Using qualitative data to inform the feasibility of workload monitoring within law enforcement officers

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Agenda

Background

Quantitative Findings

Qualitative Methodology

Results

Conclusions & Reflections
Background on Law Enforcement
Law Enforcement in the United States

- Police and Sheriff's Patrol Officers: 688,400
- Average Age: 40 years
- Gender: Male: 86%        Female: 14%
- Race & Ethnicity: White: 67%      Black: 12%      Hispanic: 17%
- Most Common Degree: Baccalaureate

USBLS, 2021; DataUSA, 2019; O*NET 2022
Critical and essential **physically demanding tasks**¹:
- Pursuing suspects (climbing stairs or fences)
- Restraining and controlling a suspect
- Relocating a downed victim

**Skills:**
- Decision Making
- Critical Thinking
- Social Perceptiveness
- Negotiation
- Monitoring

¹Jamnik et al, 2013; O*NET 2022
Current State of Law Enforcement Officer Health

POOR HEALTH PROFILE

POOR PHYSICAL ACTIVITY HABITS

WORK-RELATED STRESS

SHIFTWORK

LOWER LIFE EXPECTANCY

• 1.7-fold higher CVD prevalence
• ↑ on-duty CVD events
• 82% are overweight or obese
• Work stress → ↑ CVD risk / ↓ sleep / low PA

Injury Risk within Law Enforcement Officers

- 10th most dangerous occupation within US\(^1\)
  - Three times higher injury rate than all other US workers\(^2\)
  - Increased 1.2% annually from 2003-2014

- Majority of non-fatal injuries are musculoskeletal (MSK) in nature
  - Slips, trips, and falls\(^3\)
  - Overexertion\(^3\)
  - Recent 9.5% increase in violence and assaults\(^2\)

- Most common regions: upper extremity, lower extremity, and torso
  - Annual cost of over $3 million\(^4\)
  - 38% result in lost time from work\(^5\)

\(^1\)Holloway-Beth et al, 2016; \(^2\)Tiesman et al, 2018; \(^3\)Lyons et al, 2017; \(^4\)IACP, 2013; \(^5\)Violanti et al, 2012
### Examples of Law Enforcement Shift Schedules

- **Shift Rotation**
  - Consecutive days; days per month
- **Shift Type**
  - Day or Night shift
- **Shift Entry Points**
  - e.g., 6am-6pm; 6pm-6am; 4pm-2:30am
  - Length may vary (12 hr, 10.5 hr)
- **Fixed or Not**
  - Rotates D→N and N→D
  - e.g., every 2 weeks, every 6 months

### Table: 2021 August Shift Schedule

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<thead>
<tr>
<th>Sun</th>
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Note: 2 or 3 consecutive 12-hr shifts, 14 shifts per month

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<th>Sun</th>
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Note: 5 consecutive 10.5-hr shifts, 15 shifts per month
Background on Workload Monitoring
What is Workload Monitoring?

- Promising tool within team sports as an injury prevention method\(^1,2\)
- Captured with a variety of methods
  - Internal load = psychophysiological response
  - External load = physical demands
- Greater prior day workload and greater monthly workloads associated with higher risk of injury (OR=1.54-1.98)\(^3\)
- Relative loads examine the relationship between fatigue versus fitness\(^4\)
- ↑ relative workload increases risk of injury, especially when coupled with low chronic loads\(^5,6\)
  - ↑ fitness levels tolerate higher loads and exhibit a lower risk of injury\(^5,7,8\)

\(^1\)Impellizzeri et al, 2021; \(^2\)Eckard et al, 2018; \(^3\)Watson et al, 2017; \(^4\)Banister et al, 1980; \(^5\)Hulin et al, 2016; \(^6\)Cummins et al, 2018; \(^7\)Malone et al, 2017; \(^8\)Malone et al, 2019
Workload Survey

- **External workload**
  - Number and duration of calls within given work shift
  - Department’s reporting systems

- **Internal workload**
  - Qualtrics → NASA-TLX scale
    - Six domains: mental demand, physical demand, temporal demand, effort, frustration level, performance
    - Scale of 1-100 (1 = low demand/performance)
    - Composite score of all raw values
The Need For Feasibility Studies

WHAT WE KNOW

- LEO = ↑ MSK injury risk
- Training load = popular and useful tool in athletics to monitor injury risk

WHAT WE NEED

- Simple workload monitoring tool to determine injury risk in LEO

FEASIBILITY

Acceptability
Intent to continue use

Demand
Actual use
Perceived demand

Implementation
Degree of execution

Integration
Perceived sustainability
To evaluate the feasibility of using workload monitoring to assess internal workload in LEO.

– We determined retention rates, in addition to adherence to and usability of the workload monitoring in LEO. Acceptability was also examined within the departments’ administrative officials.
Quantitative Findings on Feasibility
• Eight-week longitudinal design with pre- and post-testing
• Between pre- and post-testing, workload survey sent via text message 30 minutes following end of each shift
• Fifty LEO volunteered for this study

<table>
<thead>
<tr>
<th></th>
<th>Mean ± SD or %</th>
<th>Range</th>
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<tbody>
<tr>
<td>Age (years)</td>
<td>37 ± 10</td>
<td>22 – 53</td>
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<tr>
<td>Employment Tenure (years)</td>
<td>10.7 ± 8.4</td>
<td>0.5 – 27.0</td>
</tr>
<tr>
<td>Height (cm)</td>
<td>178.0 ± 8.1</td>
<td>159.7 – 192.0</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>94.2 ± 24.6</td>
<td>57.6 – 188.0</td>
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<tr>
<td>Body Mass Index (kg/m²)</td>
<td>29.6 ± 6.6</td>
<td>19.2 – 53.2</td>
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<tr>
<td>Sex (% Female)</td>
<td>18</td>
<td>–</td>
</tr>
<tr>
<td>Race (% White)</td>
<td>76</td>
<td>–</td>
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</table>

• Eight administrative officials volunteered for the post-testing surveys
  • Police Chiefs, Sheriff, Lieutenants, Training Captains
• Officers:
  – Usability
    • System Usability Scale – 10 questions about the ease of use and confidence about using the workload tool in the future
    • Scale of 1-5 (strongly disagree to strongly agree) then summed
    • Score out of 100
  – Likelihood to Continue to Use
    • Scale of 0-10, with 10 representing high likelihood to continue to use

• Administrative Officials:
  – Perceived usefulness and perceived sustainability
    • Scales of 0-10, which 10 representing high utility and sustainability
Flow of Participants: CONSORT Diagram

- Assessed for eligibility (n = 60)
  - Excluded (n = 10)
    - No response (n=4)
    - No time (n=2)
    - Work-related injury (n=1)
    - Sickness (n=1)
    - Left department (n=1)
    - Not on patrol (n=1)
  - Baseline testing (n = 50)
  - Follow-up testing (n = 48)
  - Lost to follow-up (n = 2)
    - Transferred departments (n=1)
    - Family emergency (n=1)

96% retention
Feasibility Measures

• **Law Enforcement Officers (n=48)**
  - 93.9 – 94.5% survey adherence [68 – 100%]
  - Usability: 88.3 ± 11.2 [52.5 – 100]
  - Likelihood to Continue to Use: 6.8 ± 2.9 [0 – 10]

• **Administrative Officials (n=8)**
  - Sustainability (Willingness to Implement): 8.9 ± 0.9 [7.6 – 10]
  - Utility (Usefulness): 9.0 ± 1.0 [7.5 – 10]
Qualitative Methodology
Goal: To evaluate the feasibility of using workload monitoring to assess internal workload in LEO.

– Give context to our quantitative findings

★ Semi-structured interviews
★ Audio recorded sessions
★ Transcribed
★ Coded using the Consensual Qualitative Research Tradition
**Interview Outline**

- **LEO – workload survey**
  
  **DAILY WORKLOAD SURVEY**
  
  - How much mental activity was required to perform your job (thinking, deciding, calculating, searching)?
    - 1 = Low, 1.00 = High
  
  - How much physical activity was required to perform your job (pushing, pulling, controlling, activating)?
    - 1 = Low, 1.00 = High
  
  - How much time pressure did you feel did you feel due to the rate or pace at which tasks occurred?
    - 1 = Low, 1.00 = High
  
  - How hard did you have to work (mentally or physically) to accomplish the level of performance?
    - 1 = Low, 1.00 = Good
  
  - How satisfied are you with your performance today?
    - 1 = High, 1.00 = Low
  
  - How discouraged, irritable, and stressed versus content and gratified did you feel during the tasks?
    - 1 = Low, 1.00 = High

- **Admin – workload report**

  Workload score over the last 15 consecutive workdays for **day and night officers**

  Six different components for both day and night shift workers averaged over the last 15 shifts:

  1 = mental
  2 = physical
  3 = temporal
  4 = effort
  5 = satisfaction
  6 = frustration
Interview Outline

- Warm-Up & Understanding
- Feasibility
- Usability
- Barriers & Facilitators
- Improvements
One of the goals of this study was to track workload, in your own words can you tell me what workload means to you?
Interview Outline

Warm-Up & Understanding

How did you feel about length of the workload survey / report?

Usability

Barriers & Facilitators

Improvements
Interview Outline

Warm-Up & Understanding

Feasibility

Barriers & Facilitators

Did you find any component of the workload survey / report useful / not useful?
Interview Outline

Warm-Up & Understanding

Feasibility

Usability

Improvements

What made it easy / hard to fill out / read the workload survey / report?
Do you have any suggestions on how the workload survey / report can be improved?
Auditor
Dr. Johna Register-Mihalik

Coder #1
Myself

Coder #2
Dr. Hayden Giuliani-Dewig

Coder #3
Erika Cotrufo
### Consensual Qualitative Research Tradition

<table>
<thead>
<tr>
<th>Stage</th>
<th>Action</th>
<th>Product</th>
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| 1     | Identify key words  
Create initial code domains | Initial Codebook             |
| 2     | Create categories within domains |                             |
| 3     | Cross analysis of interviews | Finalized Codebook           |
| 4     | Determine frequency of data presentation | Narrative accounts and illustrative cases |
• Patrol
• Cluster random sample from initial voluntary response sample

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<tr>
<th>Sex</th>
<th>Race/Ethnicity</th>
<th>Age (years)</th>
<th>Experience (years)</th>
<th>Additional Responsibilities</th>
<th>Department</th>
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<tr>
<td>Male n=7</td>
<td>White n=6</td>
<td>20-29</td>
<td>≤ 4</td>
<td>Canine n=2</td>
<td>#1 n=3</td>
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<tr>
<td>Female n=2</td>
<td>Black n=2</td>
<td>30-39</td>
<td>5-9</td>
<td>Supervisor n=1</td>
<td>#2 n=2</td>
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<td>40-49 n=3</td>
<td>10-14</td>
<td>10-14</td>
<td>With Trainee n=2</td>
<td>#3 n=3</td>
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<tr>
<td></td>
<td>50-59 n=1</td>
<td>15-19</td>
<td>15-19</td>
<td></td>
<td>#4 n=1</td>
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<tr>
<td></td>
<td></td>
<td>≥20</td>
<td>≥20</td>
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Leadership Stakeholders

Purposive and convenience sampling

1 per department

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<th>Sex</th>
<th>Stakeholder Type</th>
<th>n</th>
<th>Average Years of Experience</th>
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<td>Chief/Sheriff</td>
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<td>Total</td>
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<tr>
<td></td>
<td>Captain</td>
<td>2</td>
<td>In Current Role</td>
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<td></td>
<td>27.0</td>
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Results
Law Enforcement Officer Mind Map

- Workload Definitions & Associated Duties
  - Physical
  - Mental
  - Work duties
  - Non-work duties

- Shift Characteristics
  - Timing
  - Type of calls
  - Day
  - Night

- Tracking Workload
  - Timing
  - Ease of Use
  - Feedback
  - Interface
  - Reminder

- Other Procedures & Future Directions
  - PRE & POST Assessments
  - Communication
  - Understanding
Theme #1: Workload Definitions & Associated Duties

“...it's a combination of the number of tasks you have to perform, the difficulty of them, and the time that you have to do them.”

“...there were a few days that I may not have done a lot physically, but I had to think almost 95 percent of the day. To me, I think that draws on your fatigue.”

“I’m K9, so we do tracks and stuff. Obviously, that’s physical.”

“—how I perceive one thing might be super easy and how somebody else might perceive it as really hard.”

“I’ve been an officer for 22 years, so at this point, there’s a lot of things that maybe a younger officer is gonna think a lot harder about, and for me, it’s just automatic, so it came out. Probably some things came out on here that were listed as easy to me that wouldn’t be for a lot of younger people ‘cause they just haven’t done ’em a hundred times.”

“There’s no typical day.”

“We have so many hats.”

“I just wish that there was more I could do to help.”

“Paperwork.”

“...we have to make good decisions every day, in all aspects.”

“Weekly, we have to make good decisions every day, in all aspects.”

“...it's a combination of the number of tasks you have to perform, the difficulty of them, and the time that you have to do them.”
Theme #2: Shift Characteristics

“I just wish that there was more I could do to help.”

“Most of the time, it’s just teamwork and helping each other out. I’m good for that. I don’t want to leave people hanging.”

“I hope, particularly for the police, that something like this will make them think differently about particularly the shift work and how all the little things add up to potentially unhealthy conditions with this job.”

“...seasons change and obviously, workload gets a little bit different in the winter ‘cause it’s not as busy.”

“Everything is more difficult on night shift.”

“...the stressors of dealing with being able to multitask throughout the entire day.”
Theme #3: Tracking Workload

“...it was less than 5 minutes. Everyone has that.”

“No complaints.”

“It went straight to my phone, and it’s as easy as it gets, in my opinion.”

Depending on if I was tired or not and the workload that I had that night, if I would like—if I had a lot of stuff that I had to do, that last thing I wanted to do was fill out the survey.

“It just flowed well.”

“All the questions were very straightforward and concise, easy to follow, and they all kind of made sense to our day. Like I said, for me, I perceive my workload to be both mental and physical. It asks questions about both of them. I thought it was pretty spot on.”

“It just flowed well.”

“Very simple. Easy to understand.”

“...shortening that scale...The 0-10 or like I said, just that 5 choice of that scale of strongly disagree to strongly agree.”

“...if you forget to fill out the survey after you get the first two text message. I think just maybe one more would help. It would probably be a good, beneficial one, especially for guys like me that work on night shifts.”

“...after fillin’ out the survey, it gave me a better understanding of my workload.”

“I just wish that there was more I could do to help.”

“...it encompasses all of the job.”

“...click, click, click, click. No login, no password.”

“...it’s short, and it’s quick. No big deal.”

“No complaints.”

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“...it encompasses all of the job.”

“...click, click, click, click. No login, no password.”
“I think it could be beneficial for all officers here, kind of track their performance, their workload, and being able to see that on paper especially, the administration staff, I think they would enjoy that, or they could take a lot from it.”

“I wasn’t quite sure what it was getting at. Maybe y’all will explain that. I don’t know. I wouldn’t mind knowing what some of them said.”

“I don't really know what all the data's used for. I don't have an issue doing it, I know that. I guess I have no opinion on it.”

“If the agency thinks it's useful, then I think that's their business. They've got a vision for what they want. I'm here to try to help get us towards that vision. I don't think the task is very hard.”

“I think it would give you guys some legitimate information to what officers are feeling in regard to their workload.”

“Sometimes we get a little nervous and we start putting our initials on stuff and be honest about where we are. People might not want to be as open about stuff.”

“I wasn’t quite sure what it was getting at. Maybe y’all will explain that. I don’t know. I wouldn’t mind knowing what some of them said.”

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“Quarterly.”

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“Quarterly.”
Administration Mind Map

- Report Structure & Workload Considerations
  - Timing
  - Capture
  - Feedback
  - Value
  - Communication

- Utility/Use of Data
  - Content
  - Use
  - Next steps
  - Granularity
  - Programming

- Building & Retaining the Workforce
  - Staffing
  - Decision making
  - Supporting
  - Organizational needs
Theme #1: Report Structure & Workload Considerations

“...you might go 8 hours, and the radio never goes off one time. That's not unusual for nightshift officers to turn it off and turn it back on to make sure it's working because it's been quite for so long. Then, 5 things happen that are terrifying and heartbreaking and unbelievably stressful in the span of 30 minutes. That is the nightshift.”

“It's really helpful to get information like this in a way that we could ask questions kind of in an interactive way.”

“...shorter, clearer, high-level takeaways are better with the ability to seek more granularity if you want to, so I like 1-page. I'd prefer 1-page.”

“The charts are clear. The words of the descriptions of the charts are clear. The explanation of what you're measuring for each one is clear.”

“I would want it to be a little bit longer. Eight weeks is a very small snapshot.”

“...it would be tremendous amount of value for me to see quarterly.”

“This is a great snapshot.”

“On a 1-10, I'd say it's a 9½.”
Theme #2: Utility/Use of Data

“I think there's value to know how many, in your own words, or by your own definition, how many **serious calls** for service did you go on tonight? ... because we all know that that one can significantly affect you. Maybe a child death. It may be a fatality crash, and it really affects you.”

“...**specialty units**, they have some unique demands on their time...Again, those are **extra responsibilities** that carry a lot of responsibility and a lot of **stress and pressure**.”

“In the **aggregate**...probably not for specific officers. For no other reason, if they thought we were using specific information about them, they will no longer participate.”

“Finding a way to better **balance our service delivery and officer well-being** with the downtime...that has potential.”

“...**early intervention, early warning system.**”

“...**tenure, age, number of days workout per week**...”

“...when we think about our **management philosophies** and our **management priorities**, 5 [satisfaction] and 6 [frustration], I think, could lead to action.”

“...there’d have to be some type of continued study or **continued input** by the officers to really have the **benefit over a longer term.**”
“From an administrative aspect, if we had the **time** and the **money** and the **participation of the officers**, there could be **short-term and long-term benefits** to having this information in **developing programs or policies** to ensure officers are being healthy and fit and doin’ their job while we’re maintaining service delivery as well.”

“They know I want the best for them.”

“Again, as we think about the **specific needs of our employees**, and **how we can support them**, and **how they're feeling about the workplace**, and **the demands on them**, which I think make their way into their responses, I’m sure. I think that’s a good set of questions that really help us think about our management priorities.”

“I think, as I'm beginning to understand some of what this stuff is telling us, I think it could be really, really useful to inform, you know, **decisions about staffing, decisions about scheduling**.”

“...how folks feel about their workplace, is very, very important. They like the work. They wanna work hard. That’s why they do this work. Them feeling like the demands are high, I think it's correct that probably there's some pride in those demands being high. Their feelings about those high demands, I think, are very much influenced by or generally **how they feel about the organization, how they're supported and cared for, how they're perceived in the community they serve**... **This is the stuff that makes people either come stay with you for a long time and have a great career or leave you**.”
Conclusions & Reflection
Take Aways

**LEO**
- Easy to use
- Short
- Timing & questions are relevant
- Smartphone is best interface
- Minor suggested adjustments
- Unsure of tangibles

**ADMIN**
- There is a need & a want!
- Could result in actionable items
- Balance of too little/much data
- Stratify data in ways that make sense for department
- Unsure of best delivery & utility

**COMBINED**
- Quarterly
- This is a stressful job!
- Comprehension with explanation
- Mental load is the key factor
- Perception is individualized
- Would continue use
- Shift type/schedule matters
Workload monitoring is feasible in law enforcement!

“This is as big as a two-way radio!”

LEO
☑️ ↑ Usability (88%)
☑️ Moderate likelihood to continue (68%)
★ Higher likelihood with departmental buy-in

ADMIN
☑️ ↑ Willingness to implement (89%)
☑️ ↑ Usefulness (90%)

COMBINED
Next Steps

- Prepare reports for officers and admin
- Present findings back to departments
- Prepare manuscript
- Continue to collaborate with departments
“As a profession, we're not very good at this kind of work. Particularly, culturally speaking, in our profession, there's a whole lot of, "Just toughen up." We’ve been doing, "Don't be so soft" for a lack of a better way to put it, which is absurd, but it is a part of law enforcement culture. It's hard to break that.

One way to break to that is to really be takin' a hard look at what the effects of the work are on your people, both real and perceived. By the way, perceived is real, if it informs how you feel about the workplace, and your place in it, the management of your stress, and so on. I can imagine going forward with this kind of work, this kind of analysis. This kind of reporting will be essential to modern law enforcement leaders. I don't expect it to happen in 2022 to be part of our culture, but maybe by 2032, when we realize that the far and away, the most important thing we have are the people who are here. We can't get anything done without all these folks who answer these questionnaires. We really have to get serious about their wellness and taking care of them and creating some kind of holistic program that helps maximize their success.”
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Questions?