Real-Time, Objective Measurements of Physiological Stress among Law Enforcement Officers in Dallas, Texas

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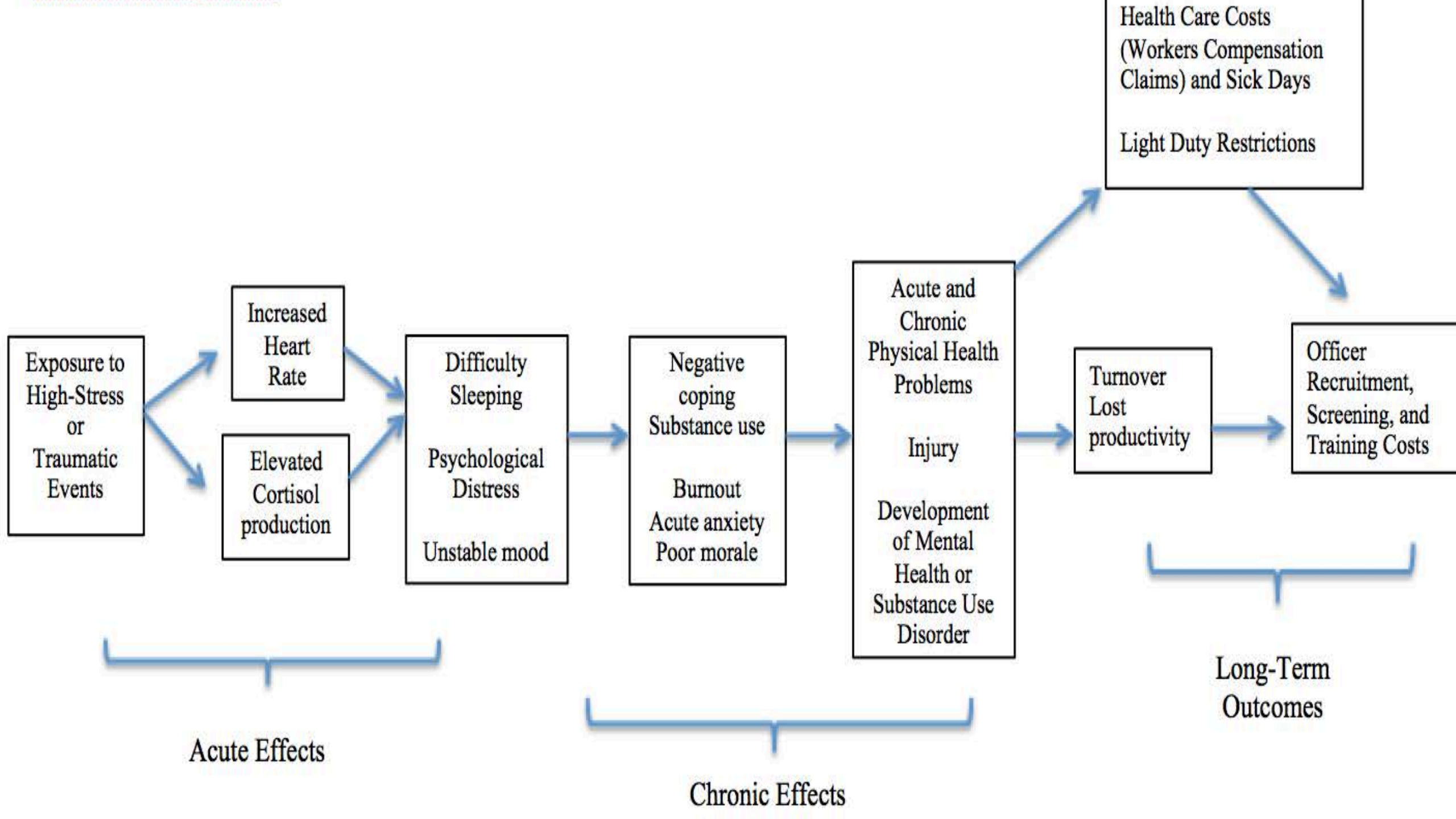
Outline

- Background & Significance
- Aims
- Methods and Data Collection
- Findings
- Summary

Background & Significance

- Law enforcement officers experience premature mortality, disproportionate injury, cancer, cardiovascular disease, and suicide
- Repeated exposure to stressful and traumatic stimuli is a possible mechanism
- Acute and chronic stress may also drive high rates of divorce and family conflict, emotional dissonance and exhaustion; detachment, and cynicism
- These adverse effects of stress have costly ramifications in terms of:
  - injury and workers compensation claims
  - compromised immune systems and increased illness and associated sick days
  - long- and short-term disability
  - early retirement and attrition
  - lost productivity and burnout


Exposure to High-Stress or Traumatic Events
Increased Heart Rate
Elevated Cortisol production
Difficulty Sleeping
Psychological Distress
Unstable mood
Negative coping Substance use
Burnout
Acute anxiety
Poor morale
Acute and Chronic Physical Health Problems
Injury
Development of Mental Health or Substance Use Disorder
Health Care Costs (Workers Compensation Claims) and Sick Days
Light Duty Restrictions
Turnover
Lost productivity
Officer Recruitment, Screening, and Training Costs
Acute Effects
Chronic Effects
Long-Term Outcomes

Aims

The Problem: We don't know what about the officer day to day is stressful

- Identify the factors that influence uptake of the FitBit data collection methodology, including LEO buy-in, attitudes and challenges associated with use

- Goal: To identify the micro-stressors associated with the law enforcement occupation

Data Collection Methods

FitBit Charge 2

Self-Report

Surveys

5 weekly surveys over a 1-month period

ClinCard Incentives

Logs

Activity Log

Stress Log

Focus Groups

All participated in a post-study focus group to discuss feasibility and stress

Occupational exposures:
DPD activity data

Feasibility

FitBit data collection

	% Missing
1	20.6%
2	15.5%
3	37.4%
4	17.2%
5	74.3%
6	15.1%
7	20.7%
8	15.3%
9	17.7%
10	17.7%
Total	**25.5%**

- FitBit uptake was acceptable, much variation between officers

Perceptions of FitBit method / feasibility

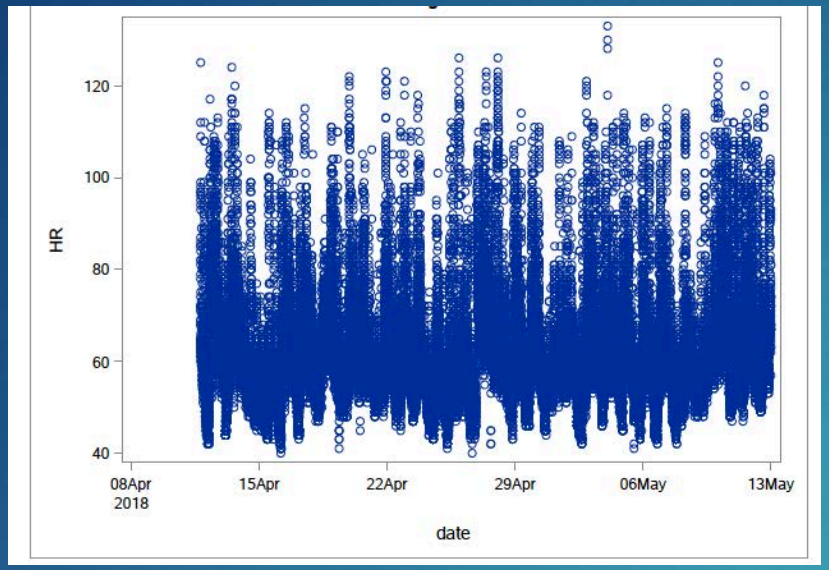
Sleep

Steps

Notice a high heart rate

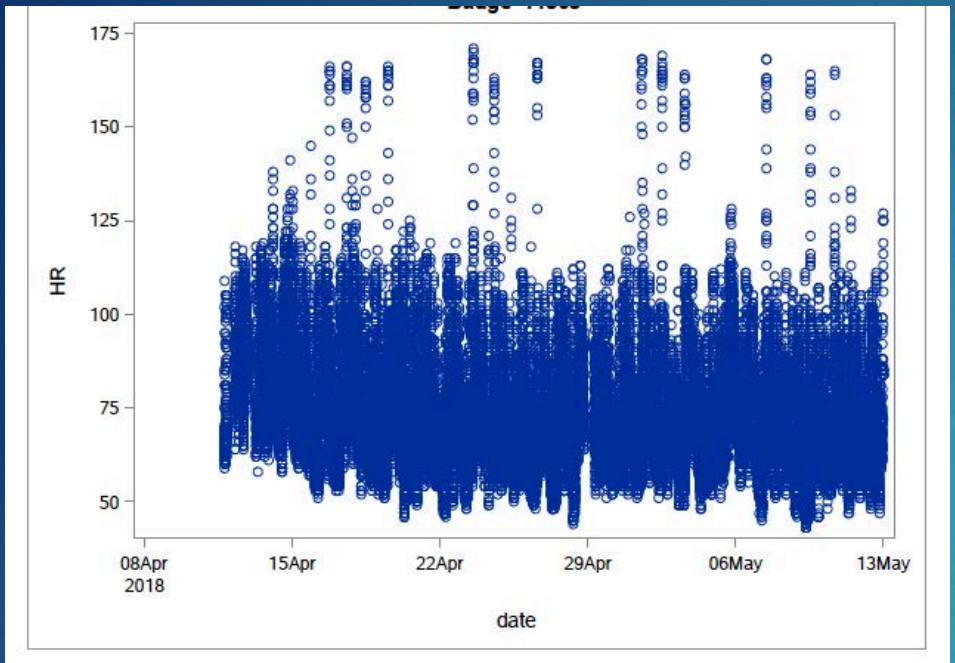
Slightly uncomfortable at first

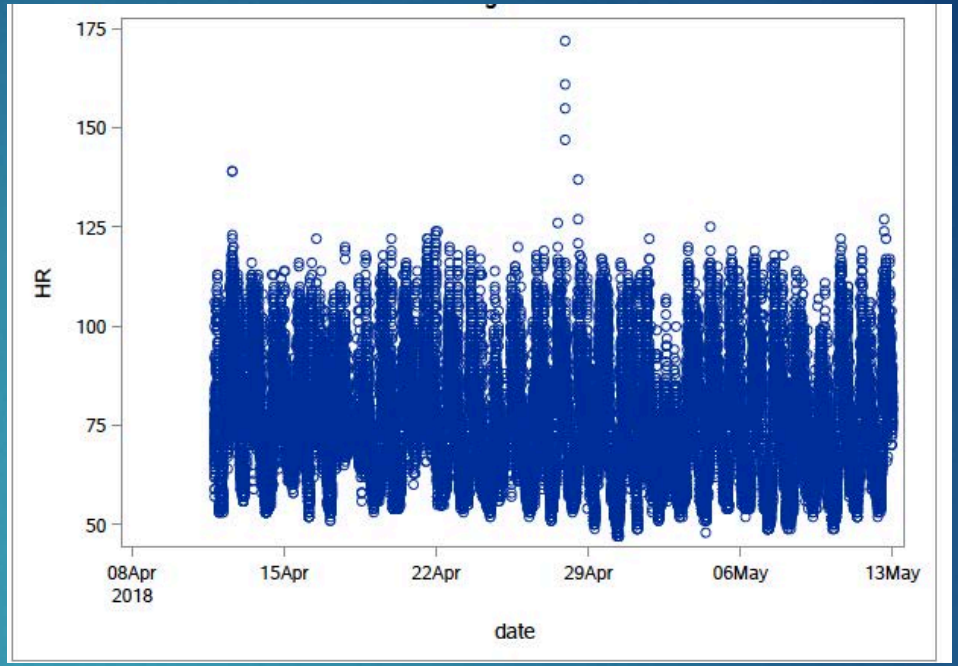
Had to remove it in water



Call_Date	AssignedTime	ArriveTime	ClearedTime
4/18/18	23:42	23:51	0:52
4/19/18	0:52	0:56	1:47
4/19/18	1:47	1:47	2:56
4/19/18	2:56		6:45
4/19/18	0:05	0:20	0:26
4/19/18	0:24	0:40	0:55
4/20/18	1:57	2:03	14:28

Tying of FitBit Data to Activity Records





Variation in Heart Rate

Micro-Stressors

Primary Stressors (Focus Groups)

CIT

traffic stops

shooting

Low pay

meals

hypervigilance

manpower

Inadequate benefits

Can't turn off 'cop mode'

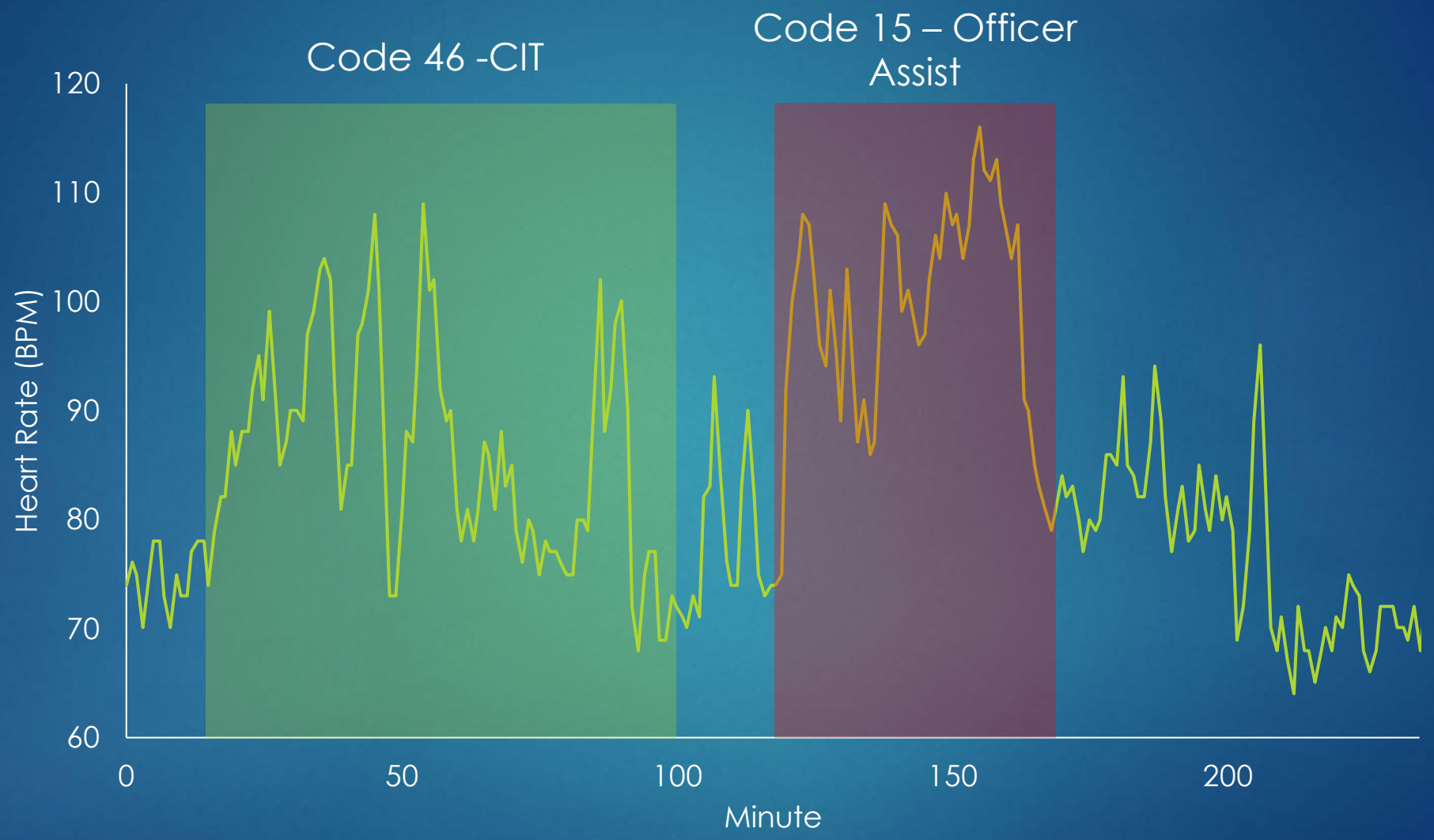
Dept policy prevents them from "actually catching bad guys"

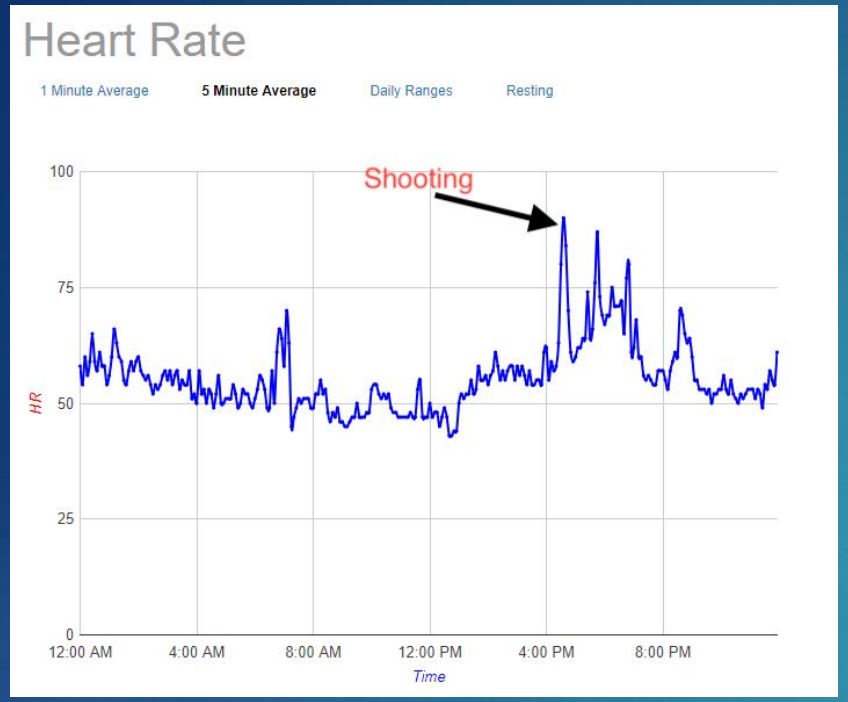
Coping Mechanisms

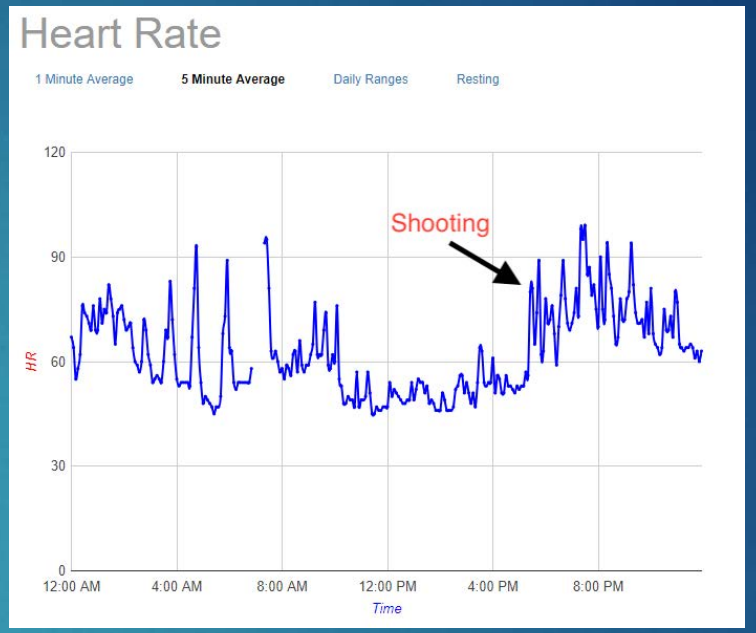
Physical Activity*

Family

Games

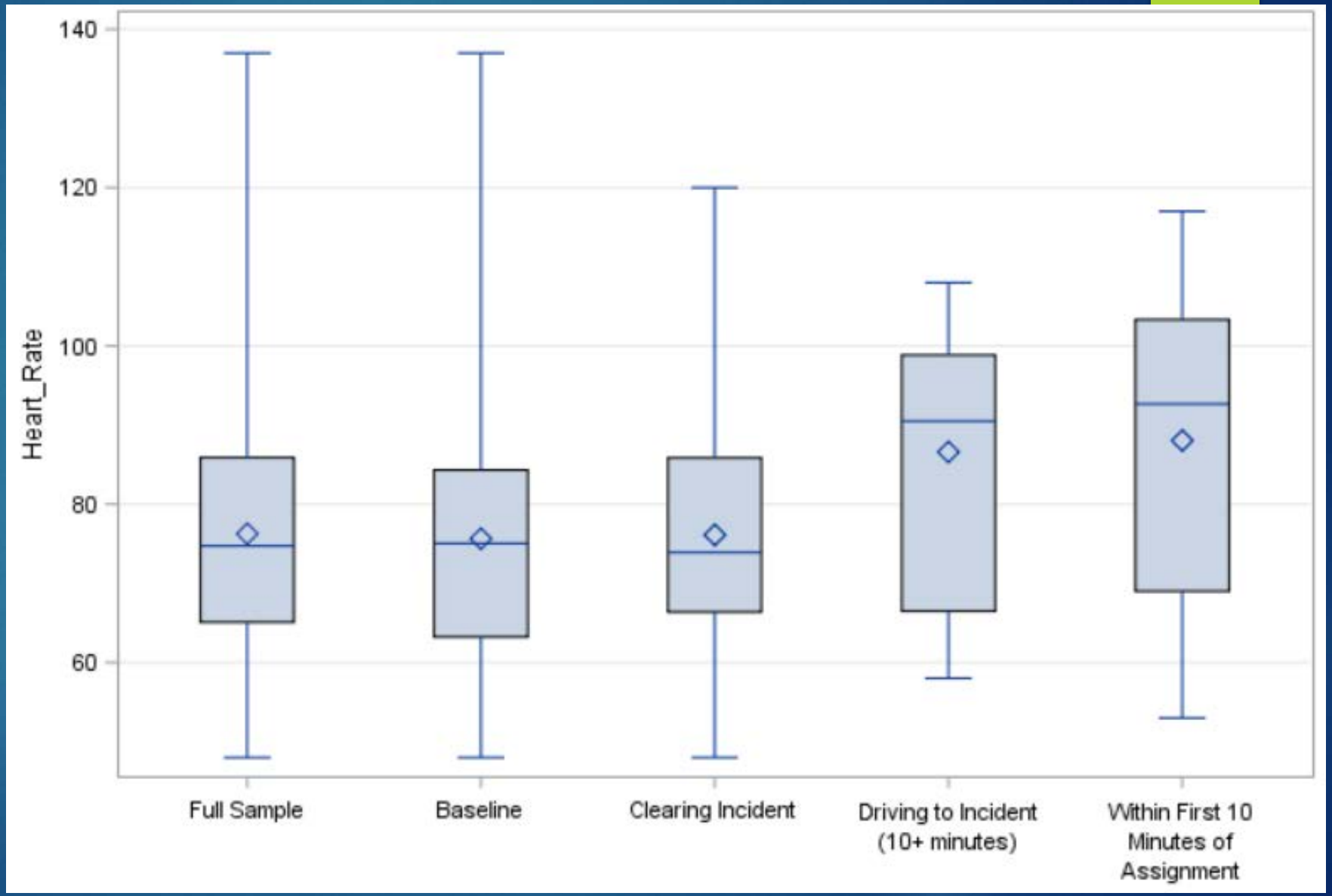

Code 46 -CIT
Code 15 – Officer Assist
120
110
100
90
80
70
60
Heart Rate (BPM)
0
50
100
150
200
Minute





Shooting of 2 DPD Officers

Officer Assist Call



Summary and Conclusions

- LEOs were highly receptive to FitBit methodology and eager to participate in a cohort study. LEO buy in was high
- Heart Rate data were noisy and inconsistent
  - Tremendous between-officer variation in responses to occupational stimuli
- Problems with activity records make it challenging to study responses to stress

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Thank you!

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