



UTILITY

Police Officer Legal Risk from a Wide Field of View in a Body-Worn Camera

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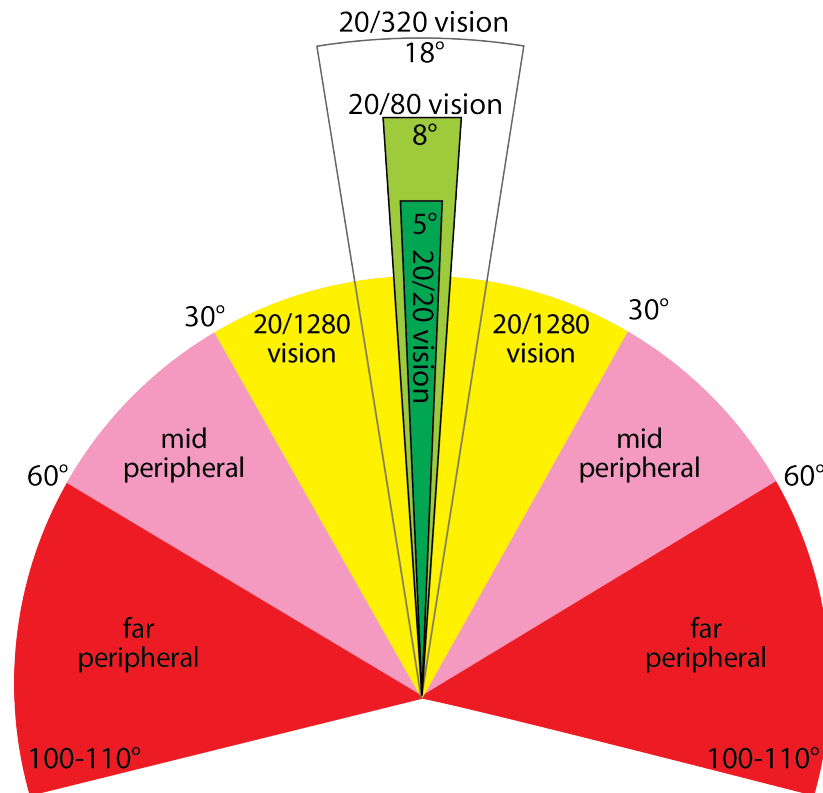
Overview

A number of recent body-worn camera Requests for Proposal have included a lockout specification of a minimum number of degrees for a body-worn video camera Field of View. In general the impression is given that the wider the field of view, the better. This paper argues that bigger is not better. Instead, a narrower field of view similar to a police officer's field of view is better. In a police officer's peripheral vision, detail is invisible. Video camera recording of peripheral vision detail is crystal clear on a video playback. A Police Officer should only be held accountable for visual detail he can actually see.

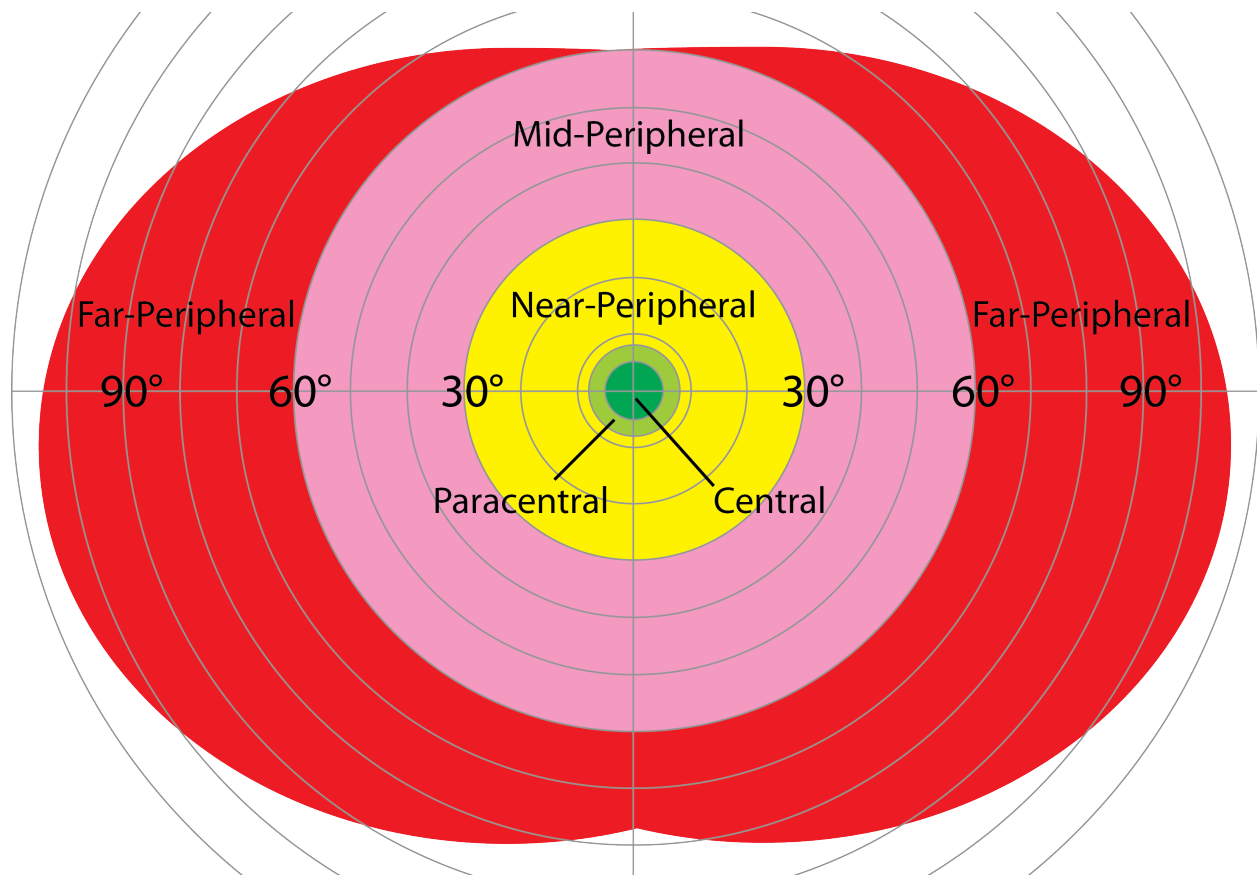
This paper draws from a number of facts about the biology of the human eye that can easily be confirmed through an internet search. The recent events in Ferguson, MO and the death of Eric Garner in Staten Island, NY have ignited a national controversy about racial profiling, police accountability, and public trust in 21st Century Policing. There is a general consensus that police officers should wear and use body-worn video cameras. However, it is critical to recognize there are fundamental differences in visual acuity between human eyesight and a video camera. A video camera with a wide field of view will record video with clear peripheral vision detail that the human eye simply cannot see. A video camera with a wide field of view puts a police officer at significant legal risk, because it can clearly record what the human eye cannot see. Police Officers should not be put at legal risk because of the biology of human eyesight.

Biology of Human Eyesight

The human eye is remarkable, but it has limitations. A human being only sees detail clearly in their direct line of sight. "Foveal" Vision is where 20/20 visual acuity is possible. Foveal Vision is 1° on either side of line of sight (what you are looking at). Furthermore, **visual acuity declines by 50% for each 2.5° shift away from the center line of sight.**



The maximum effective field of view for a police officer is no more than the 18° Macular vision range — 9° on either side of the line of sight. Any event happening outside of the 18° macular range of vision is in peripheral vision. As a practical matter, no human being -- including police officers -- can distinguish any detail in peripheral vision. Motion can be determined in peripheral vision, but not detail. This is easy for anyone to verify. A person looking straight ahead can see motion in their peripheral vision. But a person looking straight ahead cannot tell how many fingers a person in peripheral vision is holding up.



This chart is another way to depict visual clarity in central line of sight compared to peripheral vision. The area in green – where the person is looking – can see details clearly. In the Paracentral area in light green, visual acuity drops by 50%. In the yellow zone Near-Peripheral zone very little detail can be identified. In the pink Mid-Peripheral and red Far-Peripheral zones, no detail can be identified by a human eye – only motion at best. The human eye’s effective field of view is less than 18°. Anyone can personally test and confirm this assertion.

The biology of why the human eye can see detail in central line of sight but not in peripheral vision has to do with the distribution of Cone and Rod cells on the eye’s retina. Cone cells are more concentrated in the center of the retina, and can detect detail. Rod cells are distributed around the center of the retina, and can better detect motion and light. The details of human eye biology are beyond the scope of this paper, but information about Cone and Rod cells can be easily verified from any number of published sources.

Video Recorder Peripheral Vision Clarity

In very sharp contrast to the human eye, a video camera can record almost perfect clarity across the entire field of view of the video camera. Detail captured by the video camera is just as good in the outer peripheral zones as in the center of the recorded video. So a video camera can detect and record event and object detail in peripheral line of sight regions that are far, far better than a human eye could ever see.

A Police Officer is at a significant Visual disadvantage

So it is certain that a police officer cannot see peripheral detail as well as a video camera can record it. Because a police officer can only see detail for what he is looking at directly, detail about events and objects in peripheral vision areas are not clear or invisible to the police officer.

This detail recognition disadvantage is further compounded by the fact that a police officer has to make split-second life or death decisions while under extreme stress. On the other hand, a grand jury or a trial jury watch a video recording that provides clear detail across the entire field of view. The grand jury or the trial jury is not under high stress, does not have to make a split second decision, and has the luxury of being able to replay the video multiple times to look at detail. This is a luxury that a Police Officer – or any human being at the scene – does not have.

A Police Officer will keep a primary subject in view

The Tueller Drill is well known in the police world. This drill shows that an attacker with a knife who charges a police officer from 21 feet or less will be able to attack the police officer before he has time to draw his weapon and fire. So any person located within 21 feet of a Police Officer potentially could kill the Police Officer. It is therefore reasonable to expect that a Police Officer located within 21 feet of a potential aggressor is going to keep a close watch on a person who could be a lethal threat. Therefore a Police Officer is not going to recognize details of the scene in his peripheral vision. However, a video recorder will reliably capture scene detail across the video camera's entire field of view.

A video camera with a Wide Field of View puts an Officer at Legal Risk

As a result, a video camera with a wide field of view puts the officer at significant legal risk. The police officer has to make a split-second decision based upon what his personal eyesight can perceive. Yet the police officer's actions and reactions are subject to "after the fact" scrutiny from video recordings that provide far more peripheral scene detail than the Police Officer could ever possibly see. This puts the Police Officer at very significant legal risk of being "Monday Morning Quarterbacked" by the public, press, grand juries, supervisors, political and media commentators, prosecutors, and most importantly juries.

The Legal and Financial Risks of a Wide Field of View are Significant

The Legal and Financial Risk is significant. Beyond internal reprimands, suspensions, and getting fired, Police Officers can be and sometimes are charged with felonies up to and including homicide. Police Officers are also at risk of civil lawsuits where the standard of proof to obtain a judgment against the police officer is lower than in a criminal case. Legal defense costs are often six figure sums, even if they are eventually found not guilty. So even if a Police Officer successfully defends against a criminal charge and/or a civil lawsuit, they may be ruined financially. So even a "win" is often a devastating personal financial loss.

Summary - A Wide Field of View is a Legal danger to a Police Officer

The biology of the human eye compared to a video recorder with a wide field of view puts a police officer at significant legal risk whenever there is an Incident. The solution is to have a video recorder with a field of view that is similar to a Police Officer's effective field of view. A body-worn camera field of view should be limited to less than 50°. This accounts for a police officer slightly changing his line of sight during an Incident – while always keeping the primary subject in view. Even then, the public, press, citizens, judges, and juries should recognize that detail in peripheral vision is unclear or invisible to any human being. Police Officers are human beings just like the rest of us.