



### I23 Testing Police Suicide Notes: Do General Population Notes and Police Testing Notes Significantly Differ?

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After attending this presentation, attendees will learn about police suicide reporting rates. Attendees will learn how the software tool SNARE provides suicide note authentication using both text-analytic, quantitative classification, and qualitative assessment based on database extraction. Attendees will learn how this method has been used to determine if police suicide notes are or are not significantly different from general population suicide notes. Attendees will also learn how validation testing is performed using behavioral and linguistic datasets, including highly sensitive data, and human subject protections for survivors of suicide.

This presentation will impact the forensic science community by showing how suicide is an international issue that affects American policing at a rate substantially higher than the general American public and only slightly lower than the American military. In the police culture, suicide is considered very shameful, which may cause an under-reporting of police suicide. Yet police officers enter their profession having met stringent standards for physical condition, mental health, and problem-solving ability, including interpersonal skill. This paper presents an empirical study of police suicide notes to determine if police suicide notes are or are not significantly different from general population notes. The method presented here, using both a computational tool and qualitative assessment, illustrates the particular human subjects protection required for validation testing using behavioral and linguistic datasets, and thus also advances the methodology of forensic science.

More than almost any other profession in the United States, policing screens its new hires for physical condition, psychological health, and problem-solving ability, including optimal interpersonal skills. Police officers begin their careers with great psychological strengths.<sup>1</sup> Yet it cannot be disputed that suicide occurs among police officers. Even our best can and do succumb to suicide. Miller states that "more police officers die by their own hand than are killed in the line of duty".<sup>2</sup>

Suicide risk is clearly related to occupational hazards of the policing profession. Such hazards include atypical schedules disruptive of circadian rhythms and long work hours, participation in violent events, constant dealings with difficult people, and prevalence of weapons.<sup>3-8</sup> These hazards, over time, can lead to depression, divorce or family isolation, and post-traumatic stress disorder, all of which are potential triggers for suicide.

These occupational hazards, especially the association with violent, traumatic events, help make sense of recent scholarship on the rate of police suicide. Only recently have national, empirical studies to determine police suicide rate been initiated through The Badge of Life Program.<sup>9</sup> Two facts can be gleaned from these studies. First, the rate of police suicide is higher than the general population. According to O'Hara and Violanti (2009), the suicide rate for police officers was 17/100,000, compared to the rate for the general public of 11/100,000 and 20/100,000 for the Army.<sup>10</sup> Loo had also found higher suicide rates in police than comparison populations.<sup>11</sup>

Second, the rate of police suicide is controversial because there may be under-reporting of police suicide. Just as the shame associated with rape in the American culture may cause actual rapes to go unreported, the shame associated with suicide in the police culture may cause actual suicides to be classified as other types of events or "undetermined." Violanti demonstrates that "male police officer deaths had a 17% increased risk of being misclassified as undetermined" than both firefighter and military occupations, and the risk of misclassification was far higher for female and African American police officers.<sup>12</sup>

In this context, the question is posed: are police suicide notes significantly different from general population suicide notes? This hypothesis was tested using SNARE, a suicide note assessment research tool for identifying, classifying and assessing suicide notes. SNARE combines a computational, quantitative tool and a database extraction feature for qualitative assessment. The quantitative tool in SNARE currently has obtained an accuracy rate of 80% on a dataset of 400+ real suicide notes and 500 control documents. When the real suicide note data is limited to brief notes (45 words or less), the accuracy rate increases to 86%. The statistical classifier is a linear discriminant function analysis using leave-one-out cross-validation. The reported accuracy rates are the average of true positives for the real suicide note class and the control document class. Preliminary results using only the quantitative component of SNARE have not shown differences between police and general population suicide notes.

Finally, forensic linguistic data safeguards are considered. While all suicide note research must take into account human subjects protections (44 CFR 45), research into police (as well as military) suicide must be especially cautious in collecting data, securing the data, and protecting survivors' privacy. Discussion includes how each of these issues is handled so research partnerships could be established between institutions.

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### **Suicide Notes, Validation Testing, Human Subjects Protections**