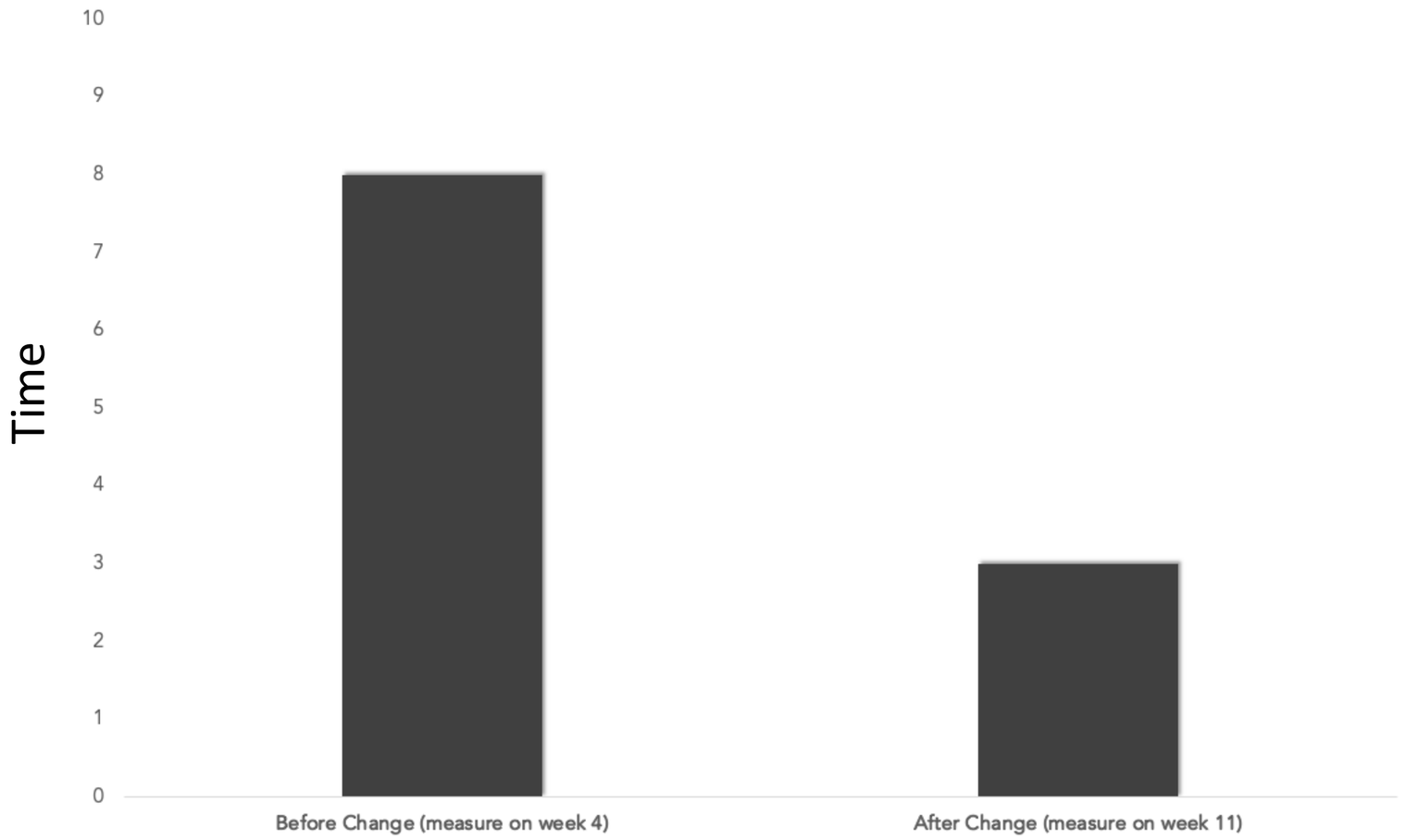
Image credits: Oshatrain

“In God We Trust.

All others must bring data.”

Goal: reduce delays

Change made between weeks 7 & 8



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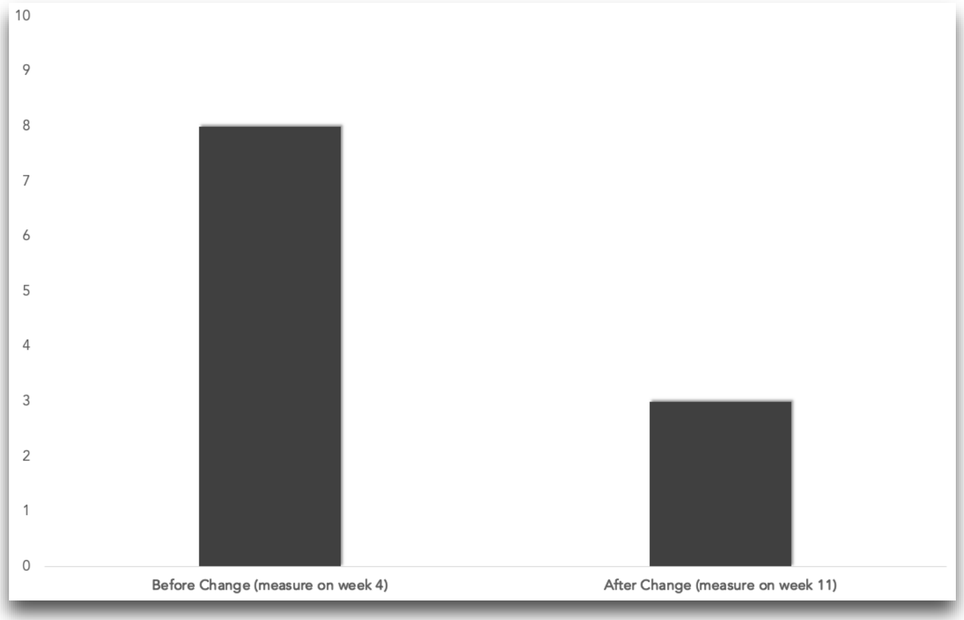

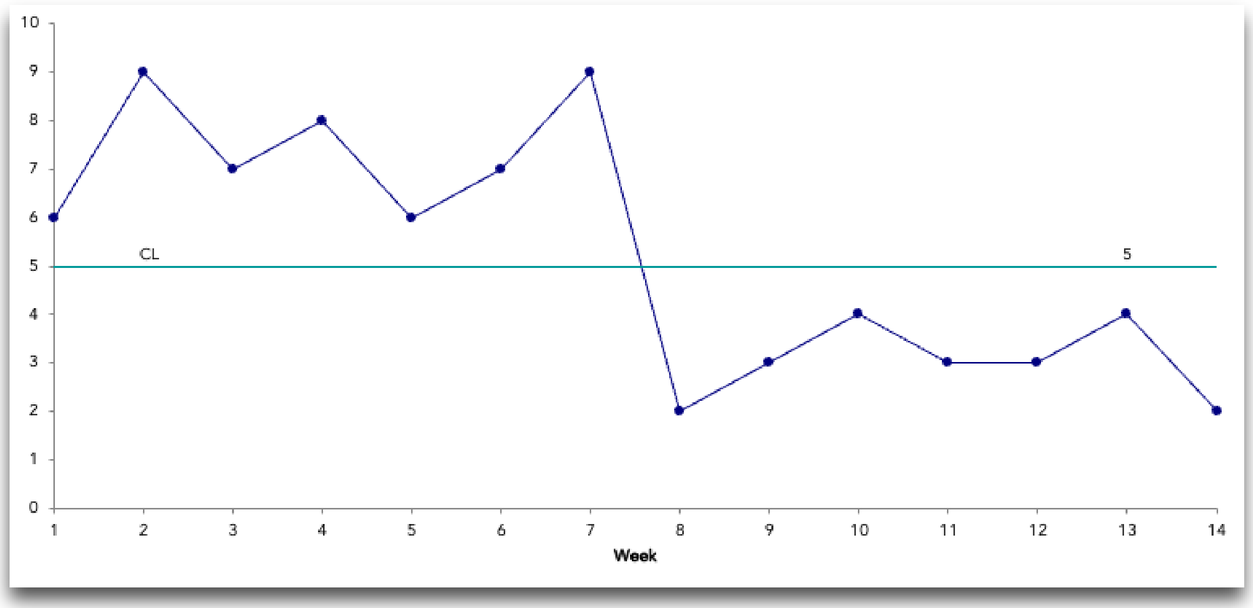

Provost and Murray (2011). The Health Care Data Guide.

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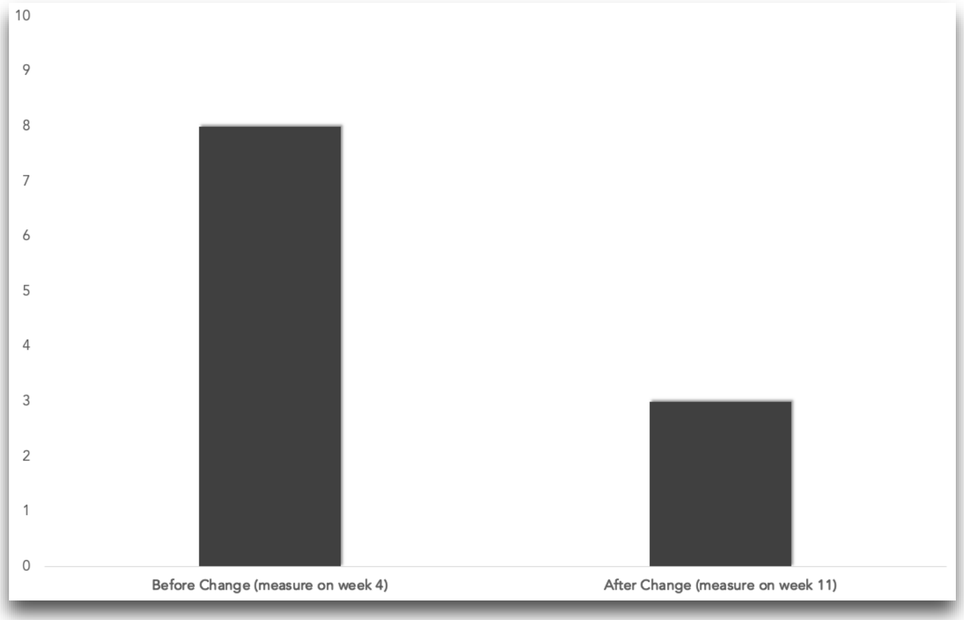

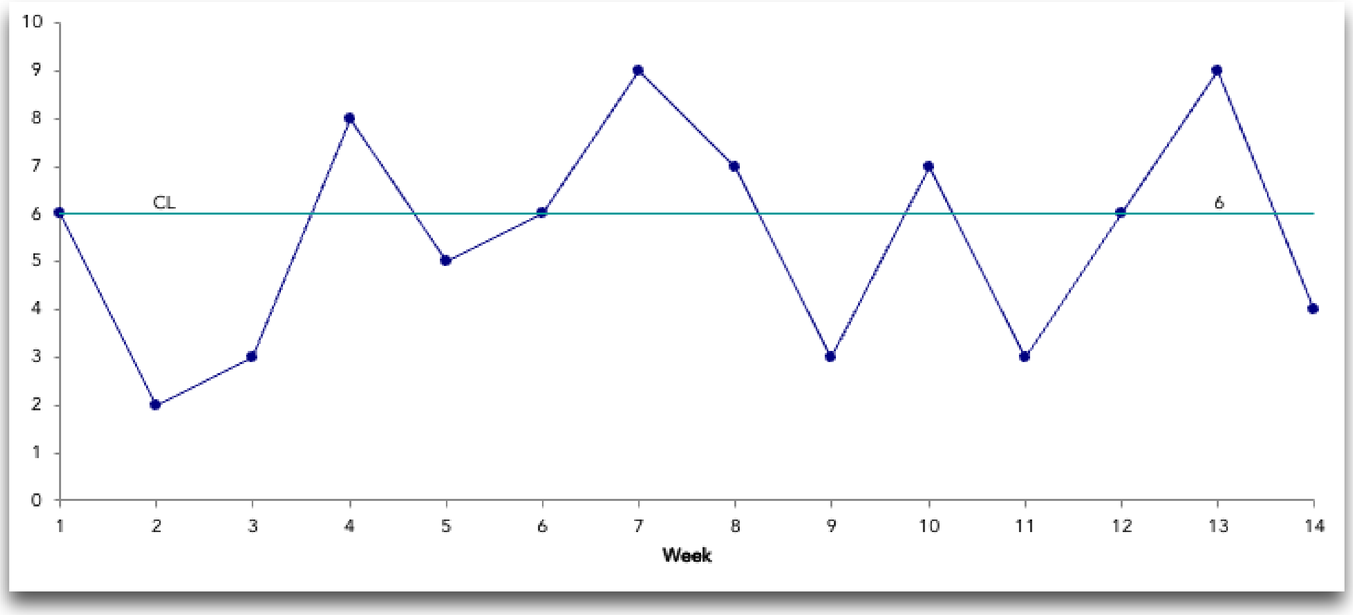

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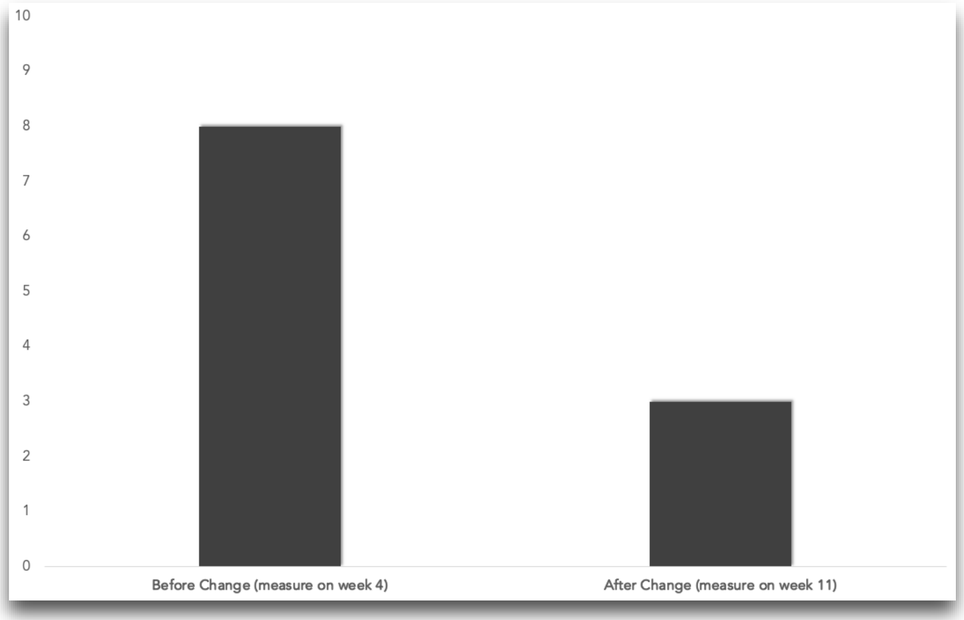

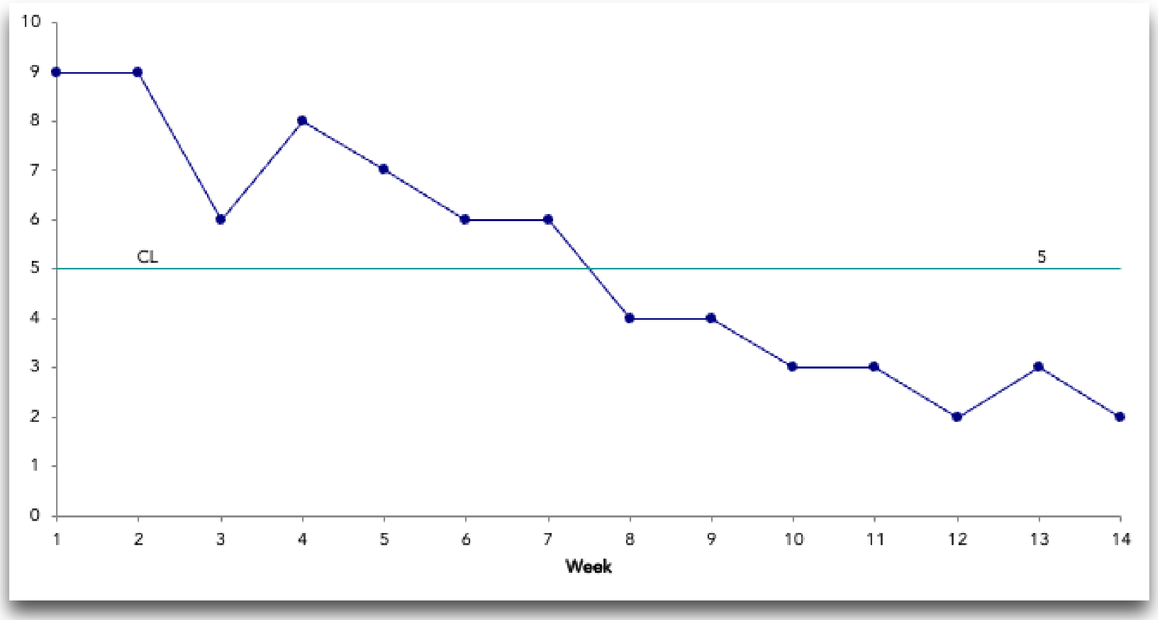

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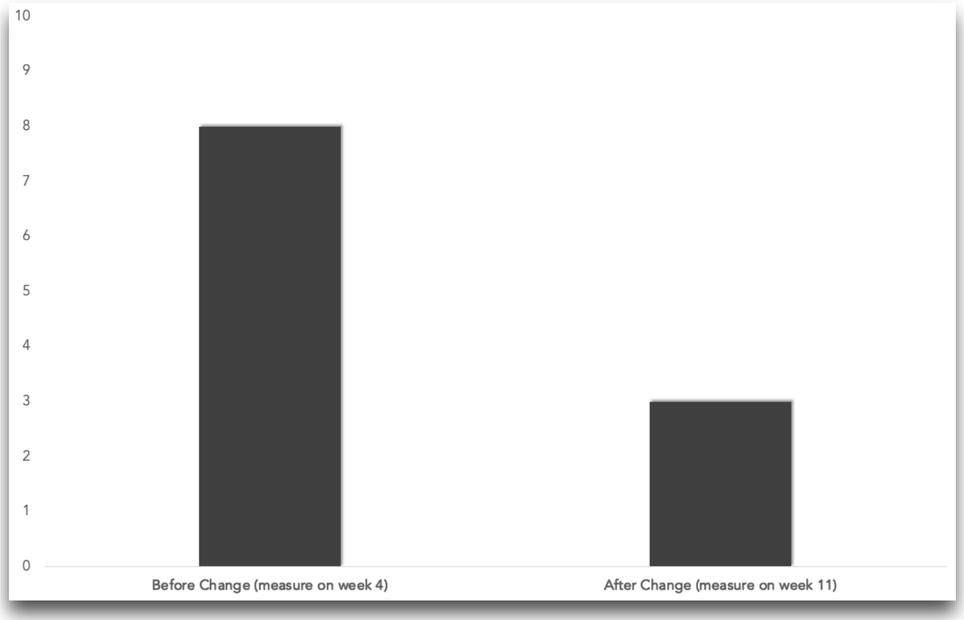

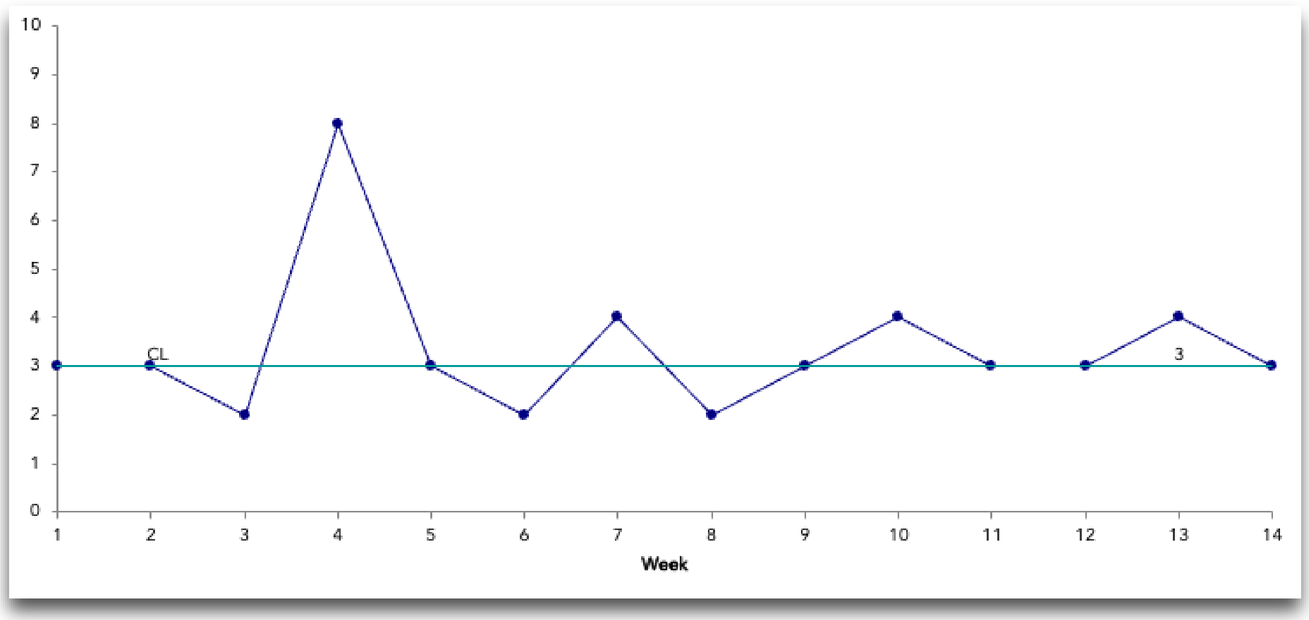

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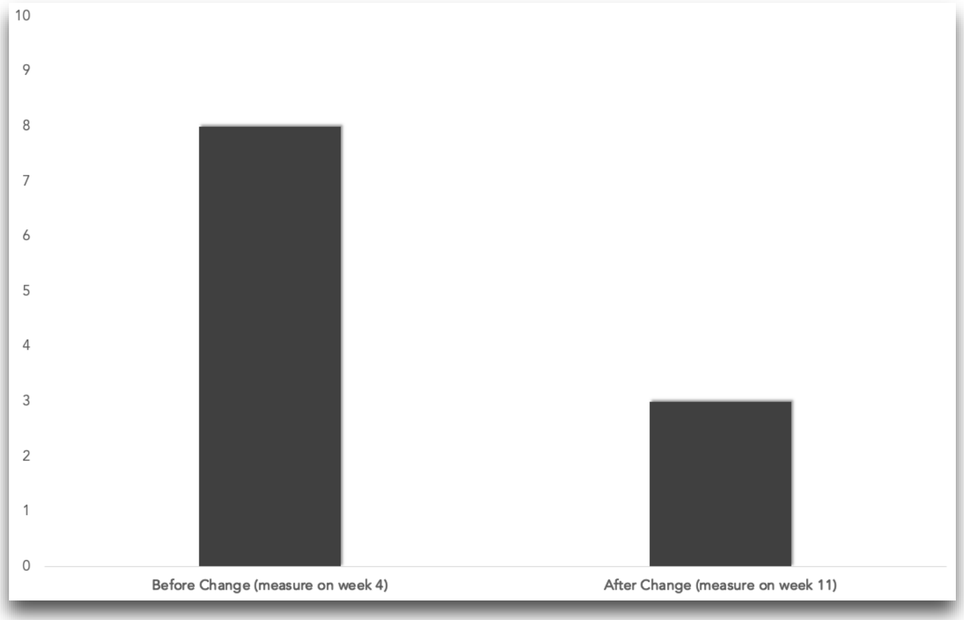

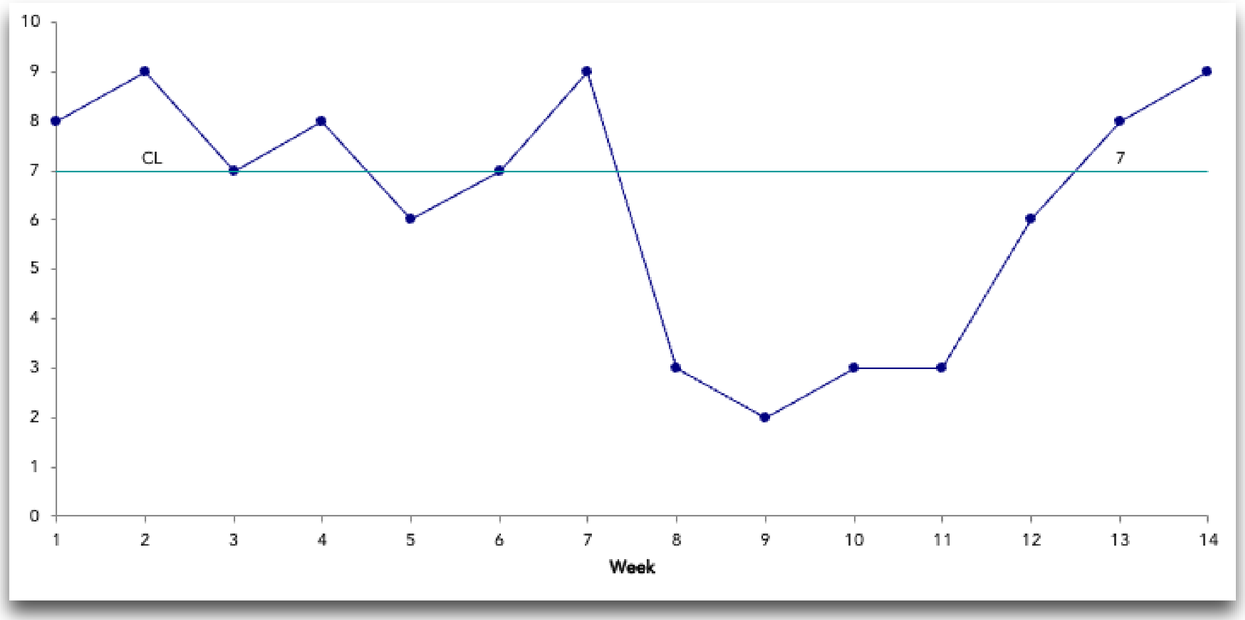

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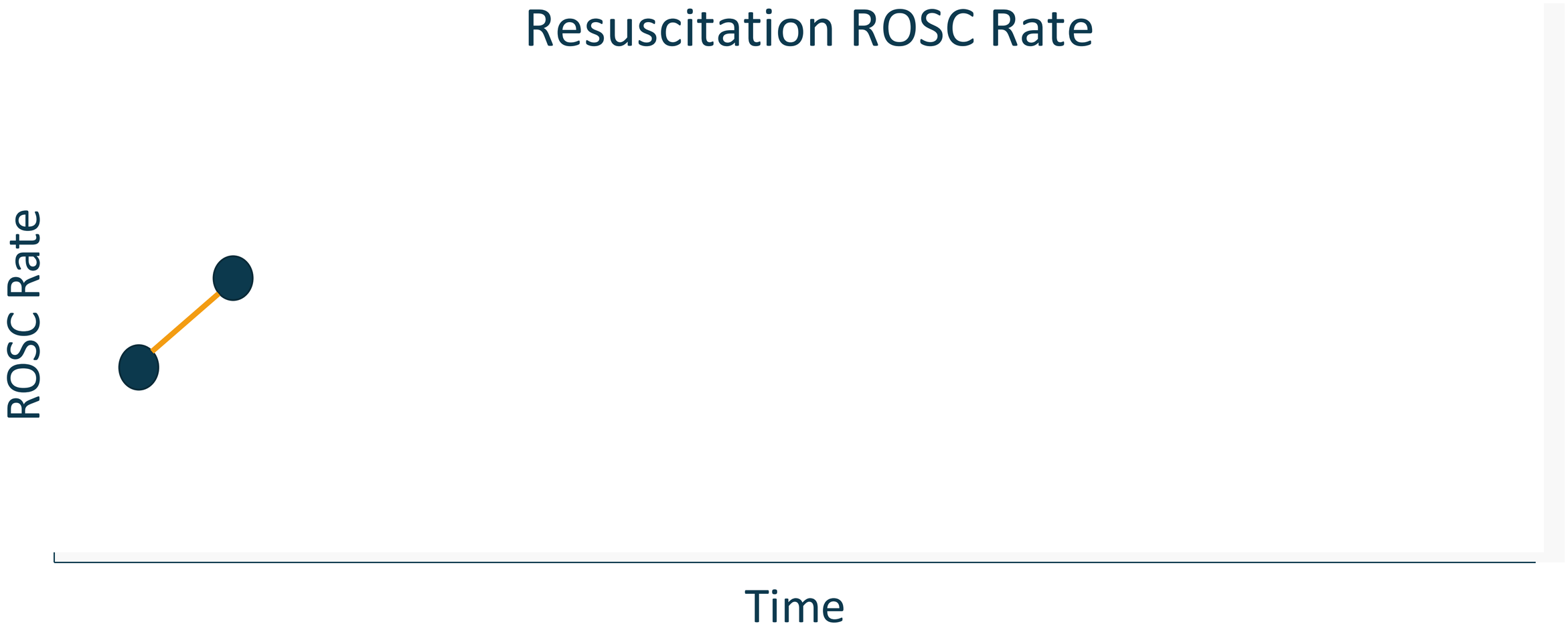
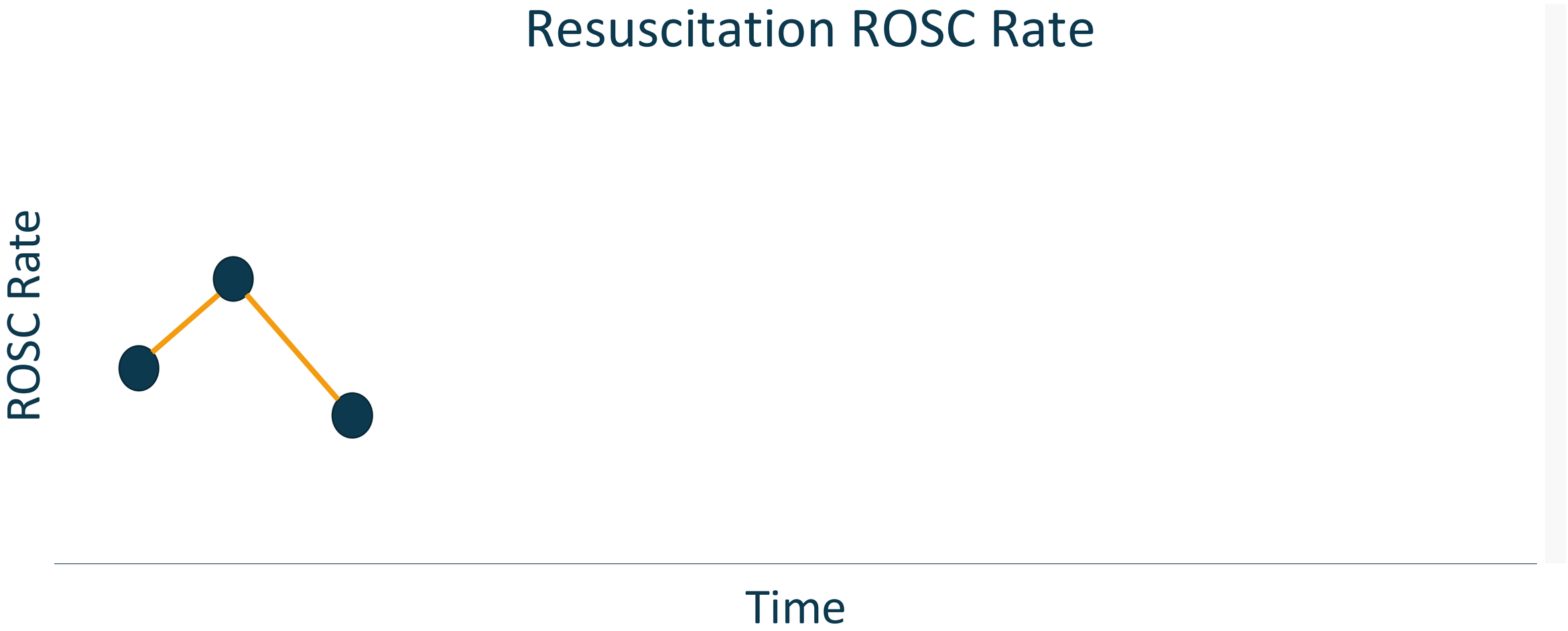
Resuscitation ROSC Rate



Celebration

Resuscitation ROSC Rate

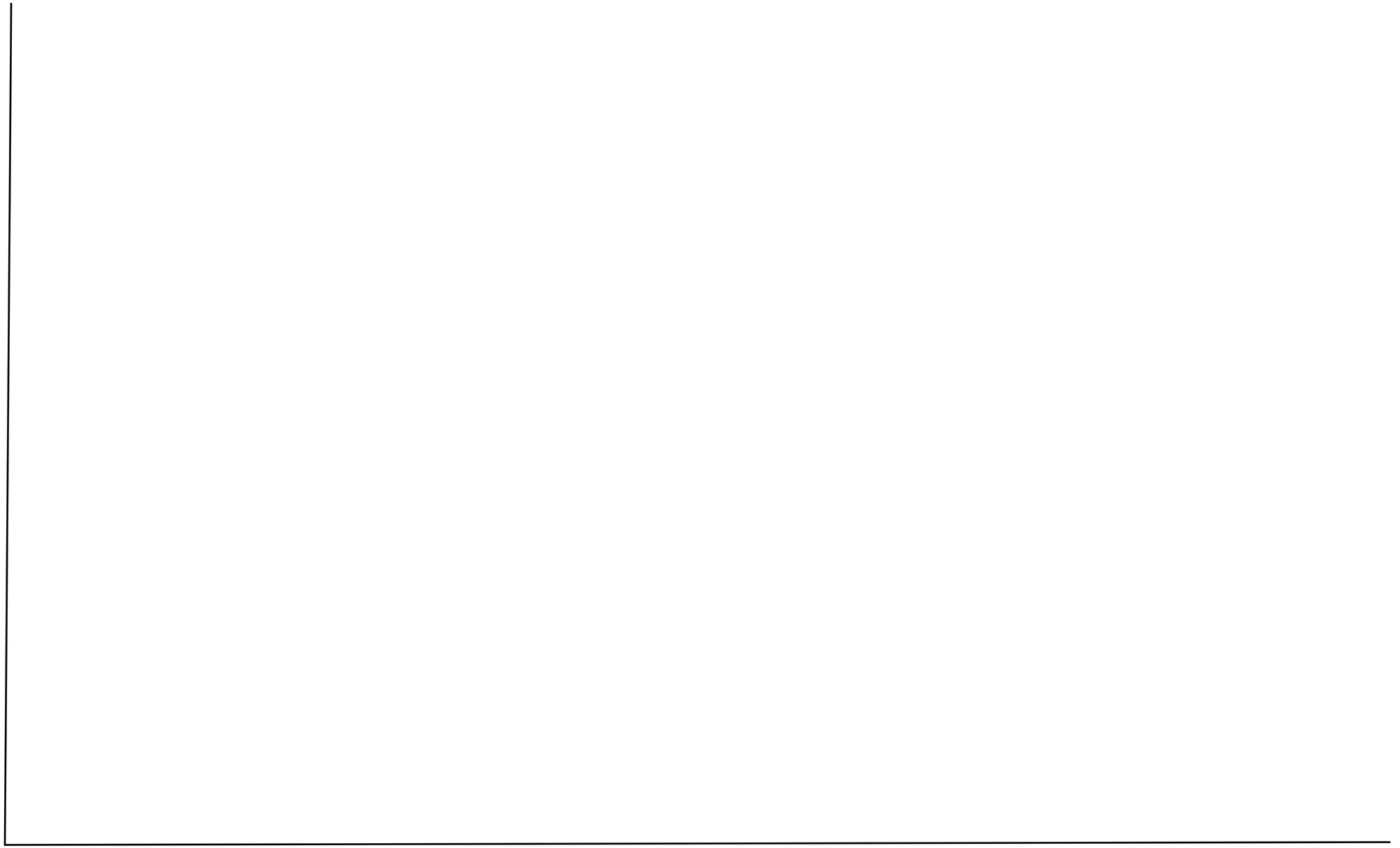


Despair

45

51

So how should we examine data?


Naturally Occurring Time Order


Measure
Naturally Occurring Time Order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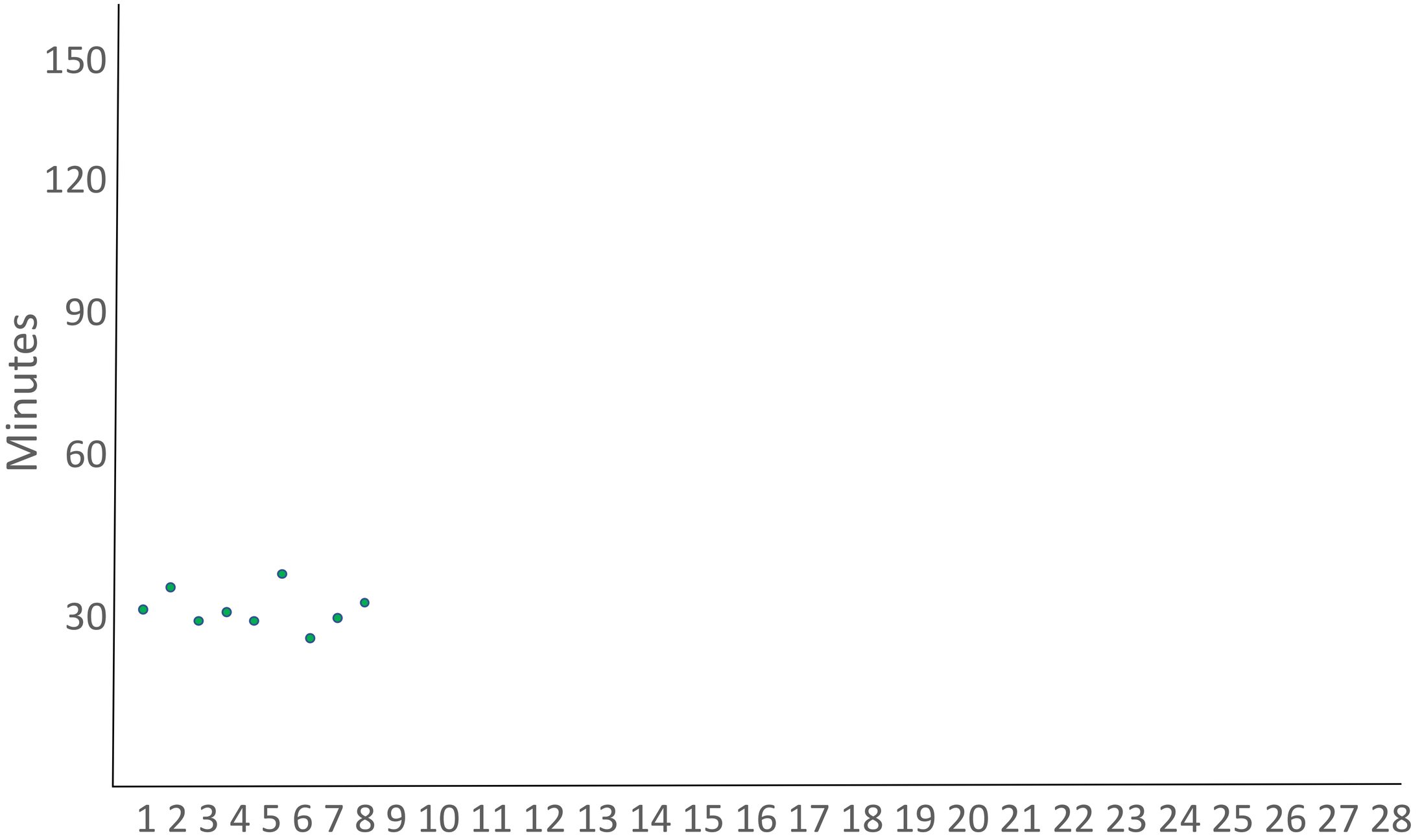
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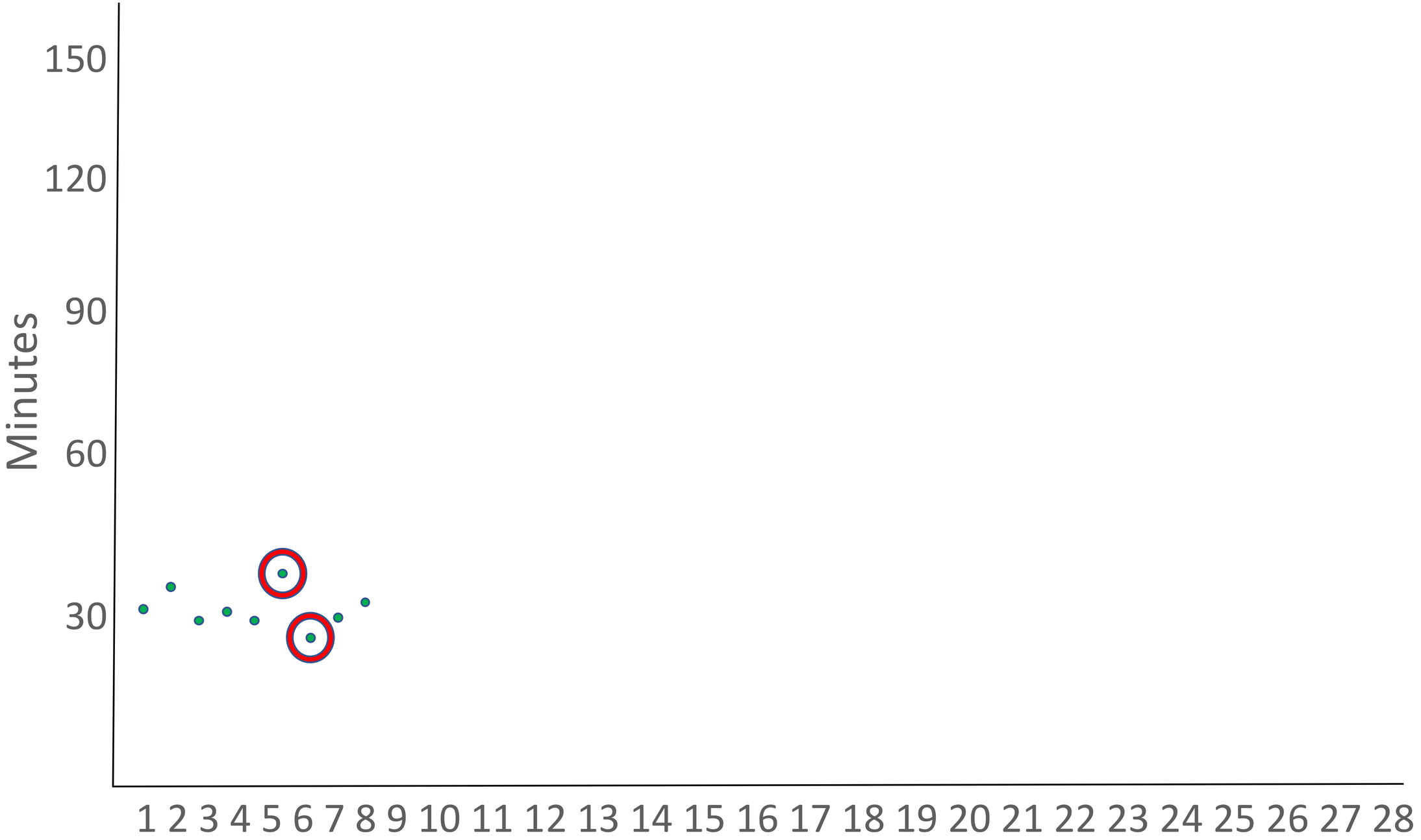
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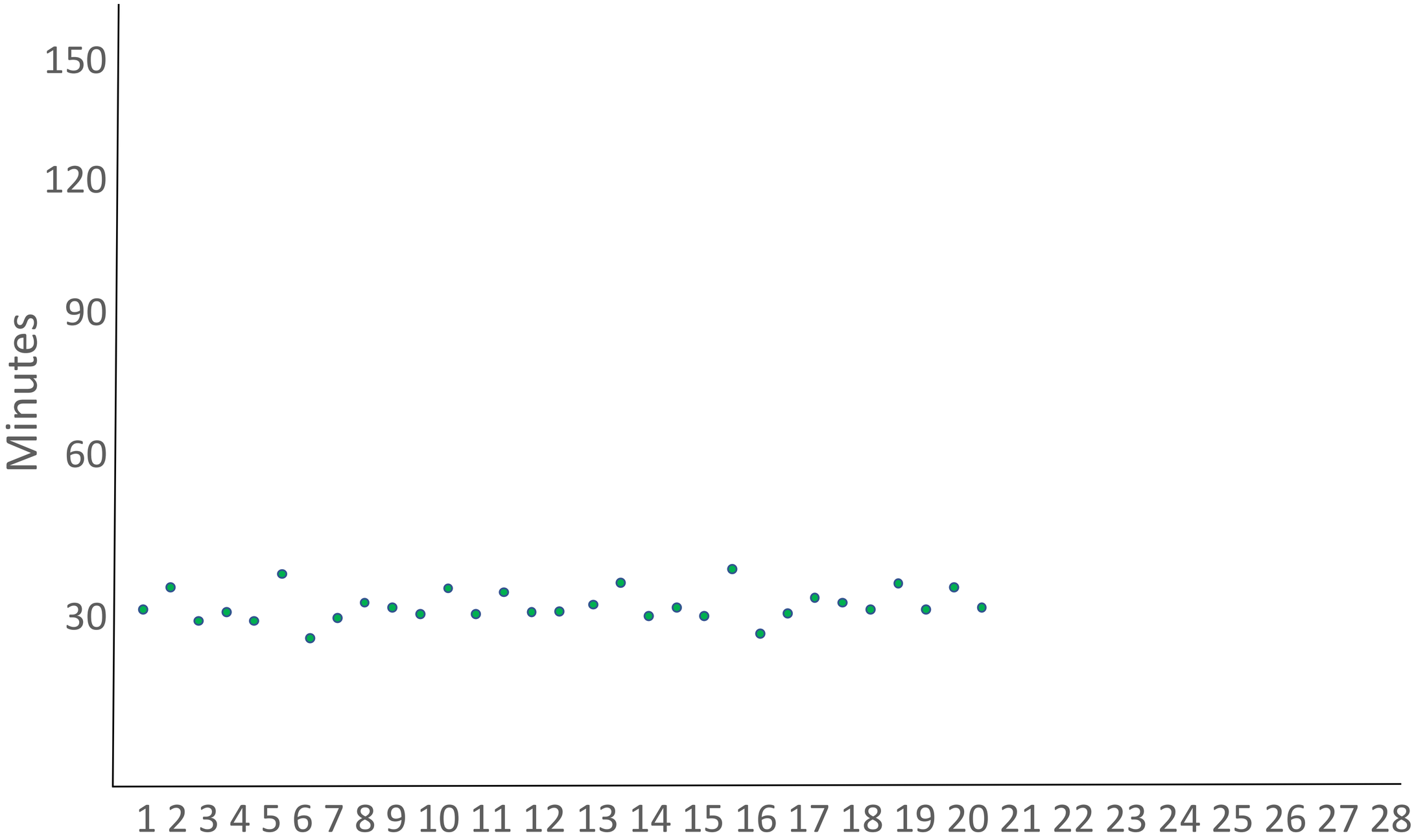
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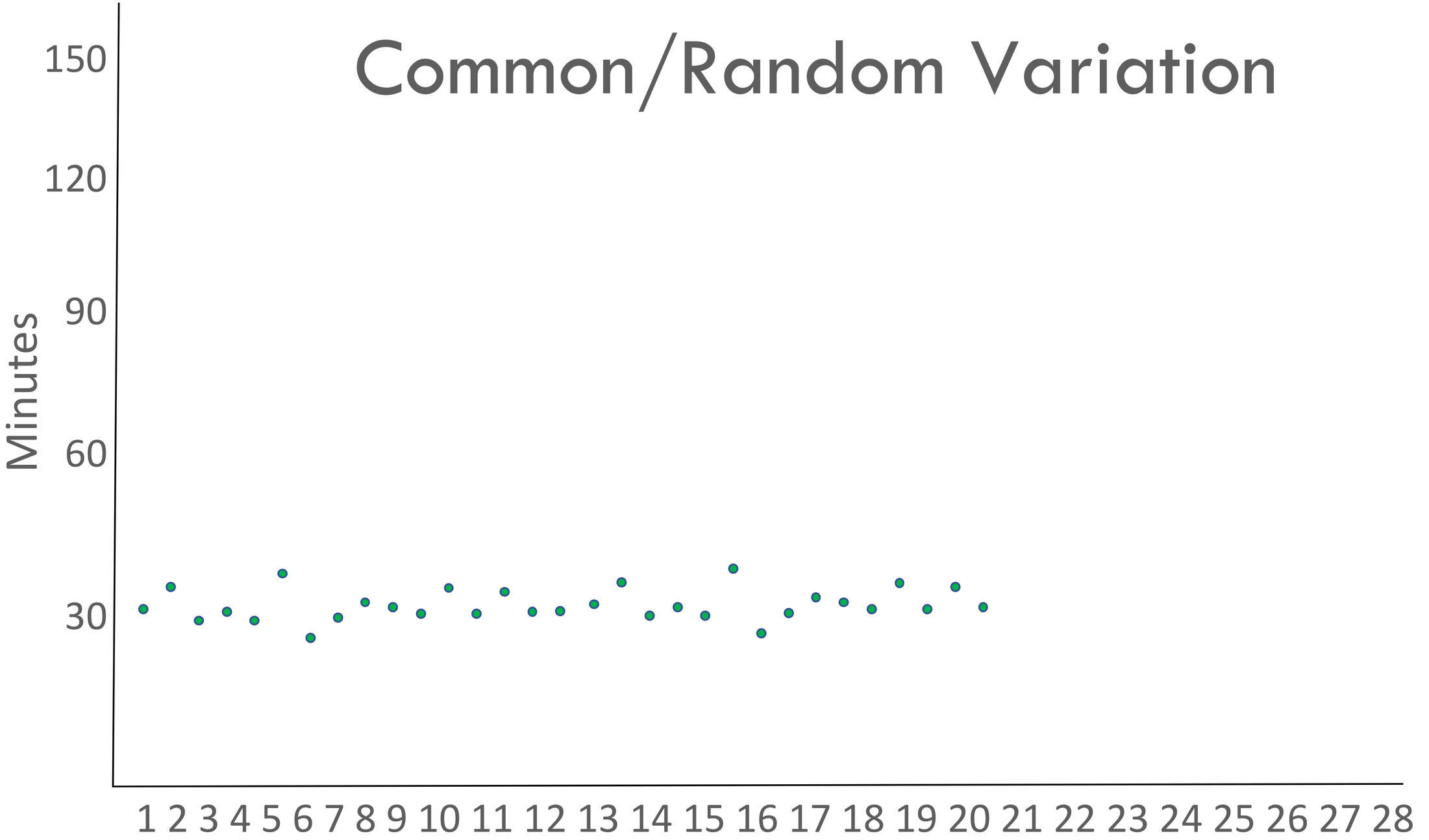
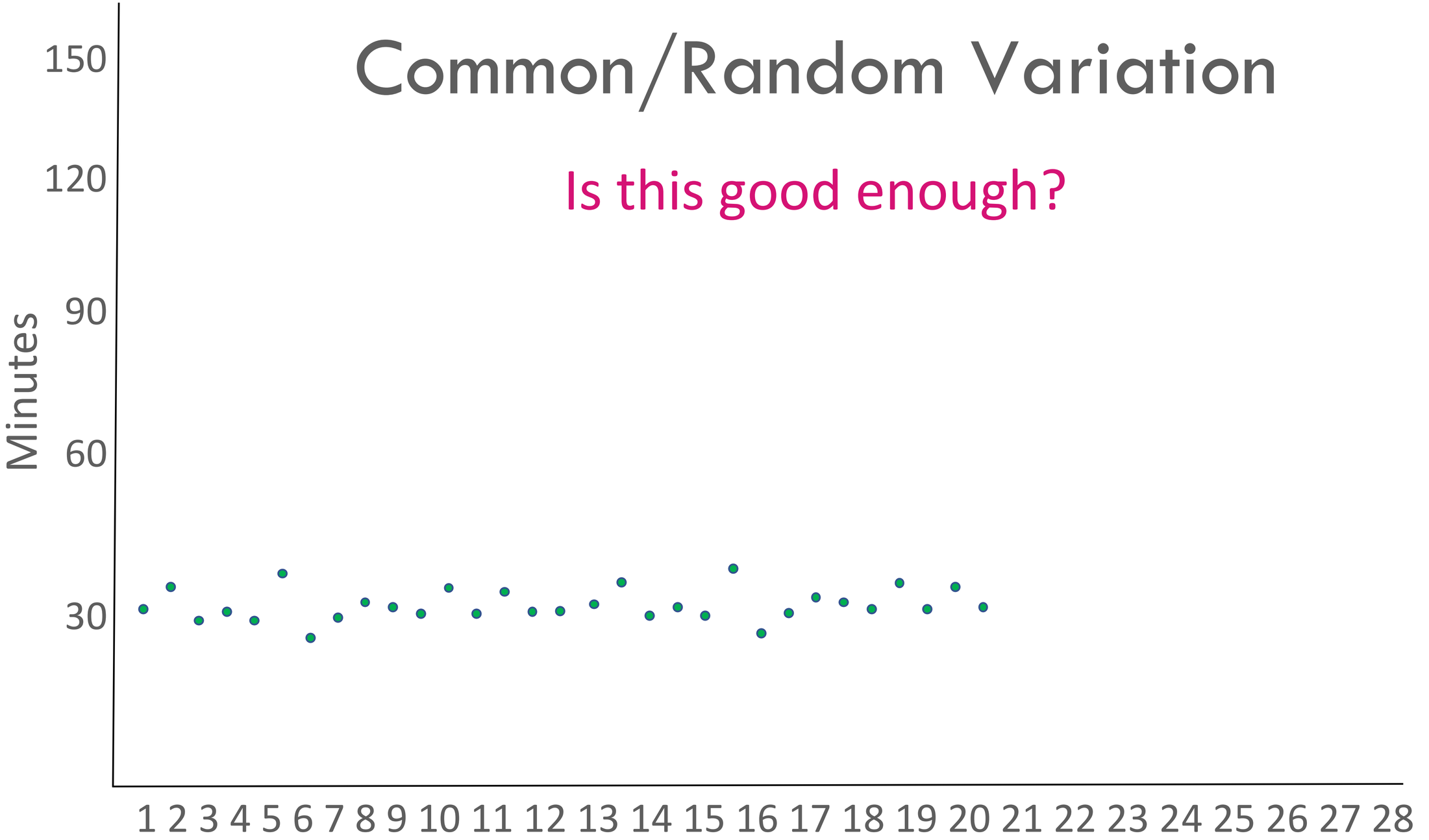
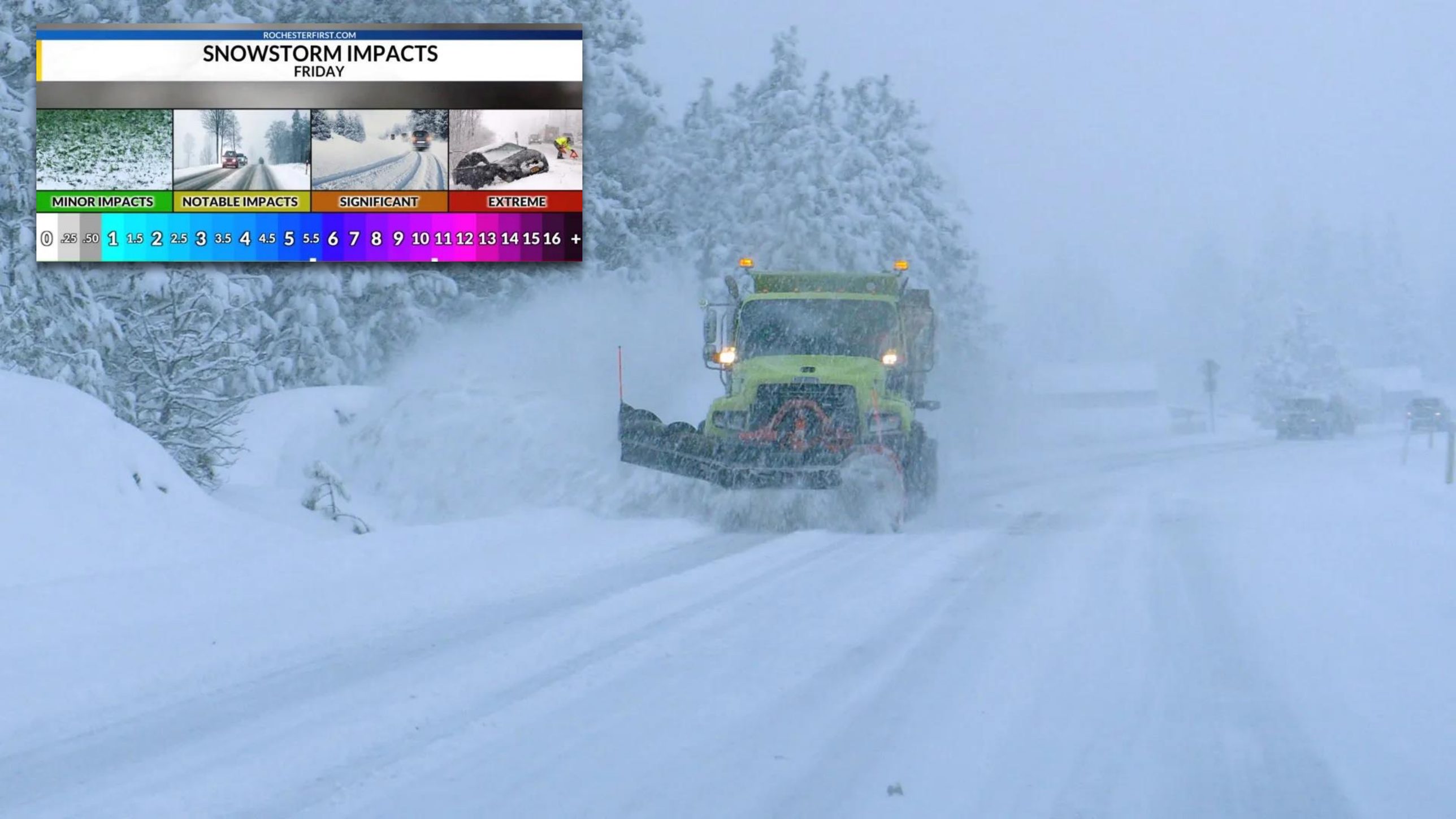
Common/Random Variation



Common/Random Variation

Is this good enough?




ROCHESTERFIRST.COM
SNOWSTORM IMPACTS
FRIDAY
MINOR IMPACTS
NOTABLE IMPACTS
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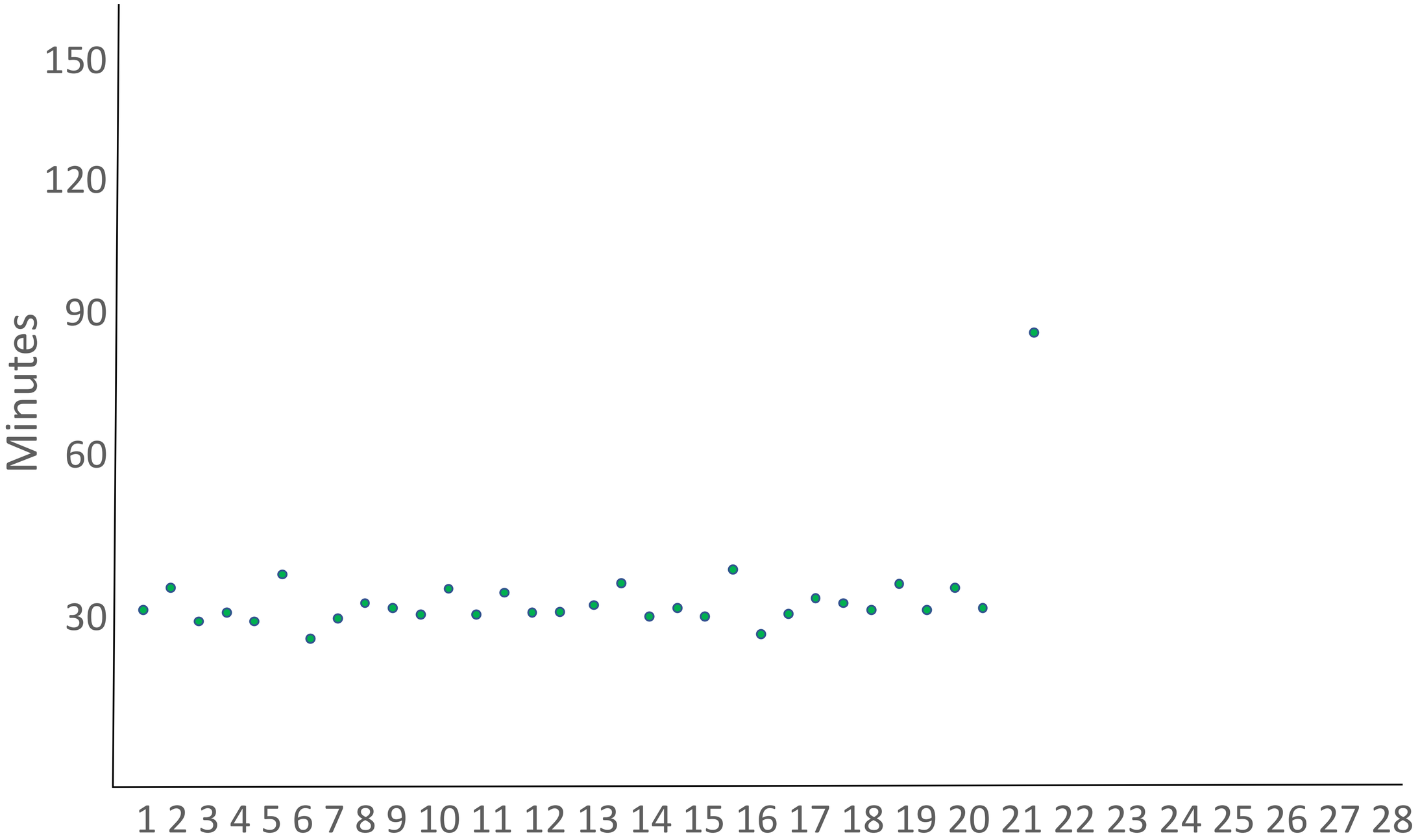
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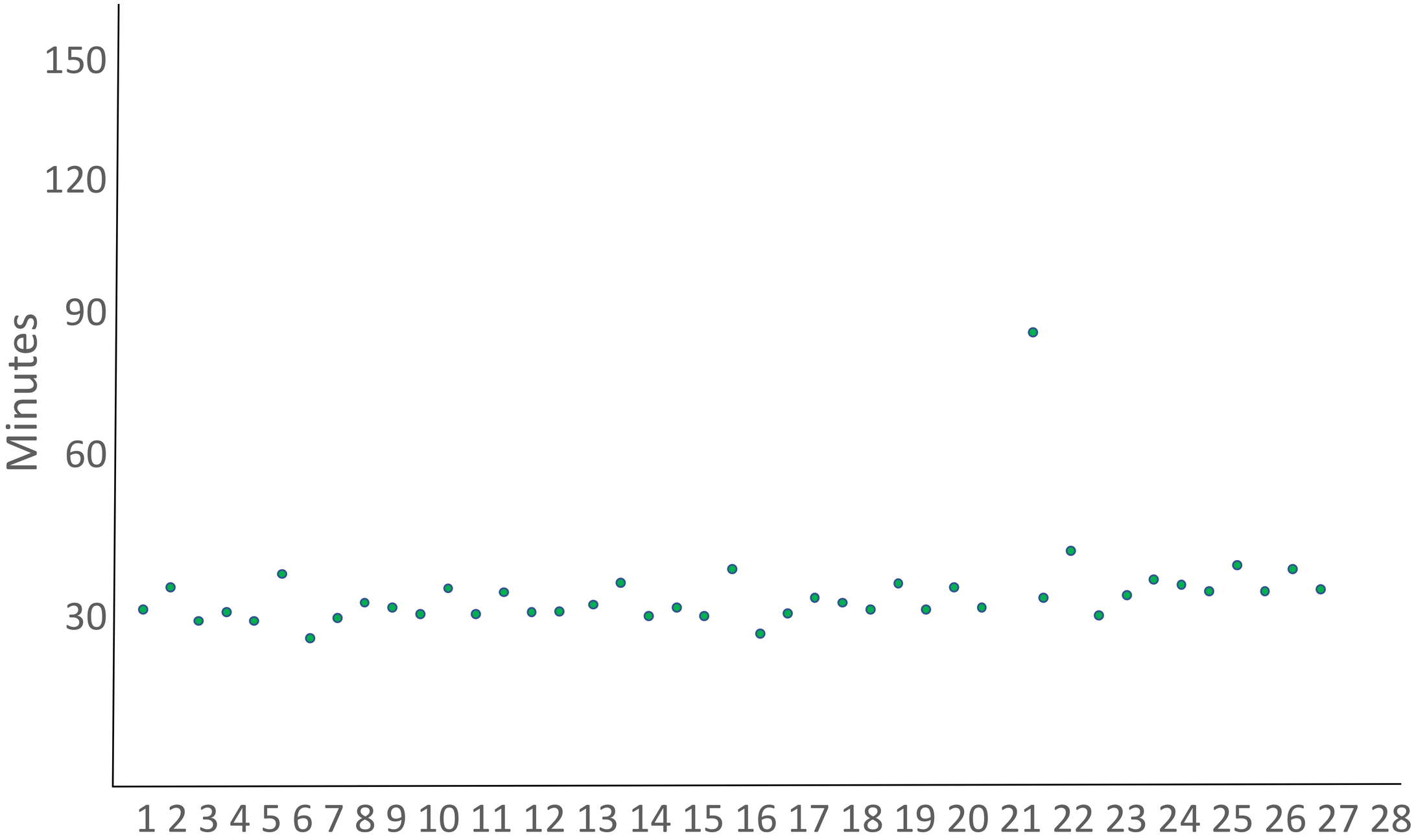
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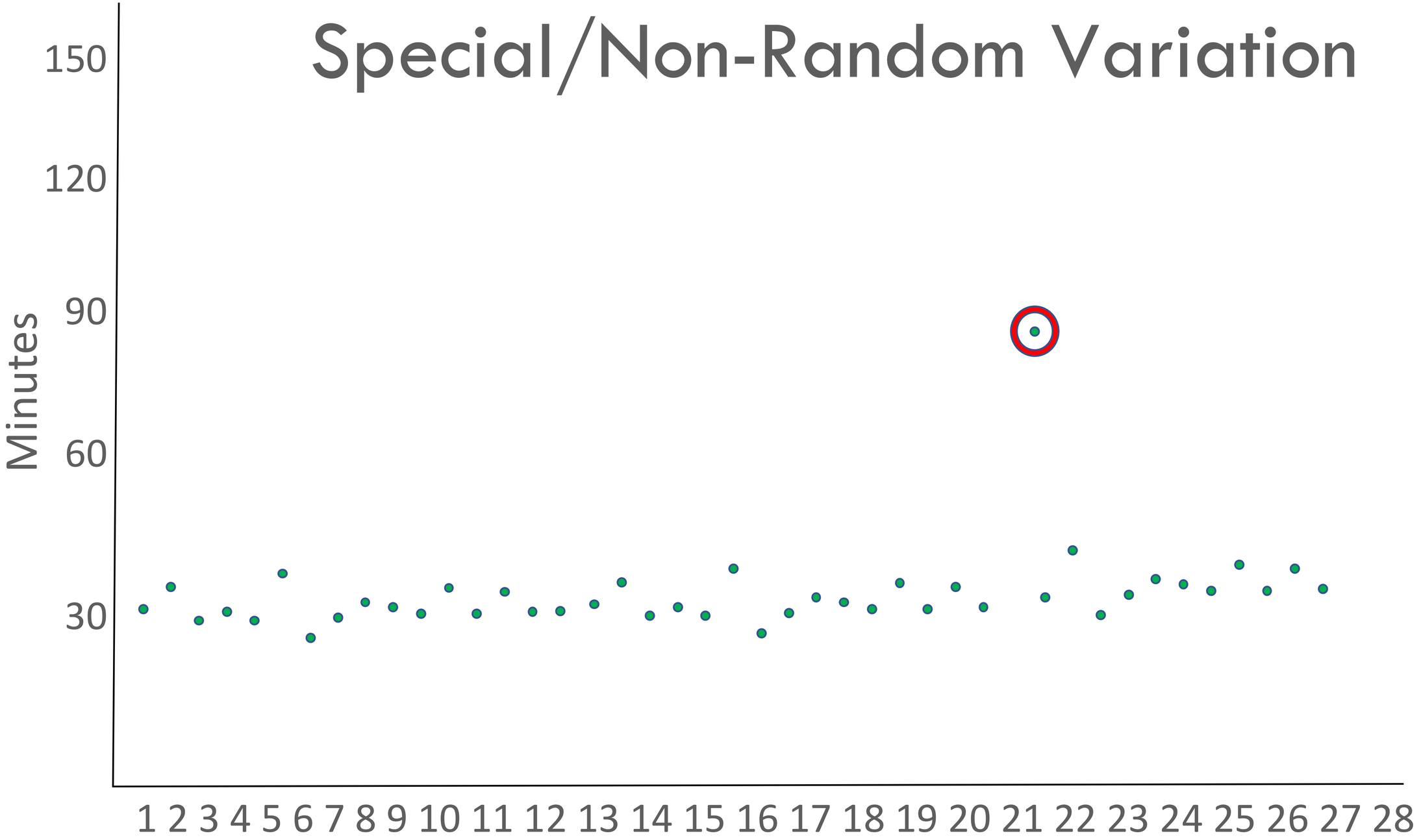
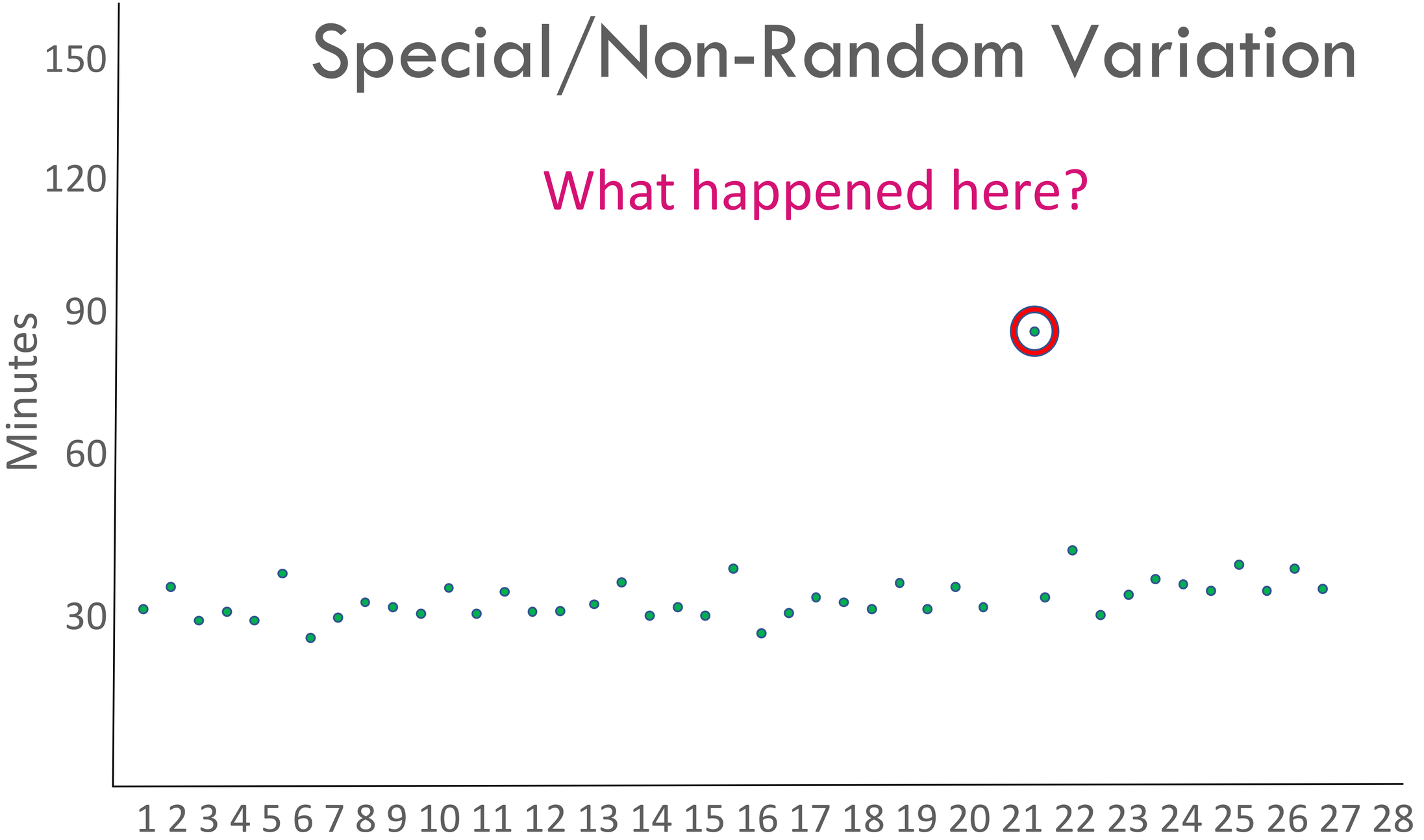
Special/Non-Random Variation

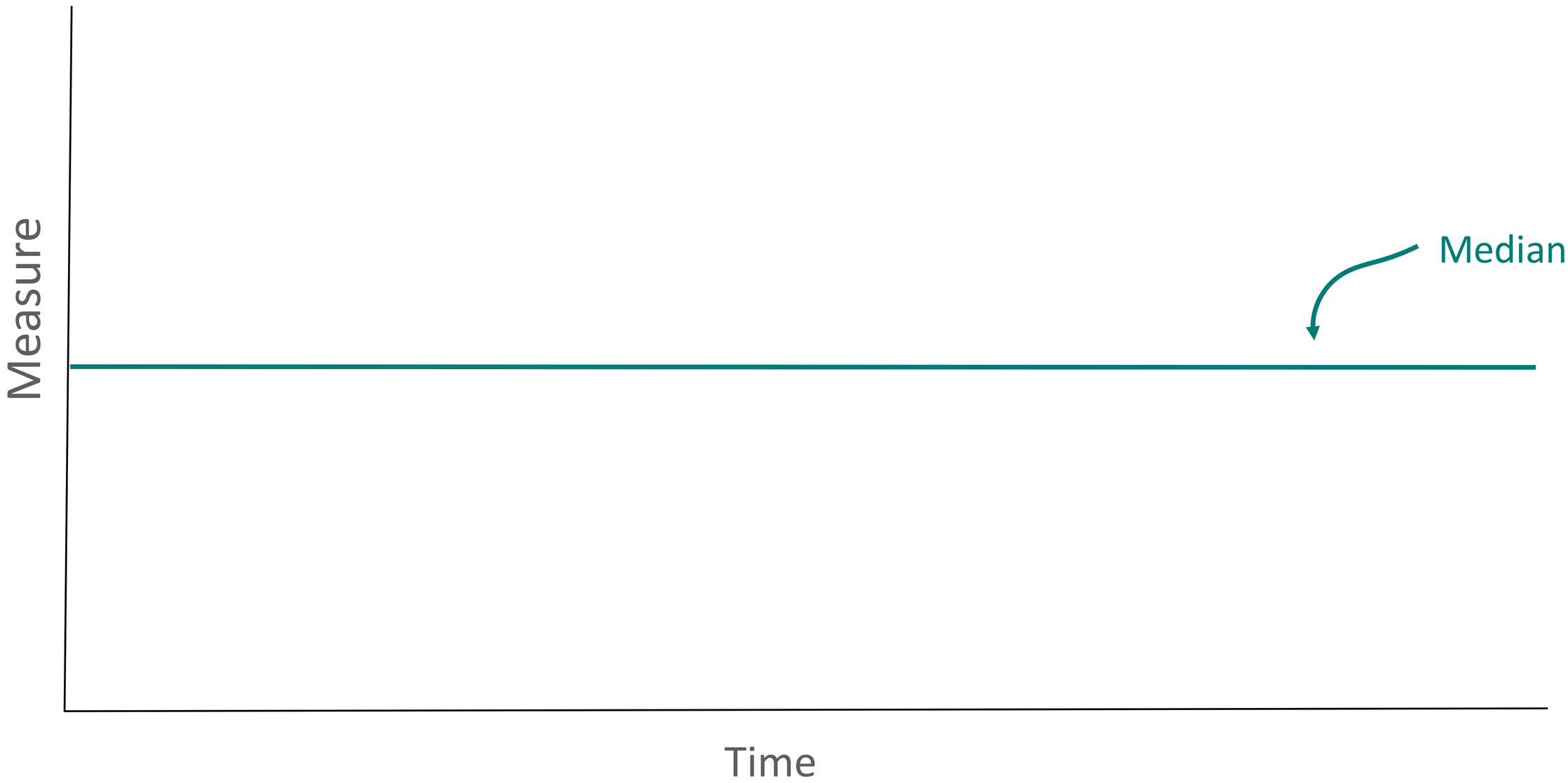


Special/Non-Random Variation

What happened here?



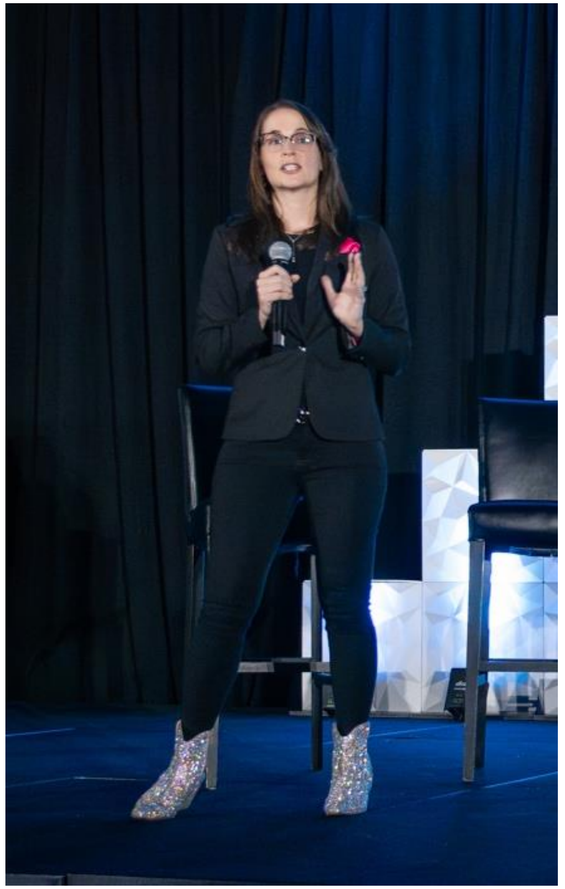
Anatomy of a Run Chart



Why median?

Average Weeks at #1 on the US Billboard

42 weeks



42 weeks

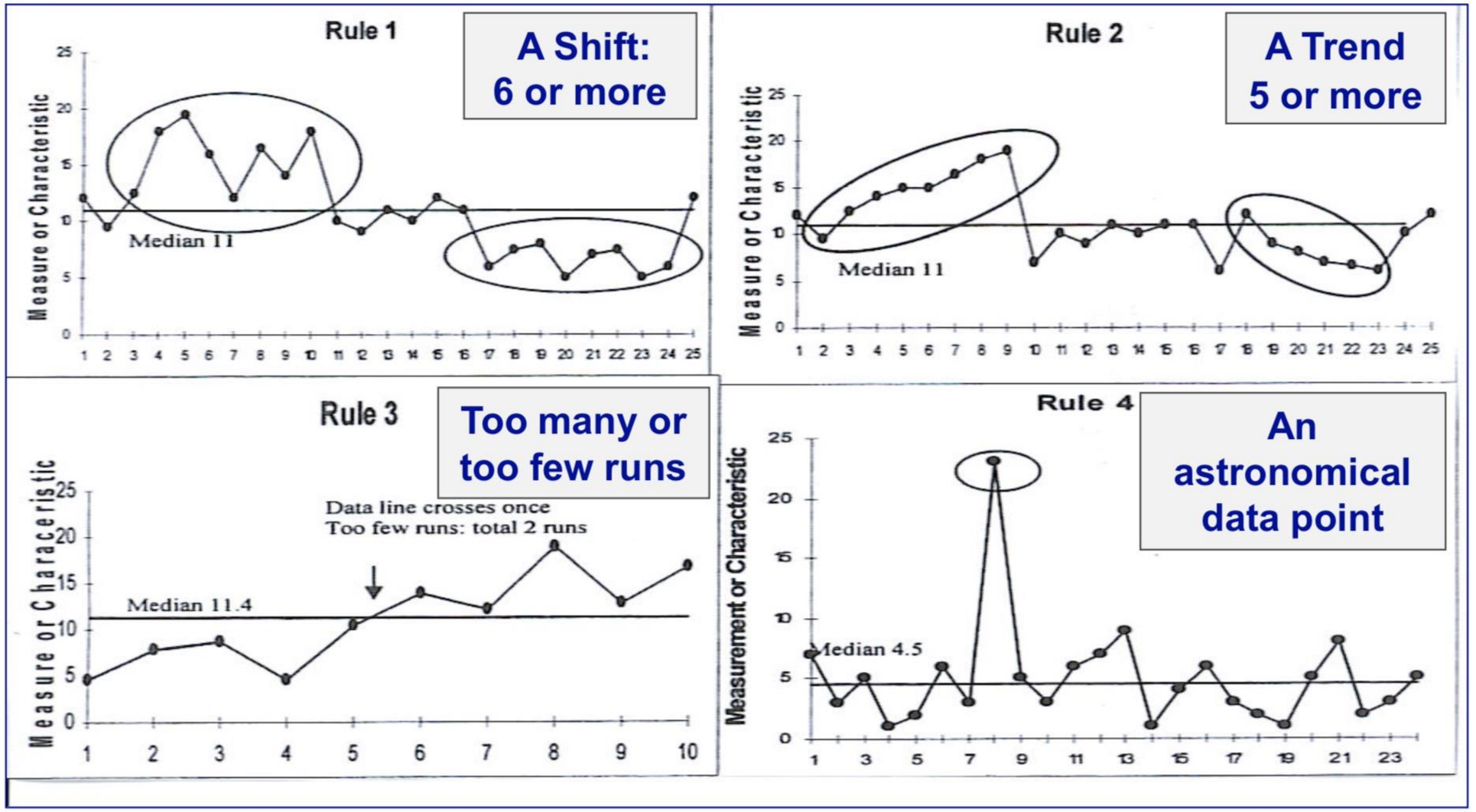
Anatomy of a Run Chart

Median

Measure

Time

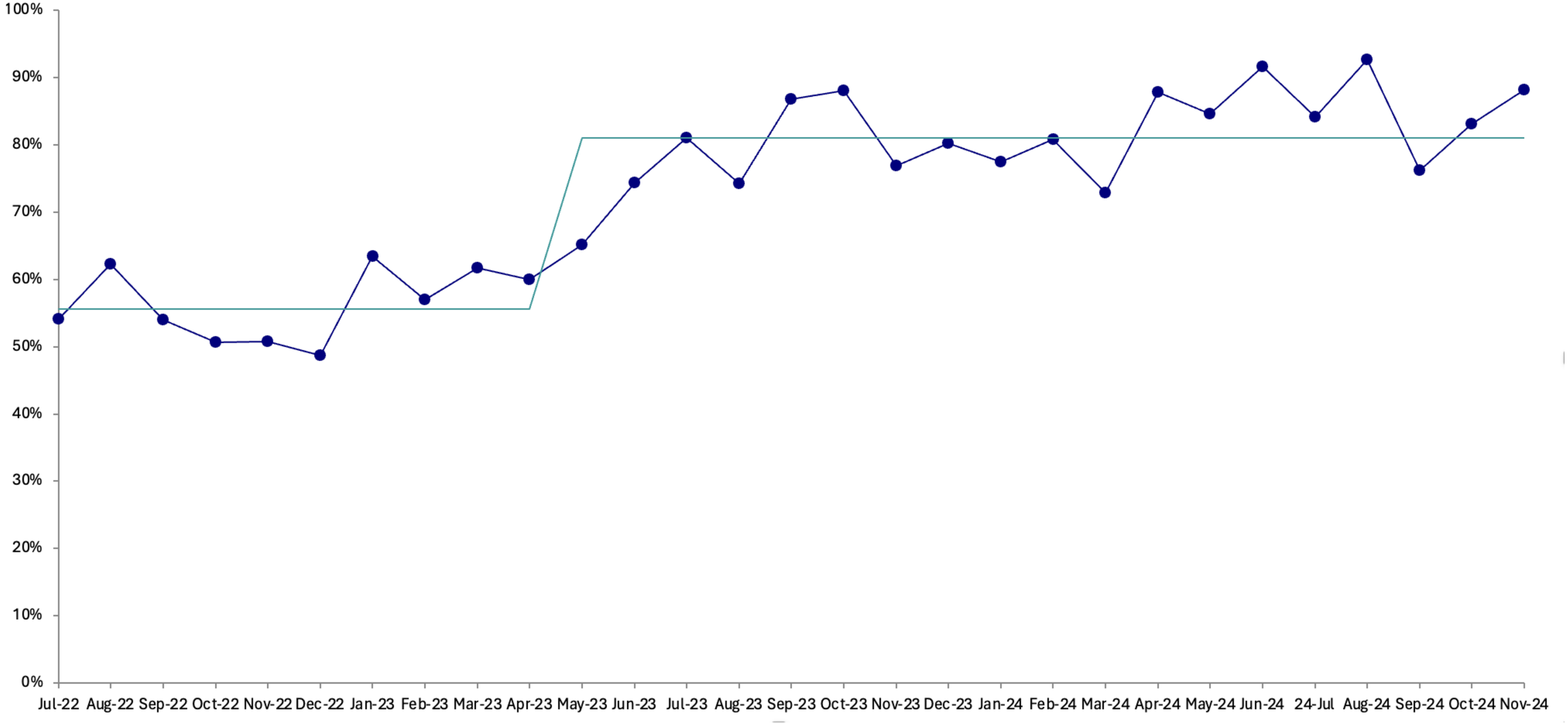
Non-Random Rules for Run Charts

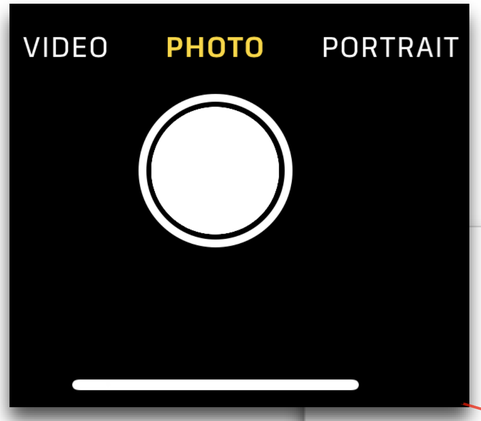


Source: The Data Guide by L. Provost and S. Murray, Jossey-Bass Publishers, 2011.

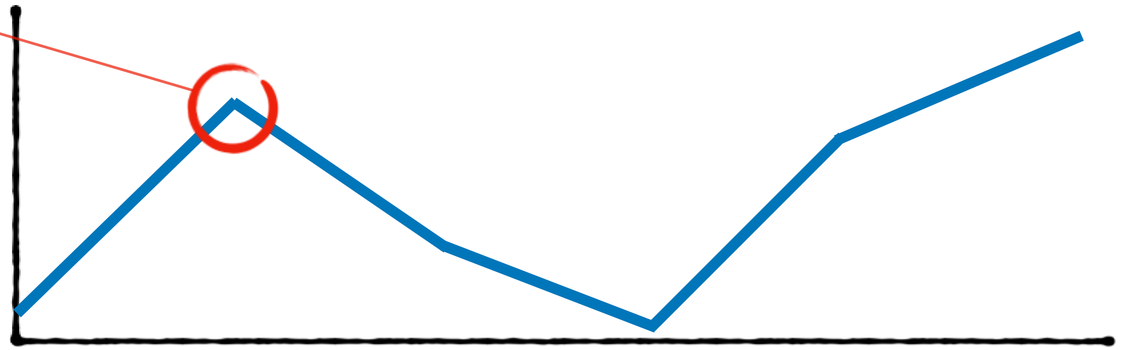
Special Cause Variation

% Ambulation Assessment in Non-Transported Geriatric Fall Patients

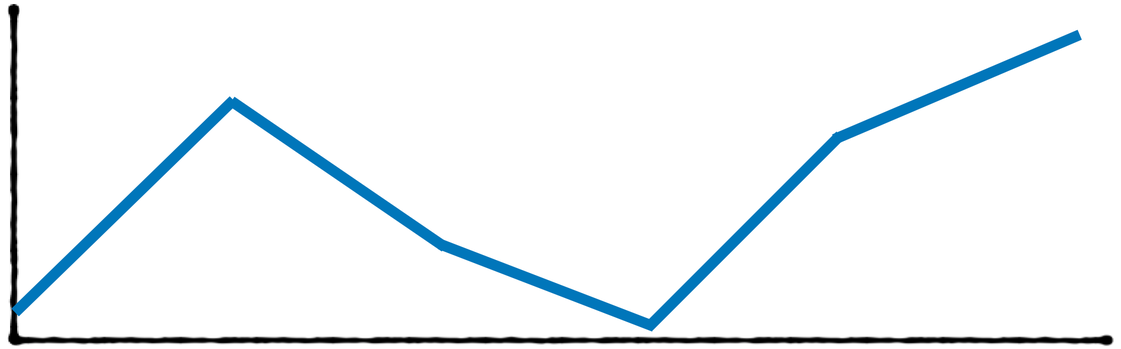


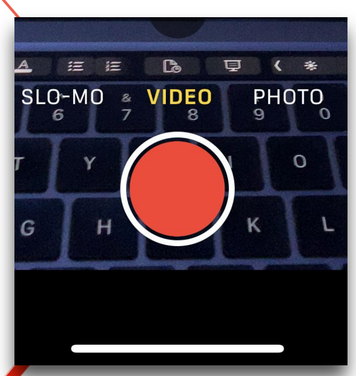


Variation

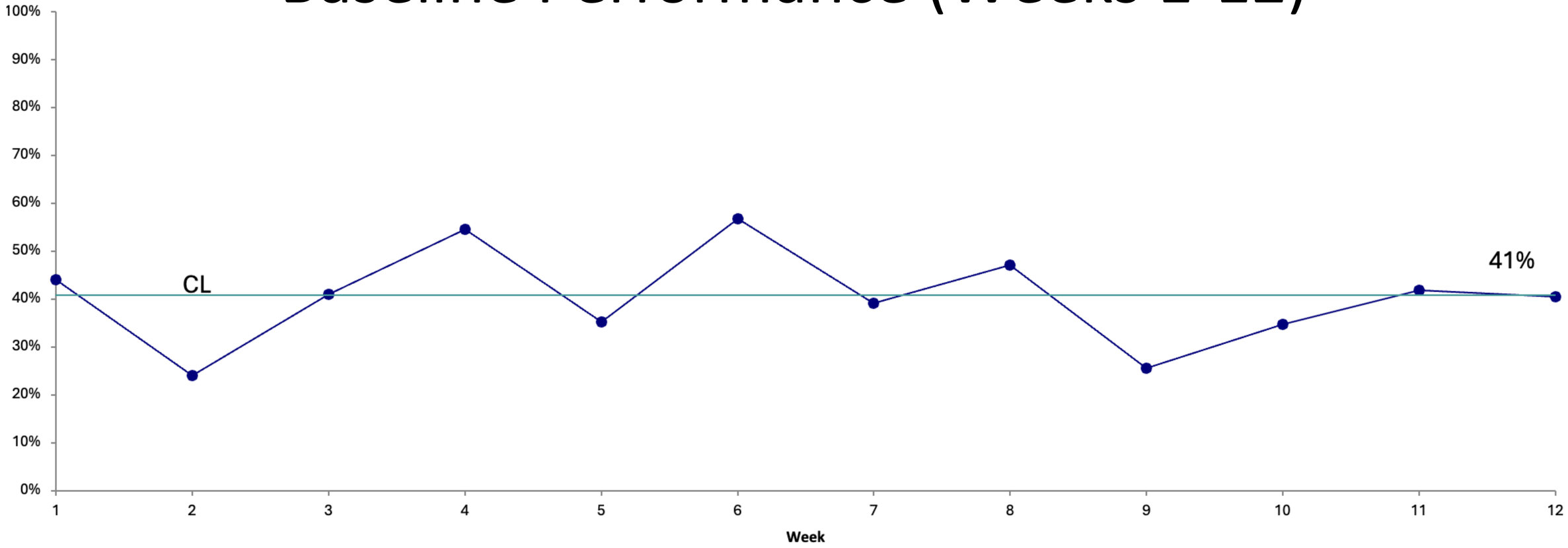


Variation

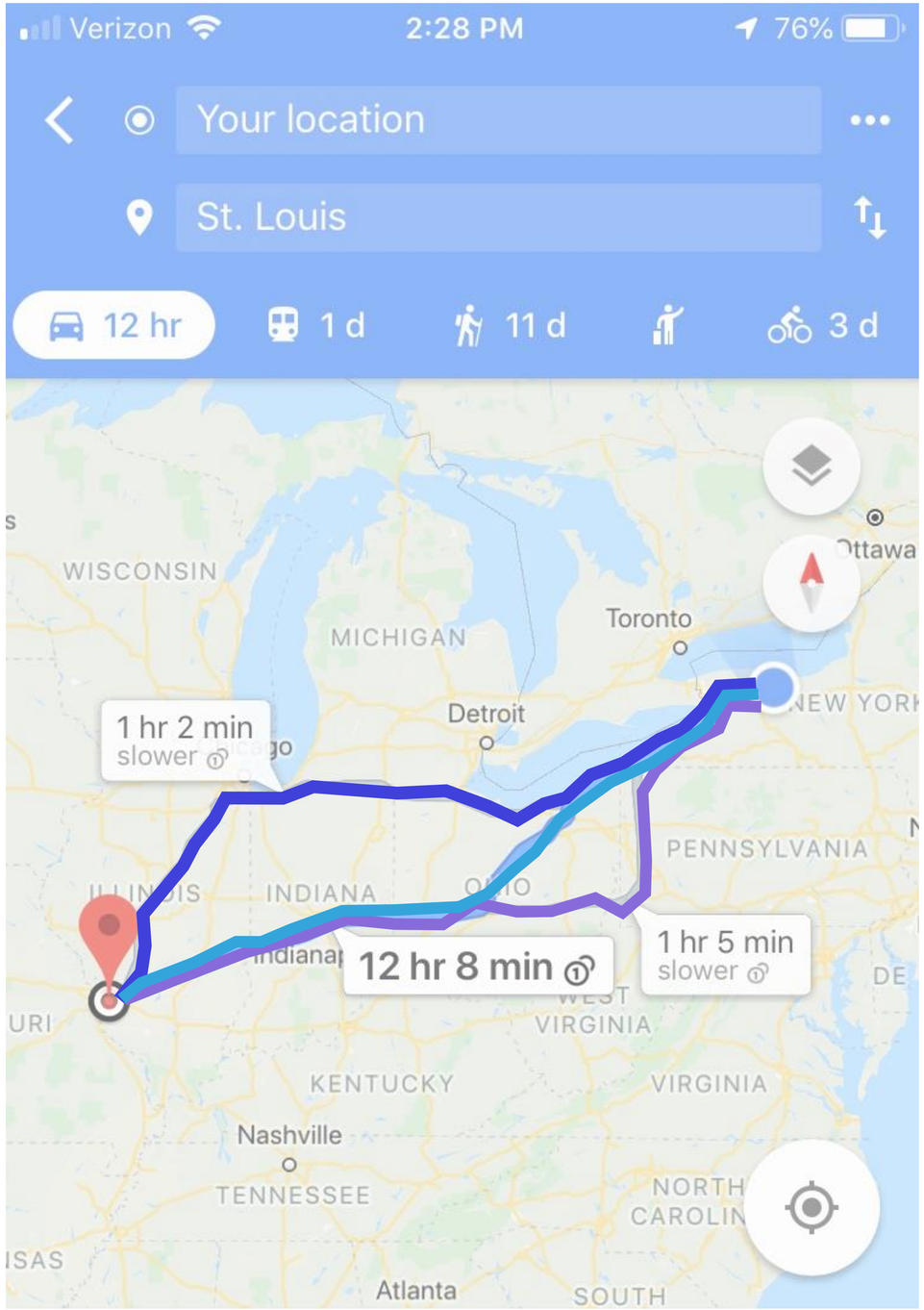




% Non-Transports with a Full Set of Vital Signs Baseline Performance (Weeks 1-12)



[3] What change can we make that will result in an improvement?

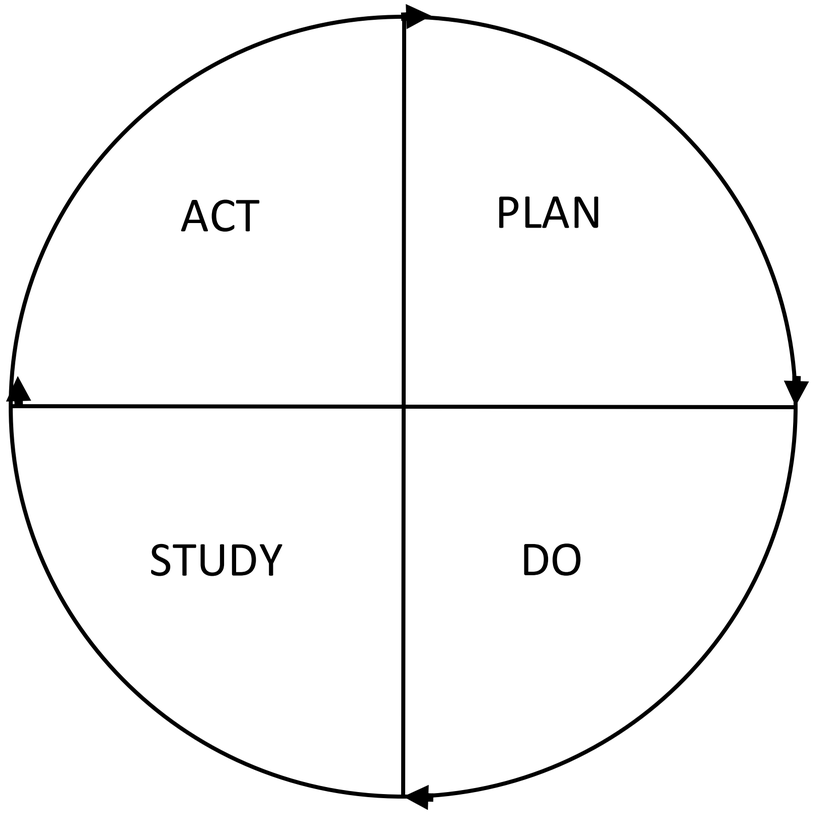


In the context of improvement, a change is a prediction.

What are we trying to accomplish?

How will we know when change is an improvement?

What change can we make that will result in an improvement?



Build knowledge

Change Idea

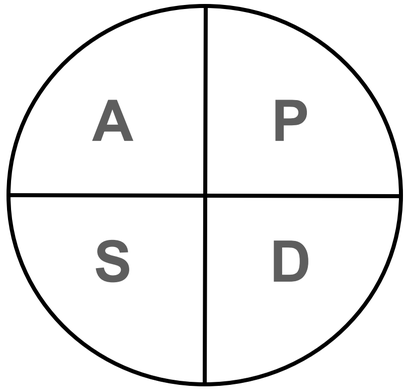
Implementation

Change Idea

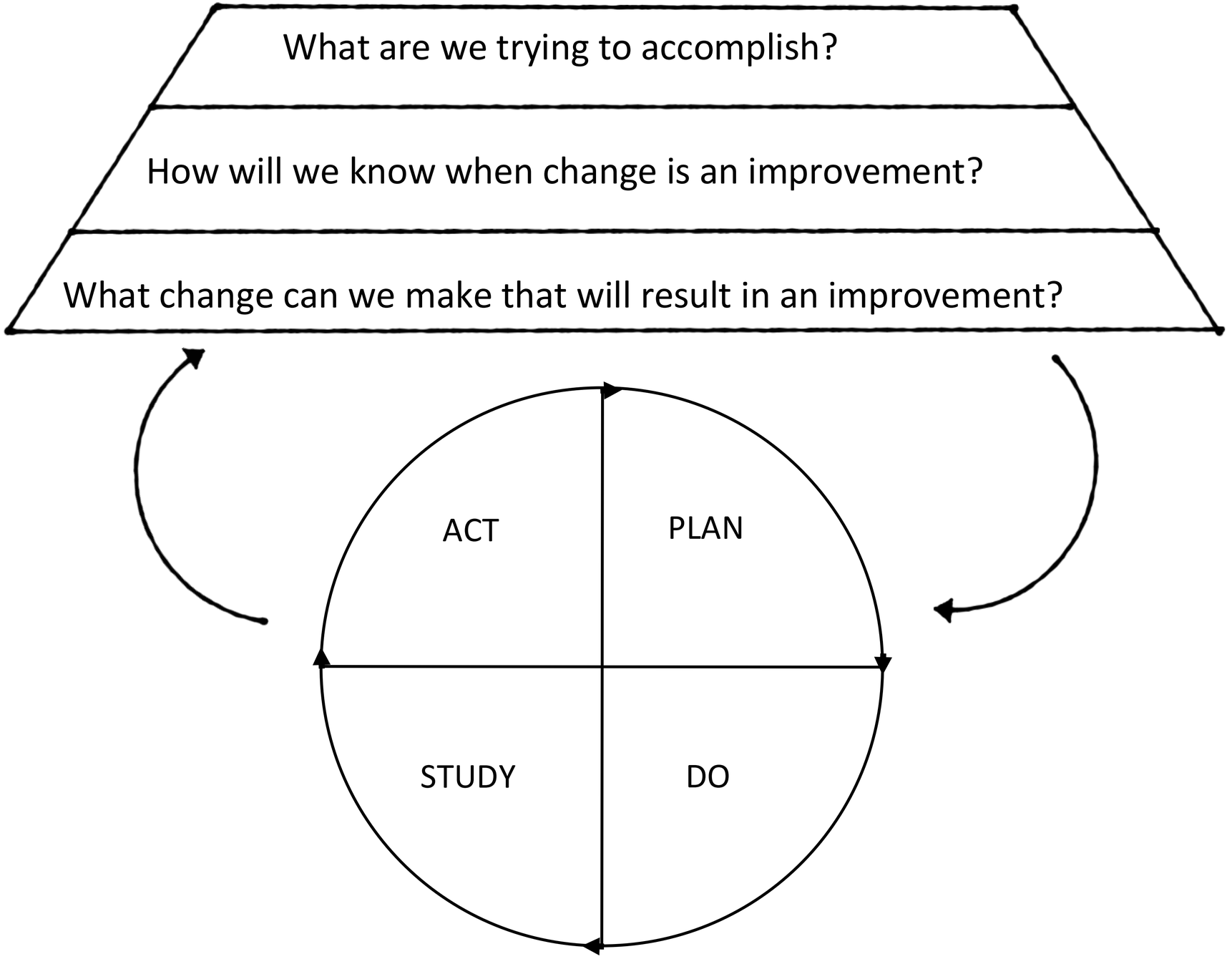
Implementation

Change Idea

Test



Implementation if successful

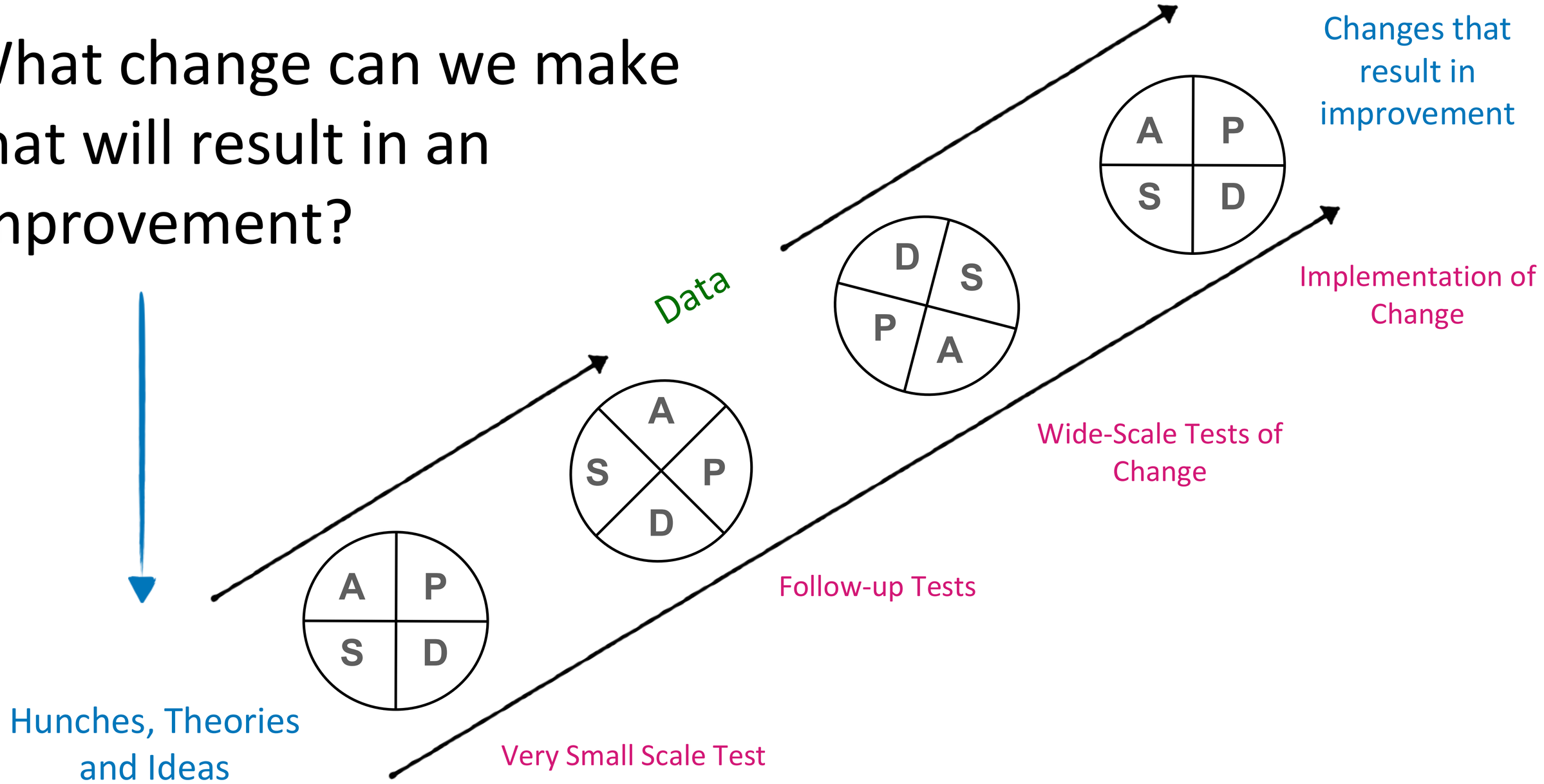

What are we trying to accomplish?
How will we know when change is an improvement?
What change can we make that will result in an improvement?
ACT
PLAN
STUDY
DO

What change can we make that will result in an improvement?

Hunches, Theories and Ideas

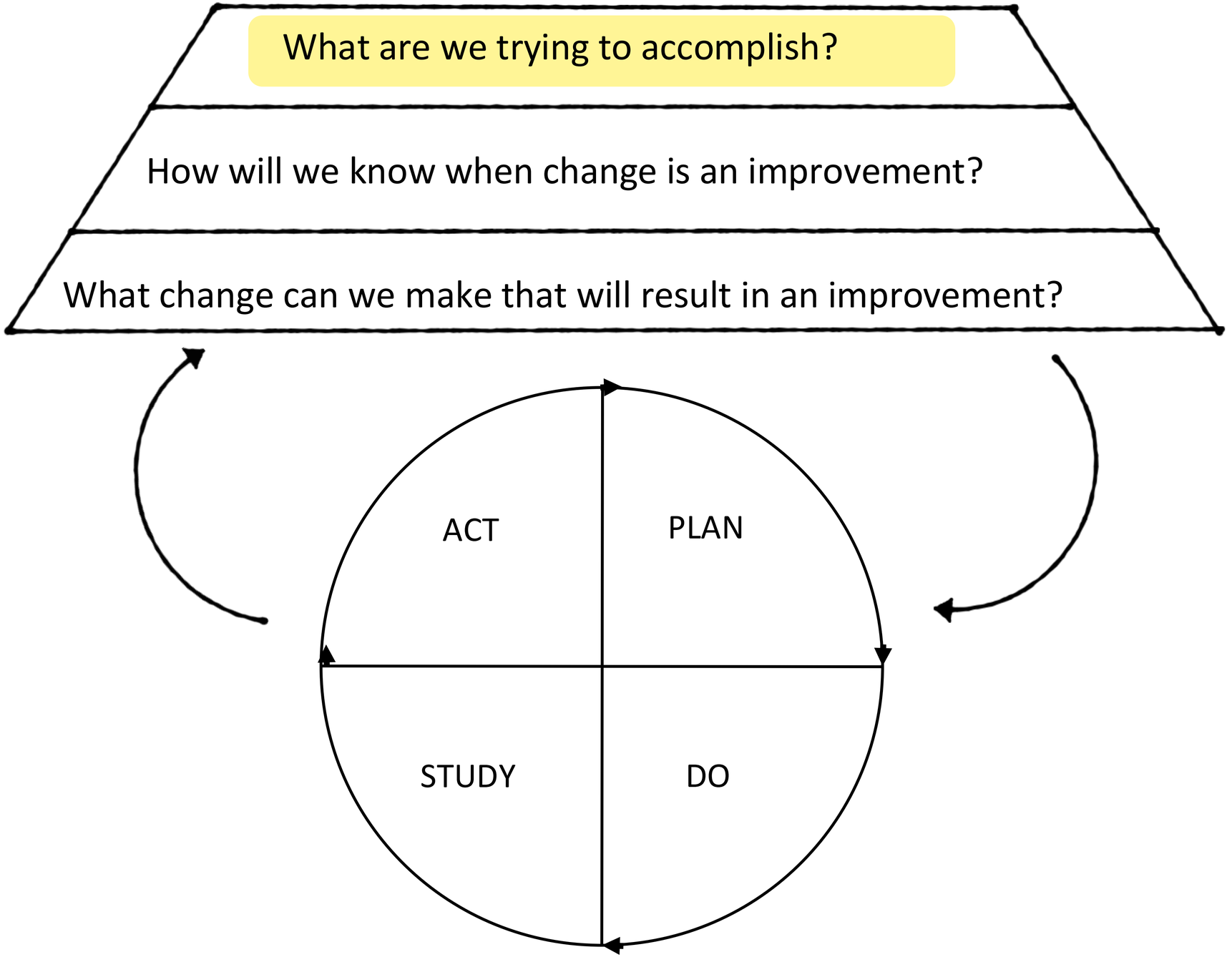
From: Provost and Murray. The Health Care Data Guide: Learning From Data For Improvement. (2011)

What change can we make that will result in an improvement?



From: Provost and Murray. The Health Care Data Guide: Learning From Data For Improvement. (2011)


New Year's resolutions
1. .


What are we trying to accomplish?
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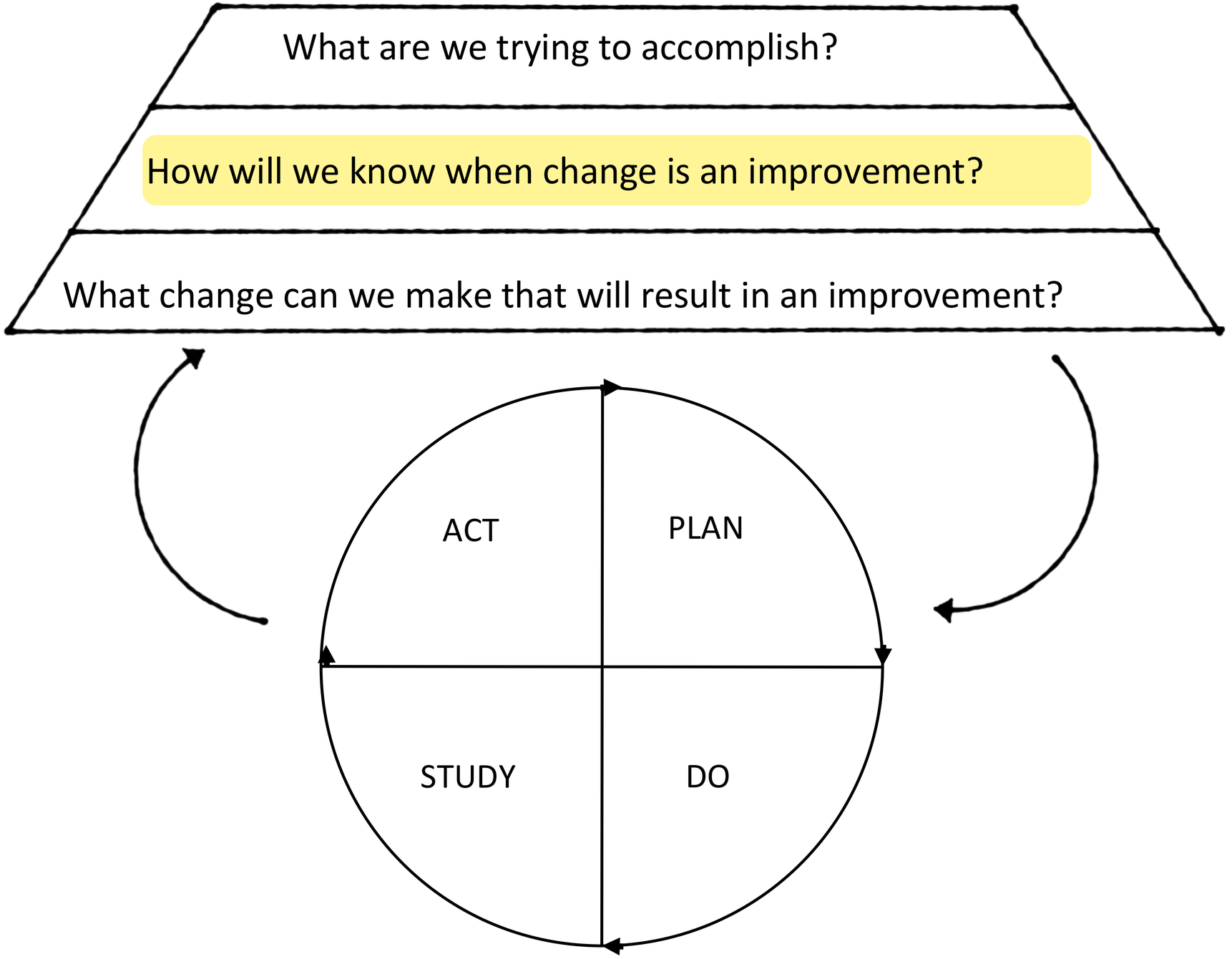
ACT
PLAN
STUDY
DO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How will we know when change is an improvement?
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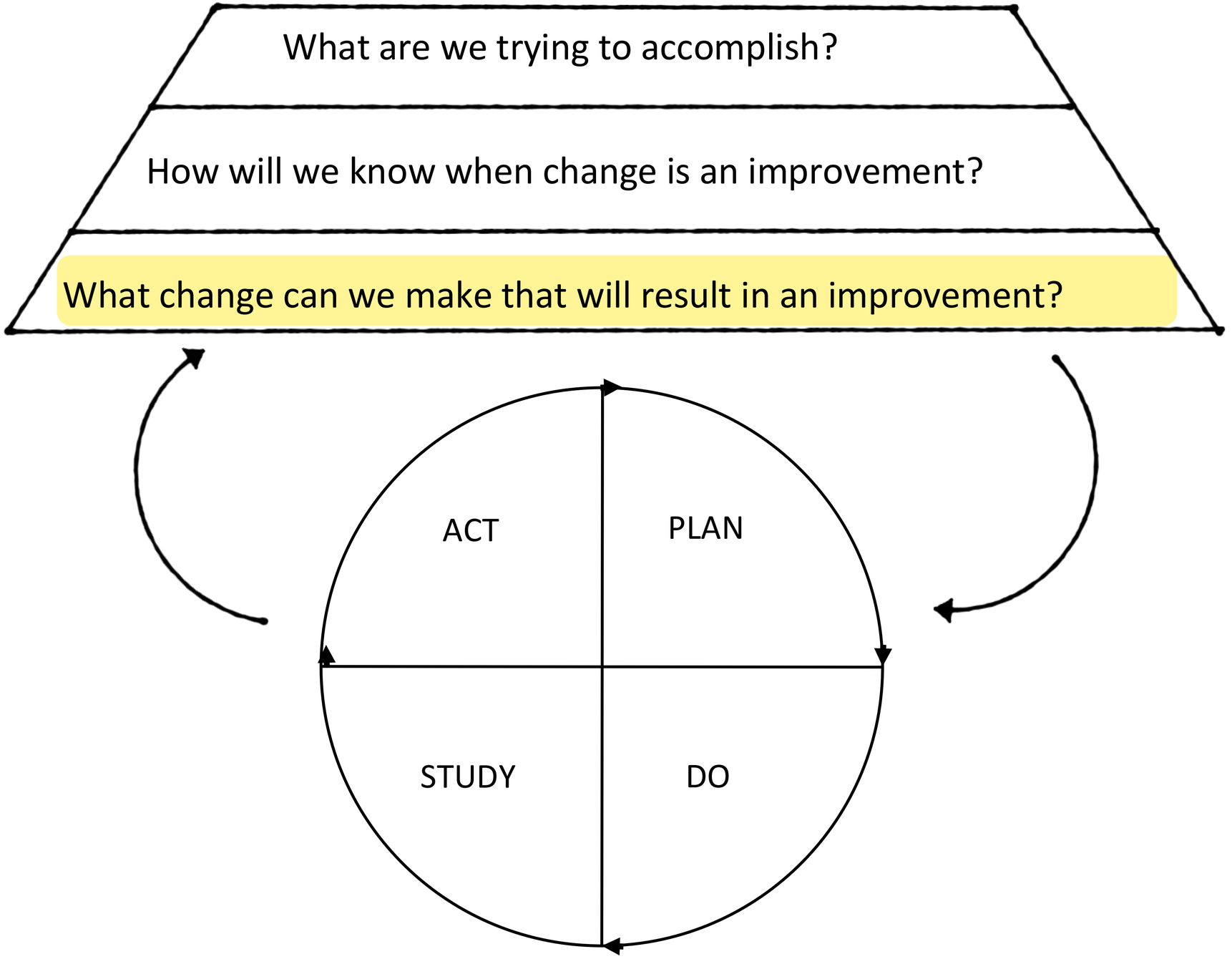
ACT
PLAN
STUDY
DO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ACT
PLAN
STUDY
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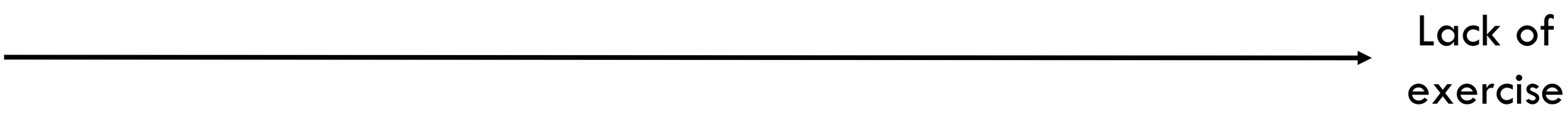
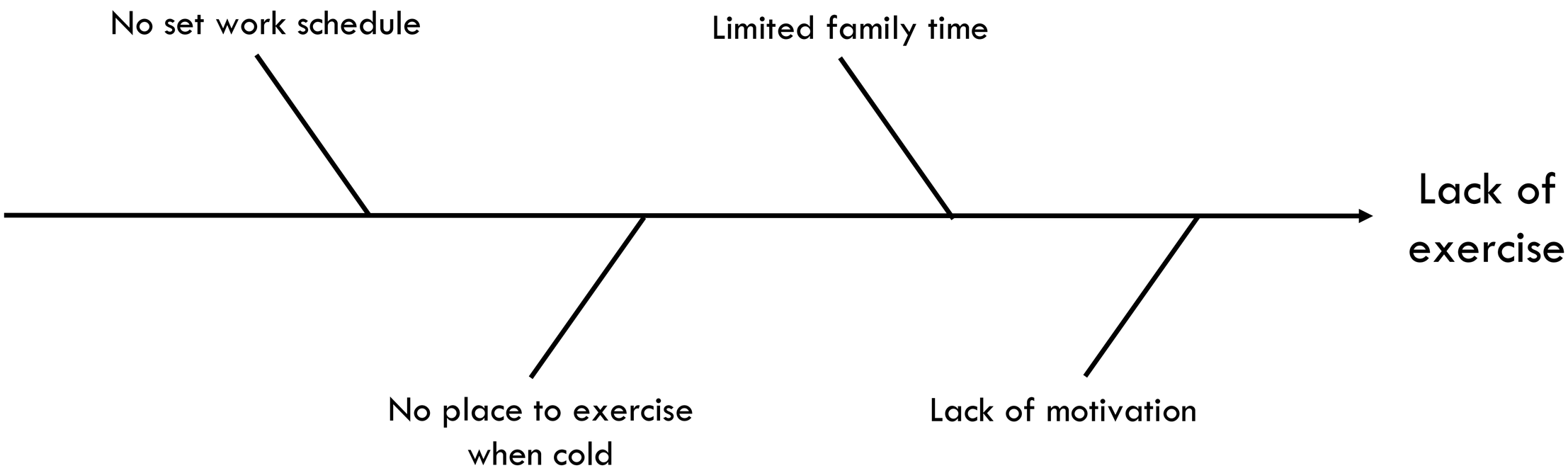
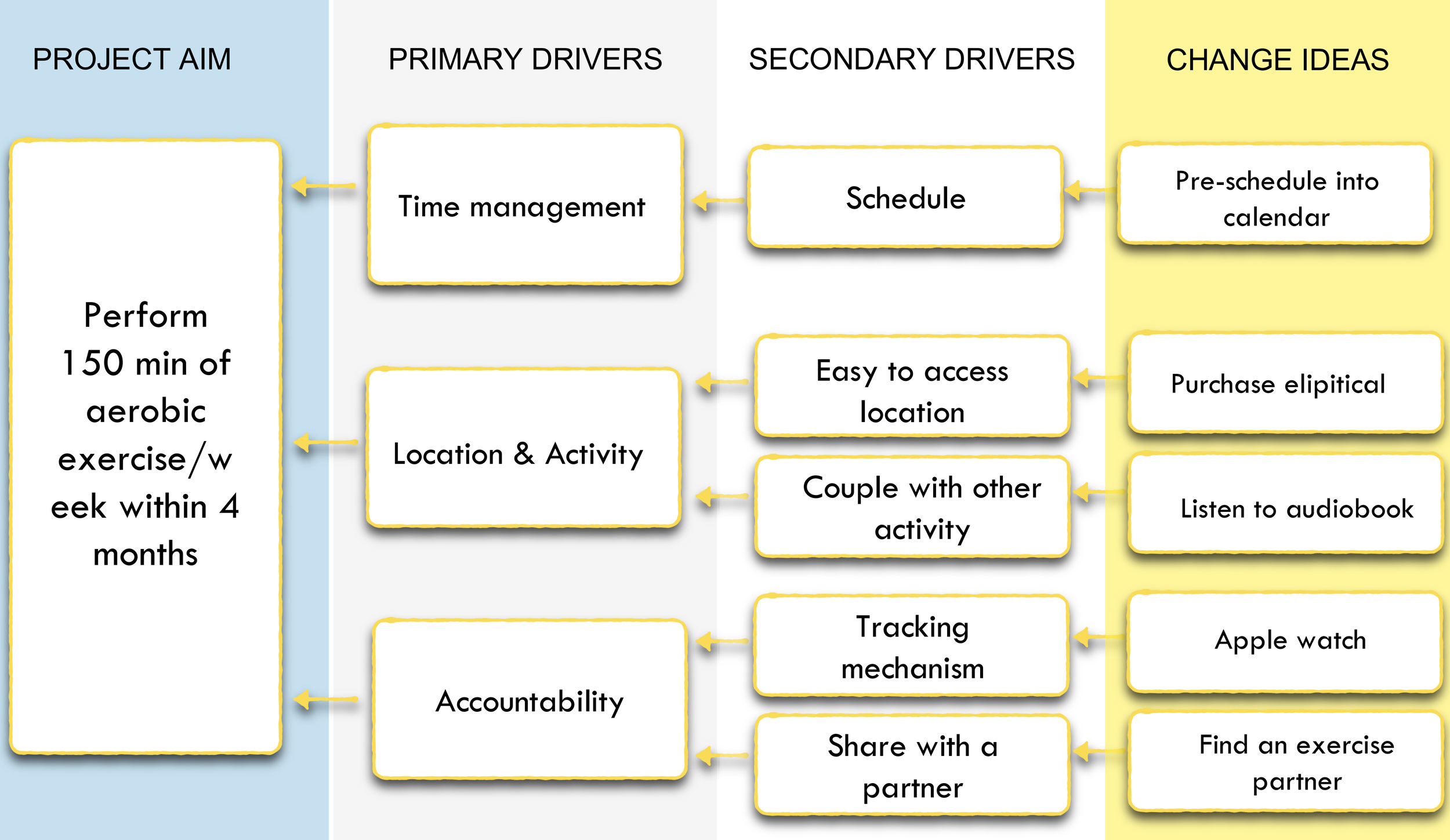
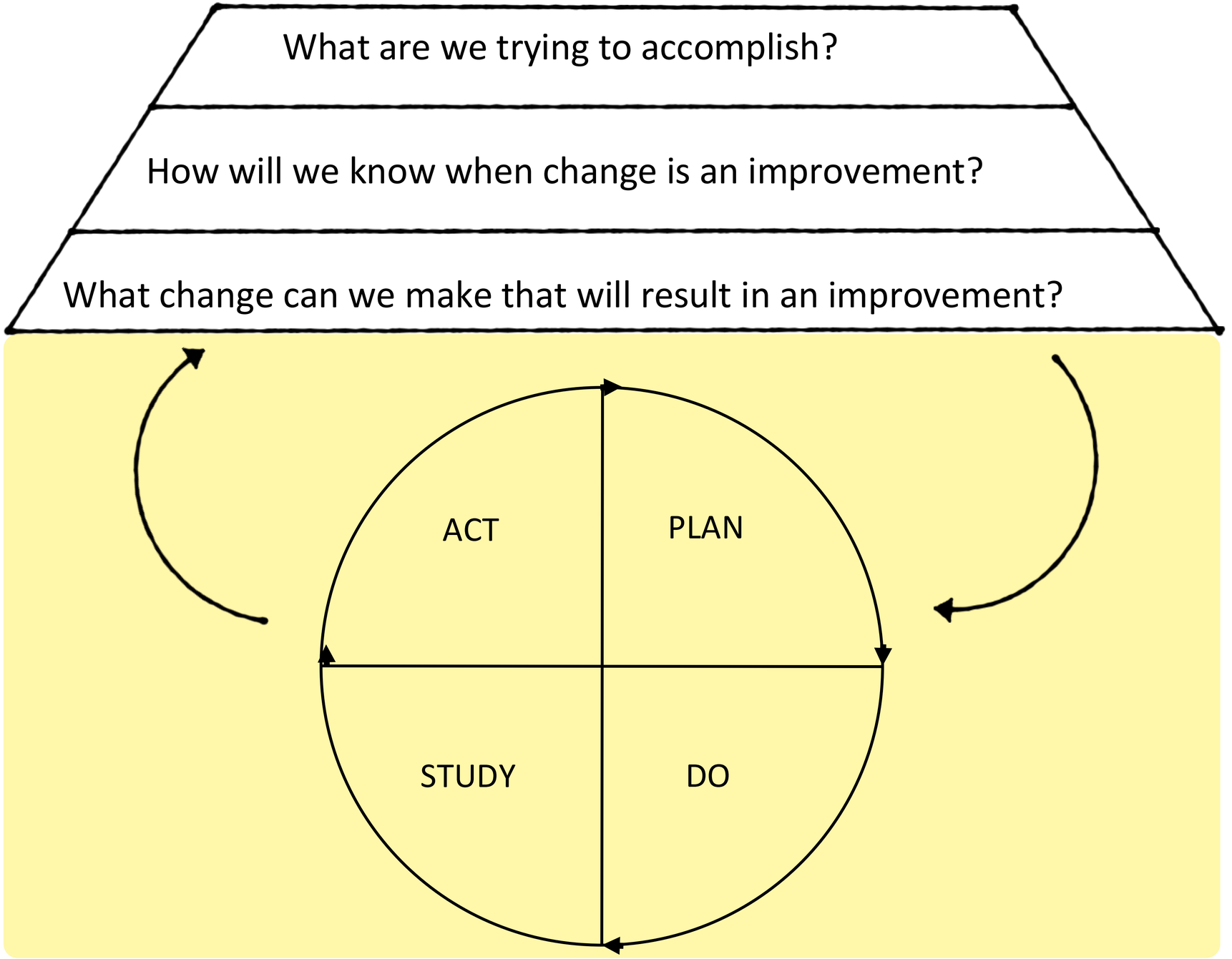

Lack of
exercise


No set work schedule
Limited family time
Lack of exercise
No place to exercise when cold
Lack of motivation

Lack of exercise

Perform 150 min of aerobic exercise/week within 4 months


PROJECT AIM
PRIMARY DRIVERS
SECONDARY DRIVERS
CHANGE IDEAS
Perform 150 min of aerobic exercise/week within 4 months
Time management
Location & Activity
Accountability
Schedule
Easy to access location
Couple with other activity
Tracking mechanism
Share with a partner
Pre-schedule into calendar
Purchase elipitical
Listen to audiobook
Apple watch
Find an exercise partner


What are we trying to accomplish?
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ACT
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STUDY
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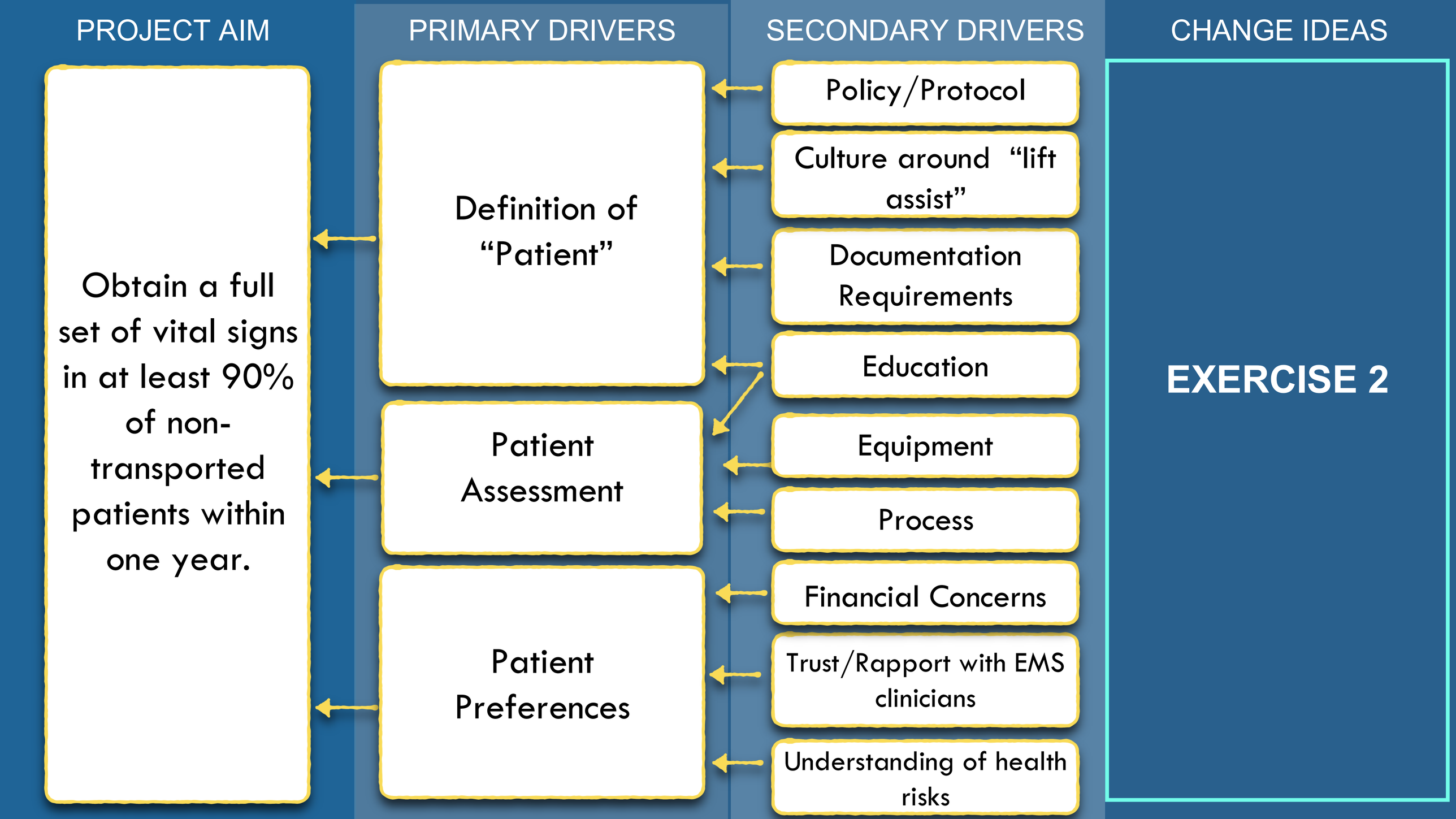
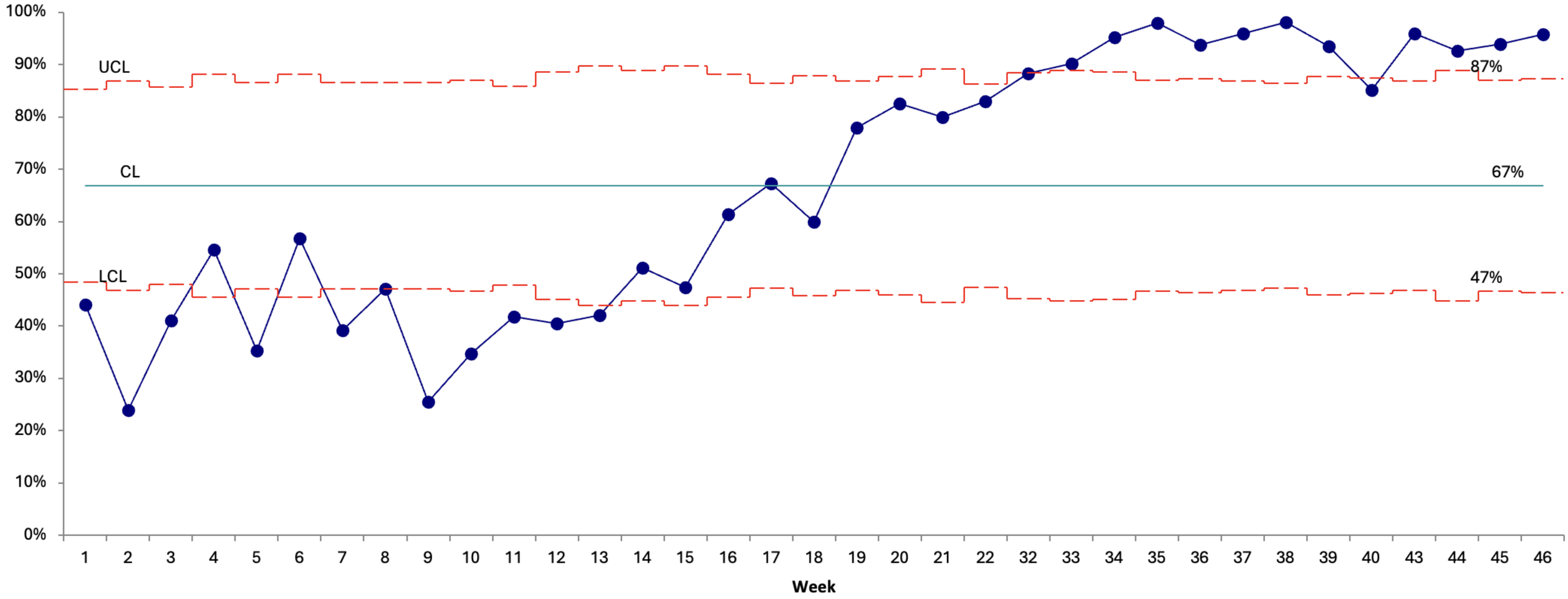

PROJECT AIM
PRIMARY DRIVERS
SECONDARY DRIVERS
CHANGE IDEAS
Obtain a full set of vital signs in at least 90% of non-transported patients within one year.
Definition of "Patient"
Patient Assessment
Patient Preferences
Policy/Protocol
Culture around "lift assist"
Documentation Requirements
Education
Equipment
Process
Financial Concerns
Trust/Rapport with EMS clinicians
Understanding of health risks
EXERCISE 2

EXERCISE 2

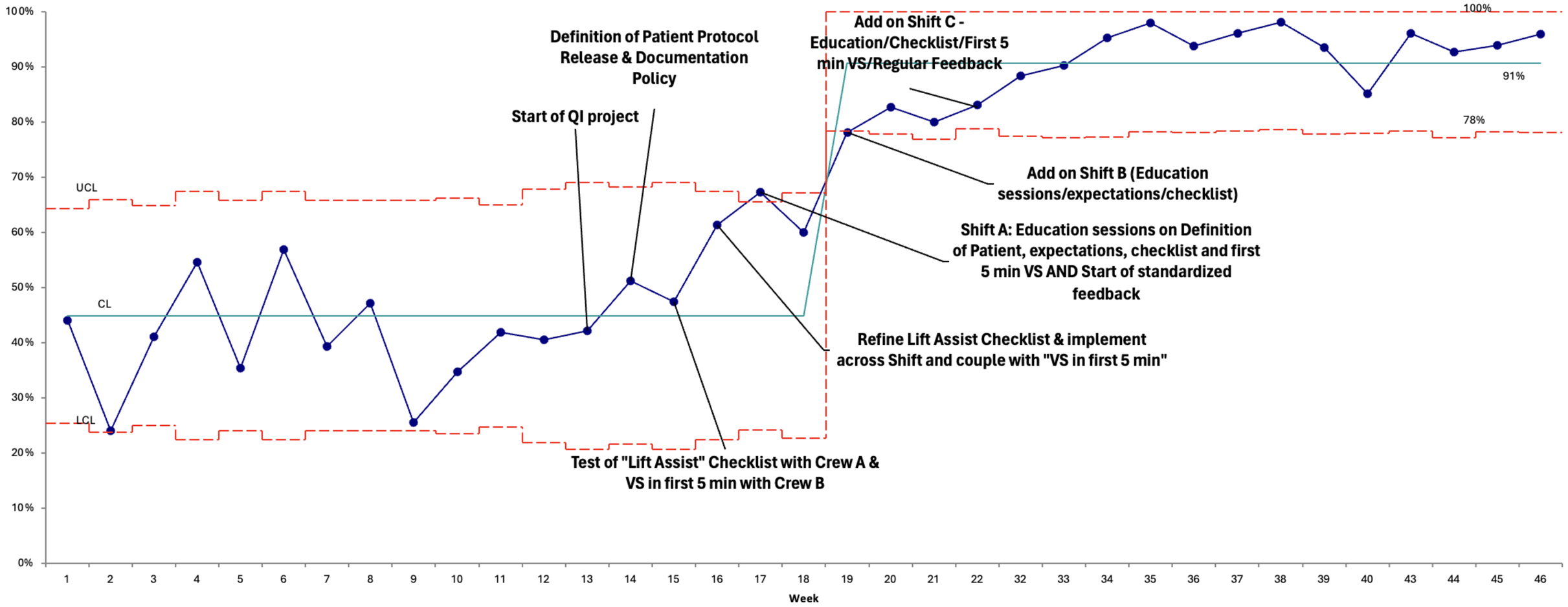
1. Review the driver diagram/table. Brainstorm change ideas that address the drivers.

2. Pick 1-2 change ideas and discuss how you might carry out the initial PDSA cycle to build knowledge or test a change.

% Non-Transports with a Full Set of Vital Signs
Weeks 1-46



% Non-Transports with a Full Set of Vital Signs Weeks 1-46



To which bucket have you been devoting your time and energy?

Where will you devote your time and energy now?