

Community Reception Center Exercise Timing Data and Planning Tool Development

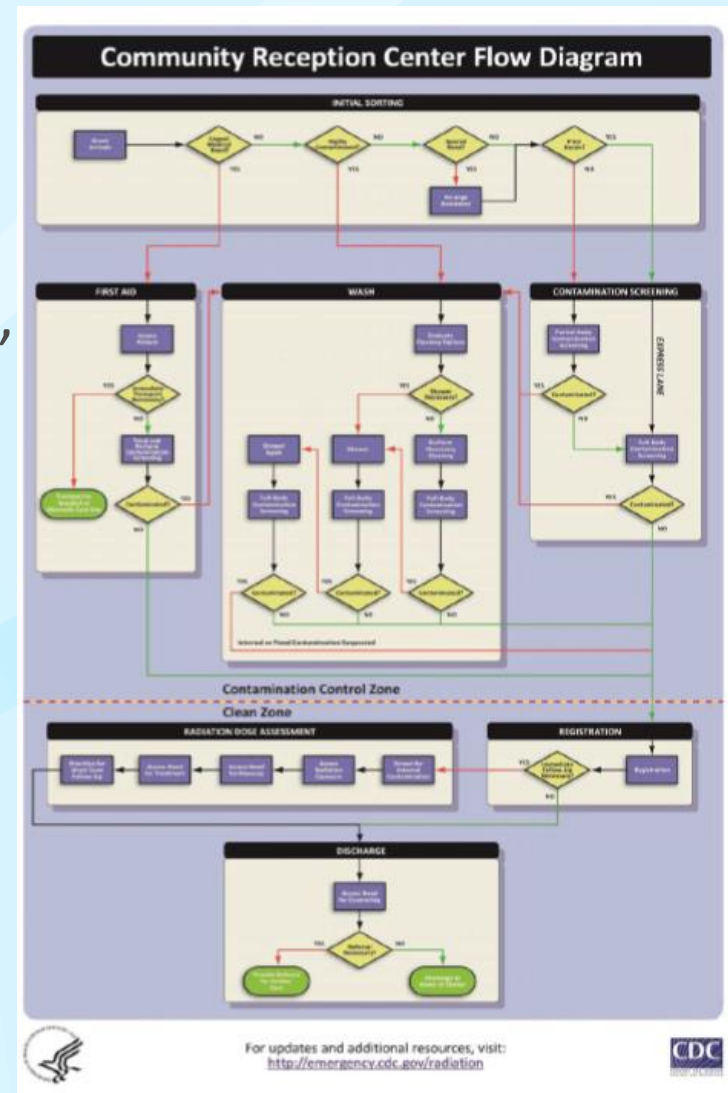
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Centers for Disease Control and Prevention
Radiation Studies Section

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Community Reception Center

- Place where population is directed after a radiological incident to receive screening, decontamination, and other services
- Services include:*
 - First Aid*
 - Contamination screening*
 - Wash (Decon)*
 - Dose assessment*
 - Registration*



Community Reception Centers are time and resource intensive

■ Time intensive

- Prior to an incident:
 - Planning
 - Training
 - Exercising
- During and After an incident:
 - Coordinating
 - Set-up
 - Implementation and Operation (multiple shifts)



■ Resource intensive

- Prior to an incident:
 - Equipment and Staff availability
 - Radiation education availability
 - Venue identification and availability
- During and After an incident:
 - Venue availability and feasibility
 - Equipment and Staff availability
 - Other

Room Poll

- How long does it take to perform a full body screening with a GM?
- How long does it take to perform full body decontamination? (shower)

Requirements for Power Plant Incidents

- 20 % of population living in an Emergency Planning Zone must be able to be screened in 12 hours

TABLE 1:

Recommended Parameter Values For Detecting Contamination on Individuals^a

Instrument/ Detector Combination	Parameter Values for Detecting Spot or Widespread Contamination on Individuals			Calculated Time Needed to Monitor an Adult (minutes)
	Probe Speed (inches/second)	Height of Probe (inches)	Path Width (inches)	
CD V-700 with side window detector ^b	4	0.25 to 0.5	0.6	19
CD V-718 with end window detector	3	0.5 to 1	1	12
All tested instruments with pancake detectors, except the Victoreen 190	6	1 to 3	2	3.9
Victoreen 190 with pancake detector ^b	6	1 to 4	3	2.6

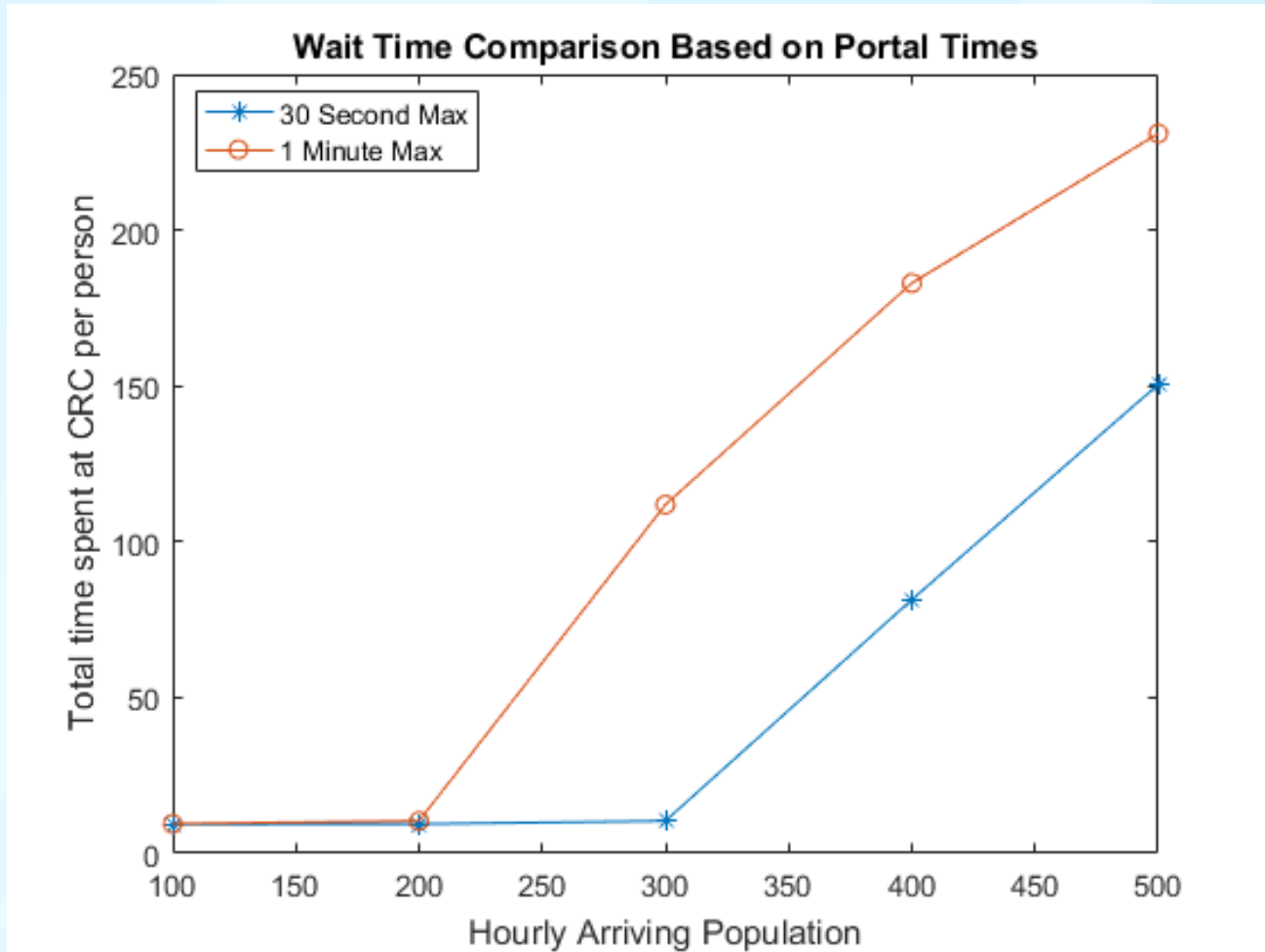
a. These values are based on the ability to detect 0.1 μCi of contamination on a small spot of skin in background gamma radiation levels up to 0.1 mR/h, except as noted. Refer to Table 4 of the Background Information Document for more detailed information.

b. Audible detection is not possible in a background gamma radiation level of 0.1 mR/h. Values are for use in background levels of 0.02 mR/h or lower.

What does this mean if applied to an IND or RDD?

- Atlanta Population = 500,000 (census)
- 20% = 100,000 people
- If 5 CRC's open :
 - 20,000 per CRC
 - Over 12 hours: 1670 people processed per hour
 - Over 2 days (2 12 hour shifts): 840 ppl/hr
 - Over 4 days (4 12 hour shifts): 420 ppl/hr

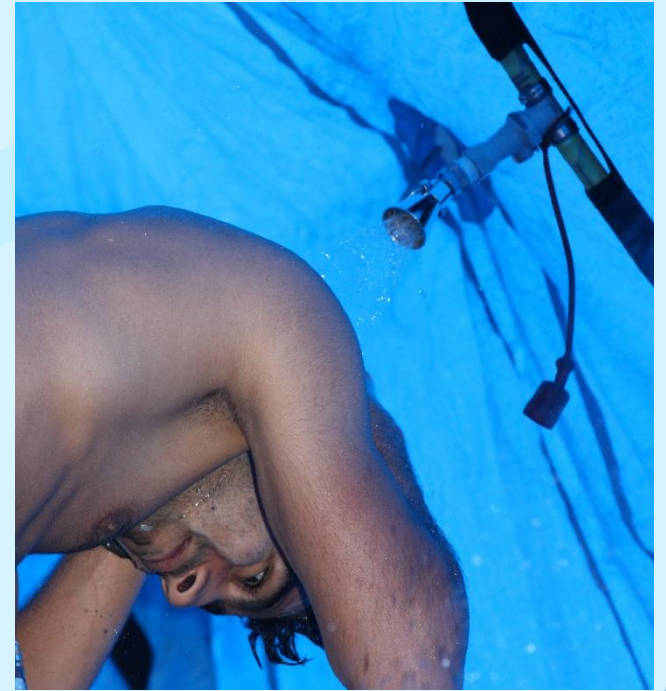
How do service times affect population throughput?



* Centers for Disease Control and Prevention (CDC). *CRC-Step User's Manual*. December 2010. 10 May. 2016
http://www.orau.gov/rsb/step/resources/CRC-STEP_User_Manual.pdf

Initial Goals for timing data collection

- Gather enough timing data to produce valid timing distributions for each station at CRC
- Compare results to current expectations
- Create new timing distributions and integrate into CRC Tool Development



CRC Tool

- **Features:**

- FREE!!
- Users will be able to input resources and operating stations
- Tool will output throughput estimations based on current plans
- Eventually tool will provide suggestions for optimum throughput with minimum resource adjustment

- **Current Status:**

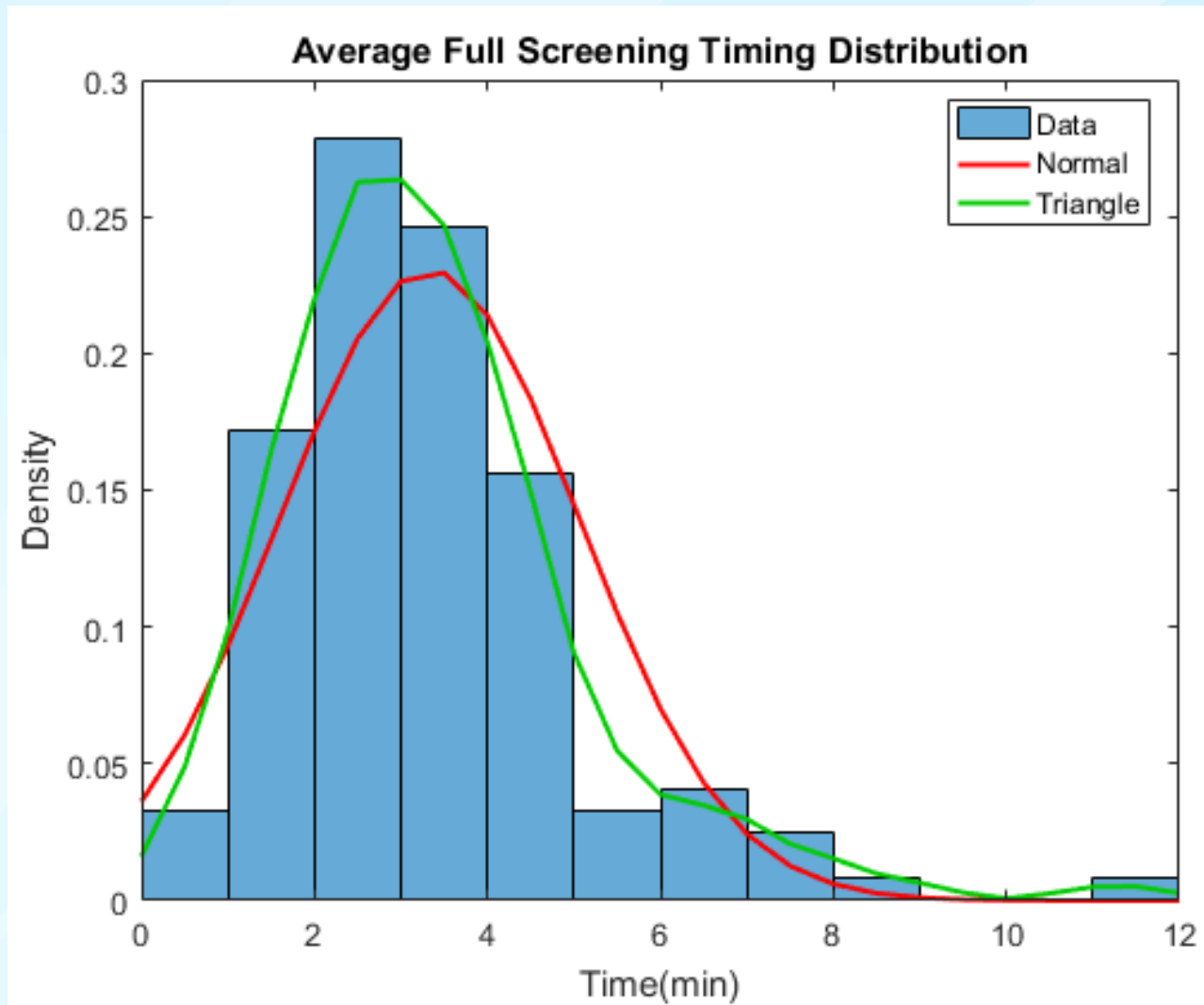
- In development
- Working on GUI and Basic functionality
- Goal to begin alpha testing by spring 2019

Preliminary Combined Exercise results

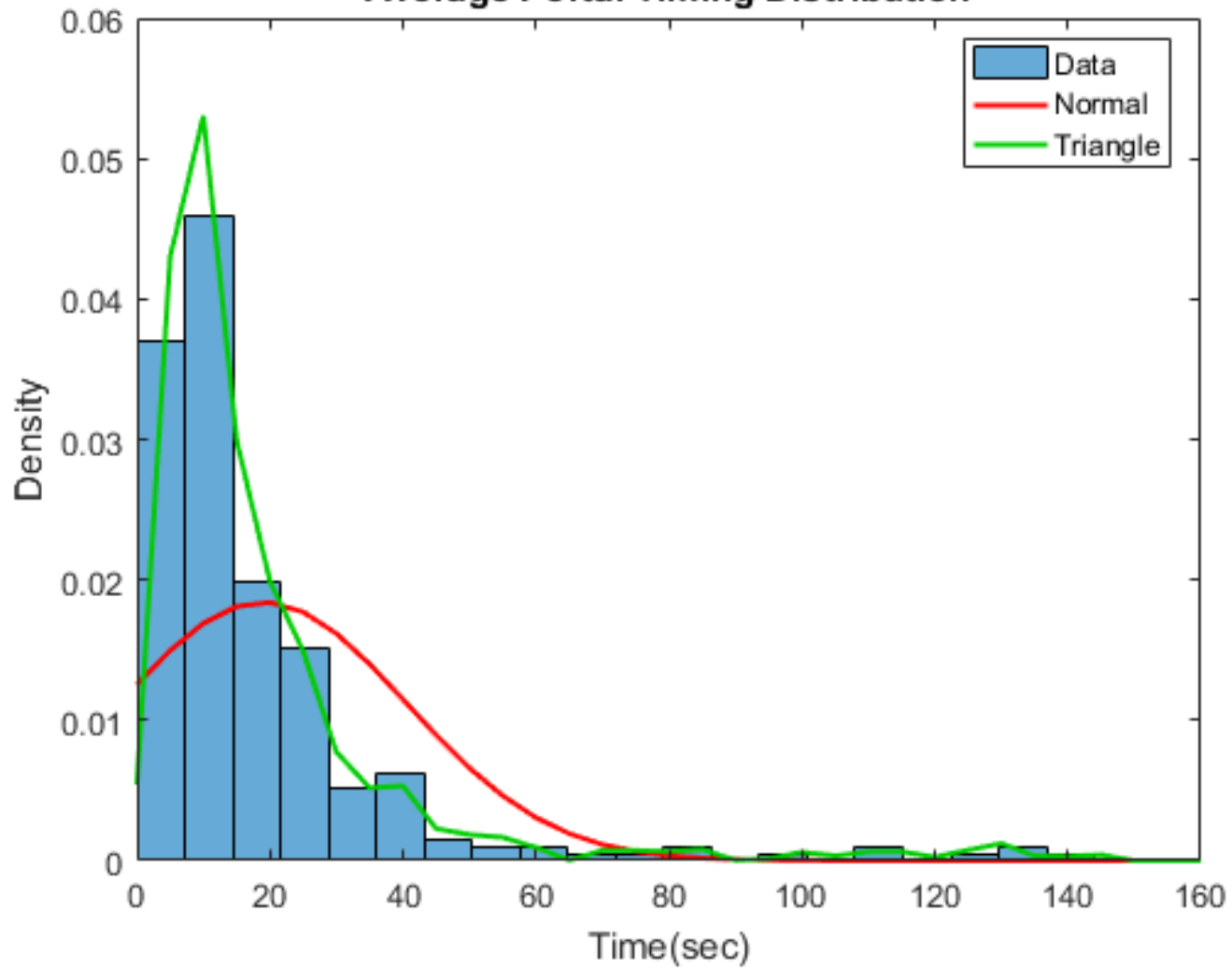
	Portal Monitor		PB Screening w/ GM		FB Screening w/ GM		Partial Decon	Full Decon
Number of observations	267		95		122		39	31
Minimum Time (mm:ss)	00:01		00:06		00:10		00:20	00:29
Mean Time (mm:ss)	00:20	*00:16	01:59	*02:18	03:20	*03:50	00:58	01:53
Mode Time (mm:ss)	00:07		00:39		04:11		00:23	02:00
Maximum Time (mm:ss)	06:21		08:02		11:16		02:12	04:00

*Averaged by exercise instead of total observations

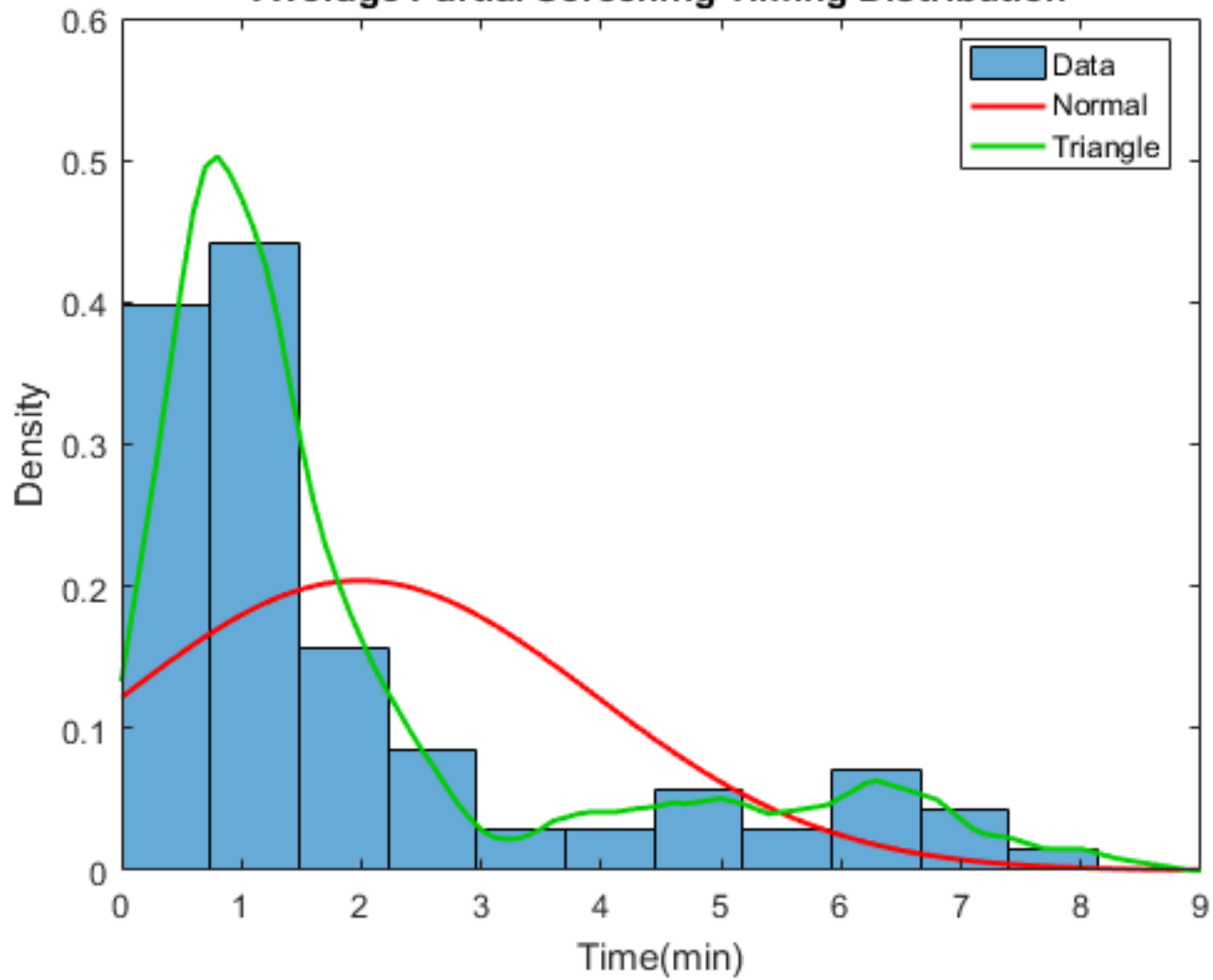
Preliminary Combined Timing Distributions



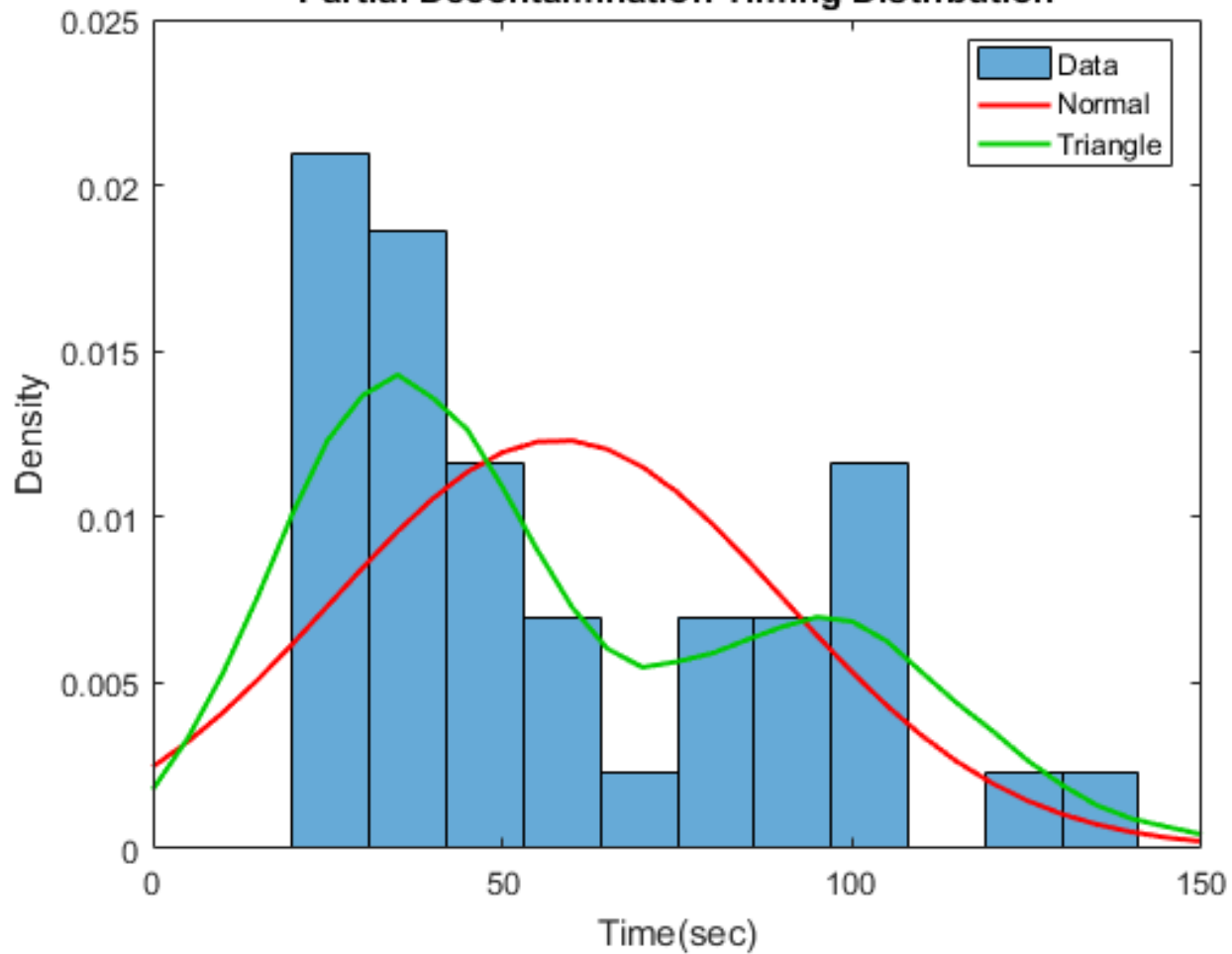
Average Portal Timing Distribution



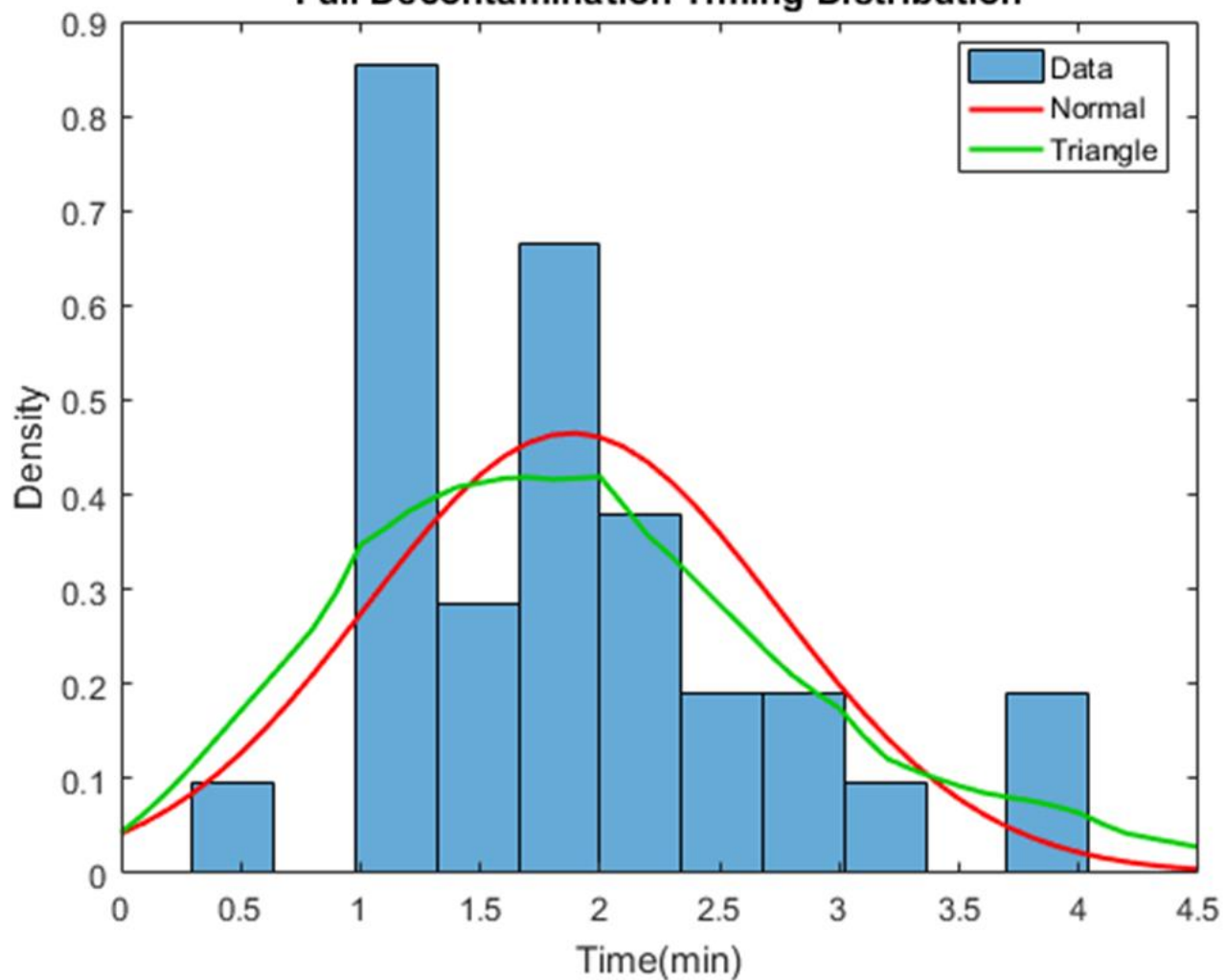
Average Partial Screening Timing Distribution



Partial Decontamination Timing Distribution



Full Decontamination Timing Distribution



Exercise results vs Default Times

	Portal Monitor		PB Screening w/ GM		FB Screening w/ GM	
Minimum Time (mm:ss)	00:01	<i>00:06</i>	00:06	<i>00:06</i>	00:10	<i>02:00</i>
Mean Time (mm:ss)	00:20		01:59		03:20	
Mode Time (mm:ss)	00:07	<i>00:15</i>	00:39	<i>00:15</i>	04:11	<i>03:00</i>
Maximum Time (mm:ss)	06:21	<i>00:45</i>	08:02	<i>01:00</i>	11:16	<i>05:00</i>

*Times highlighted in blue and that are italicized represent the default times

Exercise results vs Default Times

	Partial Decon		Full Decon	
Minimum Time (mm:ss)	00:20	<i>00:15</i>	00:29	<i>03:00</i>
Mean Time (mm:ss)	00:58		01:53	
Mode Time (mm:ss)	00:23	<i>00:30</i>	02:00	<i>07:00</i>
Maximum Time (mm:ss)	02:12	<i>02:00</i>	04:00	<i>08:00</i>

*Times highlighted in blue and that are italicized represent the default times

Next Steps

- **More exercises**
 - Different size localities and levels of preparedness
 - Realistic population to screen vs adults
 - Use of acting cards
- **CDC is developing a tool for CRC Resource, Staff and Throughput Estimation**

Remember: Using default times provides qualitative analysis for planners. To get the most accurate quantitative results, planners should conduct and time their own exercises and input into the program.

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.