

[J-12-2023]
IN THE SUPREME COURT OF PENNSYLVANIA
WESTERN DISTRICT

TODD, C.J., DONOHUE, DOUGHERTY, WECHT, MUNDY, BROBSON, JJ.

COMMONWEALTH OF PENNSYLVANIA,	:	No. 19 WAP 2022
	:	
Appellee	:	Appeal from the Order of the
	:	Superior Court entered May 26,
v.	:	2021 at No. 582 WDA 2020,
	:	affirming the Judgment of Sentence
	:	of the Court of Common Pleas of
	:	Allegheny County entered February
ANGELO WEEDEN,	:	24, 2020 at No. CP-02-CR-
	:	0000513-2019.
Appellant	:	
	:	ARGUED: April 18, 2023

OPINION

CHIEF JUSTICE TODD

DECIDED: NOVEMBER 16, 2023

In this appeal by allowance, we consider whether a printed summary created by a computerized system, “ShotSpotter,” which contemporaneously collects data regarding potential gunshots and transmits the same to the subscribing police force, falls within the purview of the Confrontation Clause when used as evidence in the course of a criminal prosecution. For the reasons that follow, we conclude that, under the circumstances presented, the admission of the document did not run afoul of Appellant Angelo Weeden’s rights under the Confrontation Clause. Accordingly, we affirm.

I. Background

At approximately 5:30 p.m. on December 15, 2018, Alyssa Houston, Heather Lamb, and Lamb’s eight-year-old daughter exited Lamb’s house and departed in Lamb’s vehicle to go shopping. Houston noticed that Appellant was following directly behind

Lamb's vehicle in his Volkswagen Jetta, tailing them down a narrow street.¹ When Lamb drove off of the main road to enter a residential area in the North Side neighborhood of the City of Pittsburgh (the "City"), Appellant pulled around the driver's side of her vehicle and blocked its forward movement. Appellant then exited his vehicle and approached the passenger side of Lamb's car, prompting Houston, who was sitting in the passenger-side front seat, to lock the car door. As Appellant aggressively attempted to pull the passenger-side front door open, Lamb's daughter yelled "gun," and Lamb quickly placed her car in reverse, backed around Appellant's vehicle, and began to drive away. Simultaneously, the occupants of Lamb's vehicle heard four gunshots, two of which struck Lamb's vehicle on the rear passenger side. Consequently, Lamb drove to the police station, and she and Houston reported the incident.

The following day, Appellant was arrested, and the Commonwealth charged him with one count each of aggravated assault, person not to possess a firearm, carrying a firearm without a license, and propulsion of missiles into an occupied vehicle, and three counts of recklessly endangering another person.² The case subsequently proceeded to a jury trial, at which Houston and Lamb testified consistently with the foregoing. Additionally, and relevant to the instant appeal, Detective Richard Baumgart, a 19-year veteran with the City's Bureau of Police (the "Bureau"), testified as a witness for the Commonwealth, detailing the Bureau's use of a gunfire detection program, "ShotSpotter."

More specifically, Detective Baumgart testified that "ShotSpotter is a gun detection program that is contracted through an outside party, by the [C]ity[,] through a company,

¹ Notably, Houston had been romantically entwined with Appellant for six years. Although Houston ended the romantic relationship earlier in 2018, she and Appellant remained friends until she ended the friendship altogether on the morning of December 15, 2018, due, in part, to Appellant's intrusiveness.

² 18 Pa.C.S. §§ 2702(a)(1), 6105(a)(1), 6106(a)(1), 2707(a), and 2705, respectively.

ShotSpotter,” noting that the ShotSpotter program covers certain areas within the City’s limits with the aim of detecting, triangulating, and pinpointing the location of any loud “bang, boom[,] or pop” noises via scientific algorithms. N.T., 12/4/19, at 92. Detective Baumgart explained that, when ShotSpotter detects such a sound, the program automatically documents the data and sends it, “[w]ithin seconds,” to a human operator in California, who then reviews the noise to discern whether it was a gunshot. *Id.* at 95. According to Detective Baumgart, “these operators have gone through . . . hundreds of hours of training through ShotSpotter to be able to recognize the difference between the pattern and the sound that they would hear with a fire cracker pattern and the sound that they would . . . hear with a gunshot.” *Id.* The detective further expounded that, if a human operator believes that a sound captured by the ShotSpotter program was a gunshot, the operator will send the information back to the Bureau, which then dispatches officers to the vicinity of the shots fired. Detective Baumgart related that, typically, this process happens quickly, such that the Bureau receives notification of a shot within a minute after the program initially detects a gunshot and dispatches its officers shortly thereafter. Notably, Detective Baumgart acknowledged that ShotSpotter is “not completely foolproof,” conceding that misidentifications may occur when a human operator errs in determining whether a sound is a gunshot. *Id.* at 96. Indeed, Detective Baumgart stated that, at times, “officers have been dispatched to gunshots where there weren’t gunshots, and vice versa.” *Id.* Nevertheless, Detective Baumgart opined that the ShotSpotter system is “very accurate” in detecting the presence of gunfire. *Id.* at 118.

Pertinent herein, the Commonwealth proffered into evidence, via Detective Baumgart, a “ShotSpotter Investigative Lead Summary” (the “ShotSpotter Summary” or the “Summary”) related to the underlying incident in this case,³ over the defense’s

³ The Commonwealth marked the Summary as “Commonwealth Exhibit 4.”

objection that admitting the Summary into evidence violated Appellant's rights under the Confrontation Clauses of the United States and Pennsylvania Constitutions,⁴ each of which provides that an accused in a criminal prosecution has the right "to be confronted with the witnesses against him." See U.S. Const. amend. VI; Pa. Const. art. 1, § 9. With respect to the Summary, Detective Baumgart explained that, when ShotSpotter detects a relevant sound, the program automatically generates a written summary which provides the date, time, and location of the suspected gunshot. He noted that, after the summary is automatically generated, updates may be added by the ShotSpotter operators to depict information obtained by the responding police officers.

Turning to the specifics of this case,⁵ Detective Baumgart testified that the Summary showed that officers were dispatched to 3400 Shadeland Avenue on the City's North Side, at approximately 7:43 p.m. on December 15, 2018, after ShotSpotter detected two possible gunshots fired at that location. On cross-examination, Detective Baumgart acknowledged that, despite his training with the program, he had not been certified by ShotSpotter and was not involved in preparing the Summary in this case. Detective Baumgart further admitted that he was unsure whether the dataset contained in the ShotSpotter Summary was ever reviewed by any human ShotSpotter operator, while noting that a human review component typically occurs in the ShotSpotter process.

Notably, although the date of the shooting incident was December 15, 2018, the Summary was not created until July 3, 2019, upon request by a ShotSpotter employee, identified by company email address "TTRANH@SHOTSPOTTER.COM." See ShotSpotter Summary at 1 (Appendix D to Appellant's Brief). In addition to providing the

⁴ Appellant also levied a hearsay objection.

⁵ Detective Baumgart conceded that he was not involved in the underlying investigation in this matter.

time, date, and location of the possible gunfire and a map of the same, the Summary includes a general description of the ShotSpotter program.⁶ The Summary also explains that the “shot count, times, and locations” contained therein “were automatically calculated by the ShotSpotter system at the time of detection,” cautioning that those values “are approximate and should be deemed as such,” and that “[t]he number of individual shots [depicted] may not match the round count reported” on the first page of the document “if an Incident Reviewer adjusted the round count during incident review prior to publication.”⁷ *Id.* at 2.

⁶ Specifically, the Summary provides:

ShotSpotter uses strategically placed acoustic sensors to detect and locate gunshots within a coverage area. The locations of the gunshots are calculated using audio pulse data and multilateration. Machine learning algorithms analyze and classify the sounds before they are reviewed by acoustic experts at the Incident Review Center. Within seconds, Incident Reviewers add relevant tactical intelligence and publish confirmed gunshots to ShotSpotter subscribers.

ShotSpotter Summary at 3.

⁷ The Summary includes an express disclaimer to this effect:

The Investigative Lead Summary is produced using data automatically generated by the ShotSpotter system and has not been independently reviewed by our Forensic Engineers. Although it provides precise trigger-pull location and timing as determined automatically by the ShotSpotter system, this summary should only be used for initial investigative purposes because the shot timing, location, and count could differ once reviewed by a ShotSpotter Forensic Engineer. Factors, such as obstructed or attenuated muzzle blast, weapon discharge in an enclosed space, or if the weapon discharged is of .25 or smaller caliber, may prevent the sensor(s) from detecting all or some of the shots fired. This summary has been generated solely for the purpose for which it is provided. Nothing herein shall to any extent substitute for the independent investigation of the shooting incident. The data and conclusions herein

(continued...)

The Commonwealth procured additional testimony surrounding the details of the December 15, 2018 shooting incident via another member of the Bureau, Officer Jacob Botzenhart, who was on duty when the Bureau received the relevant ShotSpotter notification at approximately 7:43 p.m. on that date. Officer Botzenhart explained that, while he was not one of the officers sent to investigate the possible gunshots recorded by the ShotSpotter system, he eventually became the lead officer in charge of the investigation, as, two minutes after the officers responded to the ShotSpotter report, Houston and Lamb arrived at the police station and reported the shooting incident which had occurred minutes earlier. According to Officer Botzenhart, Houston and Lamb informed him that they had heard gunshots as they attempted to drive away from Appellant in the vicinity of Shadeland Avenue. Officer Botzenhart related that, upon subsequently searching the location at which the shots were allegedly fired, he and other officers found no physical evidence of gunfire. Officer Botzenhart likewise conceded that searches of Appellant's home and vehicle yielded no physical evidence. However, Detective James Sherer testified that he observed damage to Lamb's car, which he believed was caused by bullets striking the vehicle, and the Commonwealth introduced photographs taken by Detective Sherer of that damage into evidence, without objection from the defense.

For his part, Appellant proffered evidence indicating that he supported Houston financially during their relationship, that she was unemployed in December 2018, and that multiple people were supporting her financially at that time. Appellant also presented testimony from two witnesses who attested that, on the evening of the shooting incident,

should be corroborated with other evidentiary sources such as recovered shell casings and witness statements.

Id.

Appellant was with them playing video games and eating soup and did not leave until the following morning.

Ultimately, the jury found Appellant guilty of the above-listed offenses,⁸ and the trial court later sentenced him to an aggregate term of 10 to 20 years imprisonment. Thereafter, Appellant appealed, asserting, *inter alia*, that the trial court violated his right to confrontation under the state and federal constitutions by admitting the Summary into evidence, as, in his view, the Summary was testimonial in nature, such that he should have been afforded the opportunity to cross-examine the declarant who created it.⁹ Appellant maintained that his cross-examination of Detective Baumgart did not serve this purpose because the detective had no role in creating the Summary.¹⁰

In its opinion issued pursuant to Pa.R.A.P. 1925(a), the trial court concluded that Appellant was due no relief on his constitutional challenge, as he failed to specify precisely who he wished to confront. The trial court reasoned that it could not “be found to have erred in refusing Appellant his right to cross-examine a witness who simply does not exist or has not been identified by Appellant.” Trial Court Opinion, 8/13/20, at 9. Accordingly, the trial court rejected Appellant’s right-to-confrontation claim.

In a unanimous, published opinion authored by Senior Judge Dan Pellegrini, the Superior Court affirmed. *Commonwealth v. Weeden*, 253 A.3d 329 (Pa. Super. 2021). Noting that the Confrontation Clause “protects a criminal defendant’s right to confront

⁸ The trial court separately convicted Appellant of the persons not to possess a firearm charge, as Appellant had a previous second-degree murder conviction.

⁹ While Appellant invoked our state constitution’s confrontation clause, which, as noted above, employs the same language as its federal counterpart, he did not below – and does not before us – argue that Pennsylvania’s right to confrontation is more expansive than the federal right to confrontation.

¹⁰ Appellant also renewed his hearsay-based challenge to the Summary, and he challenged the trial court’s rulings with respect to other evidence involved in his trial, but those claims are not at issue before this Court.

witnesses testifying against him,” the court opined that it was “not possible to cross-examine the declarant of the ShotSpotter [Summary] because it was automatically generated by a computer system and was not prepared by a person.” *Id.* at 336 (citing *Crawford v. Washington*, 541 U.S. 36, 51 (2004)). To that end, the court observed that the Summary “was not altered or amended by any person and no one individual can be considered its author.” *Id.* Indeed, the court emphasized that the Summary expressly advised that the document was not independently reviewed by ShotSpotter’s forensic engineers and that the data provided therein should be corroborated by other evidence, such as witness statements.

Moreover, and in any event, the court concluded that introduction of the Summary into evidence did not violate Appellant’s right to confrontation because the document was not testimonial in nature. In this regard, the court stressed that “statements are nontestimonial when made under circumstances objectively indicating that the primary purpose of the statement is to enable police to meet an ongoing emergency.” *Id.* (citing *Commonwealth v. Brown*, 185 A.3d 316, 325 (Pa. 2018)). The court noted that, rather, “statements are testimonial when the circumstances objectively indicate that there is no such ongoing emergency and that the primary purpose of the document is to establish or prove past events potentially relevant to later criminal prosecution.” *Id.* (citing *Brown*, 185 A.3d at 325). Bearing in mind these notions, the court found that, here, the Summary was not created to establish or prove past events for purposes of a subsequent criminal prosecution. Instead, the court determined that the Summary, which was computer-generated and sent to the Bureau within two minutes of the ShotSpotter system’s detection of possible gunshots, “was provided during the unfolding of an ongoing emergency or what was likely an emergency situation,” as the detection of gunfire “signaled an immediate crisis involving potential serious injury.” *Id.* Thus, the court

concluded that the Summary was not testimonial in nature and, therefore, did not implicate Confrontation Clause concerns. Accordingly, the court affirmed Appellant's judgment of sentence.

Appellant subsequently filed a petition for allowance of appeal with our Court, and we granted review on the following issue:

Whether a "Shotspotter Investigative Lead Summary" written report, which purports to show the time and location of a shooting incident and was offered as substantive evidence to the jury at trial, is testimonial in nature and subject to the protections afforded under the Confrontation Clause enshrined in the Sixth Amendment of the United States Constitution and Article I, Section 9 of the Pennsylvania Constitution.

Commonwealth v. Weeden, 278 A.3d 305 (Pa. 2022) (order).¹¹

II. Arguments

Presently, Appellant argues that the Superior Court erred in concluding that admission of the ShotSpotter Summary into evidence at trial did not violate his right to confrontation because the Summary was not prepared by a person and was not testimonial in nature. First addressing the underlying nature of the Summary, Appellant maintains that the document was testimonial, as it was not created in response to an ongoing emergency. In that regard, Appellant stresses that, while the initial communication made by ShotSpotter to the Bureau upon detecting possible gunshots was intended to assist law enforcement in promptly responding to the scene of an alleged shooting, the Summary itself "was generated over six months after the alleged shooting," thus "undermin[ing] the Superior Court's determination that the purpose of the [Summary]

¹¹ Whether the admission of the ShotSpotter Summary into evidence violated Appellant's rights under the Confrontation Clause is a question of law, for which our standard of review is *de novo* and our scope of review is plenary. See *Commonwealth v. Yohe*, 79 A.3d 520, 530 (Pa. 2013) (citation omitted).

was to respond to an emergency.” Appellant’s Brief at 17. Indeed, Appellant asserts that, because he was taken into police custody pursuant to an arrest warrant the day after the alleged shooting incident, there was clearly no ongoing emergency at the time the Summary was generated on July 3, 2019, as the Commonwealth’s prosecution of Appellant “was well underway.” *Id.* Based on the delayed creation of the Summary, Appellant contends that its intended purpose was undoubtedly “to prove at trial that gunshots were fired at a specific time and location.” *Id.*

Appellant further argues that the creation of the Summary included a significant human component, emphasizing the disclaimer language included therein which indicates that the report is reviewed by a human. Relatedly, Appellant highlights that, in his testimony, Detective Baumgart clarified that, generally, ShotSpotter includes a human review process, although the detective was unsure whether such a process occurred in this case. Appellant claims that the Superior Court’s conclusion that the creator of the Summary may not be subject to cross-examination because the Summary was computer-generated overlooks the human involvement in the creation of ShotSpotter summary reports, including the fact that the reviewer has the ability to adjust and add to a report. From Appellant’s perspective, the Superior Court’s determination that the Summary was not altered or amended by any person is inconsistent with the record evidence, as, in his view, it is unclear whether the Summary included any human amendments or intervention “because the Commonwealth’s witness had no knowledge of whether any of that occurred.” *Id.* at 22.

Asserting that the Summary was “plainly testimonial in nature,” given that, in his view, it was offered “to prove the precise time and location of the alleged shooting incident,” *id.*, Appellant maintains that he should have been “afforded an opportunity to confront the declarant with respect to this evidence,” *id.* at 22-23 (emphasis omitted).

Appellant notes that, during sidebar, defense counsel argued that he had a right to cross-examine whichever human inspector had input in the Summary; Appellant proffers that, consistent with his counsel's argument in this regard, he was, at the very least, entitled to cross-examine the human ShotSpotter operator who reviewed the initial data when the ShotSpotter system first detected the potential gunshots in this incident. Furthermore, Appellant suggests that, "to the extent that a [f]orensic [e]ngineer also reviewed the data, that person . . . also [should have been] subject to cross-examination." *Id.* at 23. According to Appellant, his ability to confront these witnesses involved in reviewing and potentially altering the data contained in the ShotSpotter Summary was paramount to his defense, and the trial court's decision to admit the Summary into evidence without permitting him the opportunity to challenge the information contained therein via cross-examination deprived him of his constitutional right to confrontation.

Relatedly, Appellant contends that Detective Baumgart served as nothing more than a "surrogate witness" with respect to the ShotSpotter Summary, as "he had no role in creating the [Summary] and thus could not speak to its reliability." *Id.* at 24. In this vein, Appellant maintains that the detective's testimony did not satisfy Appellant's confrontation rights because the United States Supreme Court has disapproved of surrogate testimony. *See Bullcoming v. New Mexico*, 564 U.S. 647, 661 (2011) (stating that "the analysts who write reports that the prosecution introduces must be made available for confrontation even if they possess 'the scientific acumen of Mme. Curie and the veracity of Mother Teresa'" (quoting *Melendez-Diaz v. Massachusetts*, 557 U.S. 305, 320 n.6 (2009))). Appellant also notes that an appellate court in Illinois concluded that a trial court erred in admitting a ShotSpotter summary into evidence.¹² *See People v.*

¹² Notably, the prosecution in that case conceded that the summary was testimonial in nature.

Robinson, 2022 WL 123358 (Ill. App. Ct. 2022). Finally, Appellant suggests that the Summary is inherently unreliable,¹³ noting that the disclaimer included in the document “makes it clear that the document is not intended for use at trial.” Appellant’s Brief at 25. With little in the way of analysis, Appellant likewise contends that the “mandatory human review of [the] machine-generated evidence demonstrates the limits of [ShotSpotter’s] reliability.”¹⁴ *Id.* at 26. Thus, Appellant urges our Court to reverse the Superior Court’s decision and determine that the trial court erred in admitting the Summary into evidence.¹⁵

¹³ The Commonwealth responds that Appellant waived this reliability-based challenge to the Summary’s admissibility by failing to raise it before the trial court. The Commonwealth also suggests that, to the extent that Appellant attempts to incorporate such a claim into his overall argument that the Summary was testimonial in nature, he neglected to sufficiently develop his argument, again rendering it waived. We agree that Appellant failed to preserve his challenge to the Summary on reliability grounds, as he did not raise such a claim in the trial court. See Pa.R.A.P. 302(a) (“Issues not raised in the trial court are waived and cannot be raised for the first time on appeal.”); *cf. Commonwealth v. Wallace*, 289 A.3d 894, 908 (Pa. 2023) (declining to consider an appellant’s authentication challenge to GPS data because he raised only a hearsay-based challenge to the evidence before the lower courts, rendering the authentication-based claim waived under Pa.R.A.P. 302(a)). Regardless, Appellant’s reliability argument falls beyond the scope of the question we accepted for consideration, which plainly focuses on the testimonial nature of the Summary under the Confrontation Clause, not the reliability thereof.

¹⁴ Appellant additionally undertakes a harmless error analysis, arguing that admission of the Summary into evidence prejudiced him, that the Summary was not cumulative of other evidence adduced at trial, and that his conviction was otherwise based solely on circumstantial evidence, which he believes he countered by way of his alibi defense. In light of our disposition, however, we need not further detail Appellant’s argument in this regard, as we conclude that the trial court did not err in admitting the Summary into evidence.

¹⁵ The Innocence Project, Inc., and the American Civil Liberties Union of Pennsylvania filed an *amicus* brief in support of Appellant. Therein, *amici* predominantly argue that the ShotSpotter system is unreliable and untested, scientifically, despite the fact that Appellant failed to preserve a reliability or authentication-based challenge to the Summary. In so doing, *amici* deride the ShotSpotter system as “fundamentally subjective,” *Amici’s* Brief at 5, given that the software does not automatically send out an alert to law enforcement upon capturing a loud noise or automatically create a summary report, but, instead, utilizes ShotSpotter operators, who “are not forensic audio experts,” (continued...)

The Commonwealth counters that Appellant misapprehends the nature of the evidence at issue, maintaining that, “when the focus is properly placed on the actual information that was admitted by the trial court—information that was strictly computer-

to send out such alerts following a brief review of the detected sound, *id.* at 7. From *amici*’s perspective, “[e]very stage of ShotSpotter’s gunshot detection process . . . is unvetted and riddled with opportunities for human intervention and error.” *Id.* at 8. Likewise, *amici* claim that the algorithm used in the ShotSpotter system is flawed and unreliable at detecting gunfire and its precise location, stressing that the ShotSpotter company has not permitted outside experts to test the veracity of the program. *Amici* posit that “flawed” forensic evidence, including from technological means similar to the ShotSpotter program, is a “leading cause of wrongful convictions,” *id.* at 17, noting that jurors oft “give outsized weight to forensic evidence,” *id.* at 20 (citation omitted).

Amici next echo Appellant’s contention that the Summary constitutes testimonial evidence, suggesting that *Bullcoming, supra*, supports the position that, without testimony from an individual involved in preparing the document, admission thereof violated Appellant’s right to confrontation. According to *amici*, several state courts have “similarly found the admission of scientific reports alone, to violate the right to confrontation,” *id.* at 23, including the Delaware Supreme Court, see *Martin v. State*, 60 A.3d 1100, 1109 (Del. 2013) (concluding that admission of a blood-analysis report into evidence without testimony from the author of that report violated the defendant’s right to confrontation). Additionally, *amici* contend that the introduction of ShotSpotter summaries as evidence runs afoul of defendants’ due process rights, asserting that “confrontation rights are an indispensable element of the due process afforded to the accused.” *Amici*’s Brief at 26.

The Pennsylvania Association of Criminal Defense Lawyers (“PACDL”) also submitted an *amicus* brief in support of Appellant, principally arguing that the Summary constitutes inadmissible hearsay which does not fall within the business exception to the rule against hearsay. Tangentially, PACDL asserts that the Summary is testimonial in nature and, thus, subject to the Confrontation Clause, deriding the Superior Court’s determination that the ShotSpotter Summary was not subject to confrontation because it was not prepared by a person. In PACDL’s view, this was a mischaracterization of the Summary, given that the document was specifically requested by a ShotSpotter representative and was reviewed, and potentially supplemented, by another ShotSpotter operator. Lastly, like Appellant’s other *amici*, PACDL challenges the Summary on reliability grounds, suggesting that the Commonwealth failed to produce evidence describing the ShotSpotter process and demonstrating that the program provides accurate results, consistent with Pa.R.E. 901(b)(9) (requiring, for authentication purposes, “[e]vidence describing a process or system and showing that it produces an accurate result”). PACDL urges our Court to expound upon this provision of our Rules of Evidence, which it claims has never been developed in the context of authentication, despite the proliferation of digital and machine-generated proof in criminal trials.

generated prior to being memorialized on paper—it is clear that the evidence was nontestimonial” and, thus, that admission of the document did not violate Appellant’s confrontation rights. Commonwealth’s Brief at 13. The Commonwealth suggests that, to find to the contrary, this Court would have to “elevate the piece of paper that the ShotSpotter data was printed on above the data itself.” *Id.* at 16-17. In relation to this contention, the Commonwealth offers that Detective Baumgart clearly testified that the ShotSpotter system automatically generates a report containing the time, date, and location of possible gunfire the moment a relevant noise is detected, and provides near-immediate notification to law enforcement, such that the Summary, while not printed until July 3, 2019, contained only information which was contemporaneously created and recorded on December 15, 2018. Indeed, the Commonwealth avers that it is the *initial* statement — *i.e.*, “the immediate ShotSpotter alert as to the time, location, and number of gunshots” — which is “actually at issue here,” and which was clearly intended to assist law enforcement in addressing an ongoing emergency. *Id.* at 29. The Commonwealth likens this data to other evidence deemed admissible by the high Court and this Court over right-to-confrontation challenges. *See Davis v. Washington*, 547 U.S. 813, 827 (2006) (determining that a 911 recording which included the victim’s statements identifying the defendant as her assailant was nontestimonial, as the 911 call “was plainly a call for help against a bona fide physical threat,” in which the victim was merely providing statements “necessary to be able to *resolve* the present emergency, rather than simply to learn . . . what had happened in the past” (emphasis original)); *Commonwealth v. Dyarman*, 73 A.3d 565, 574 (Pa. 2013) (finding that certificates demonstrating the calibration and accuracy of a breathalyzer machine “were not prepared for the primary purpose of providing evidence in a criminal case, let alone for the primary purpose of accusing” the defendant, and, therefore, were “nontestimonial for purposes of the

Confrontation Clause”). In any event, the Commonwealth claims that Appellant waived his assertion that the print date of the Summary proves that it is testimonial in nature, as he failed to raise this aspect of his argument before the trial court.

Moreover, the Commonwealth challenges Appellant’s contention that the Summary included a significant human review component which would render it testimonial in nature, stressing that Detective Baumgart’s testimony and the Summary itself readily contradict Appellant’s position. Specifically, the Commonwealth highlights the Summary’s language which indicates that it was “produced using data automatically generated by the ShotSpotter system and has not been independently reviewed by our Forensic Engineers.” See ShotSpotter Summary at 3. The Commonwealth further emphasizes that Detective Baumgart expressly testified that a forensic review is only conducted with respect to a specific ShotSpotter incident at the request of police and that such review was not requested or conducted in the case *sub judice*.

Relatedly, the Commonwealth discounts Appellant’s belief that he was entitled to confront whichever human initially reviewed the incident when ShotSpotter first detected the gunshots on December 15, 2018, arguing that Detective Baumgart’s testimony illuminated that the Summary did not include any data other than that which was automatically generated by ShotSpotter’s computer system. Nevertheless, the Commonwealth asserts that any contribution by an incident reviewer would have been so limited in scope that it would not have run afoul of the Confrontation Clause. According to the Commonwealth, such limited involvement from an incident reviewer would have been brief, “nearly instantaneous,” and “undertaken long before any knowledge that [Appellant] or some other individual was believed to be involved in a criminal offense.” Commonwealth’s Brief at 34. In that regard, the Commonwealth contends that the circumstances of this case render it distinguishable from scenarios in which evidence was

deemed testimonial in nature due to human involvement, including *Melendez-Diaz*, 557 U.S. at 310-11 (holding that affidavits reporting the results of a forensic analysis which concluded that a seized substance was cocaine were testimonial, as the affidavits were “functionally identical to live, in-court testimony”), and *Bullcoming*, 564 U.S. at 660 (determining that a laboratory report, which indicated the defendant’s blood alcohol content, was testimonial because it included an analyst’s “representations, relating to past events and human actions not revealed in raw, machine-produced data”). The Commonwealth maintains that, in those cases, the individuals handling the challenged evidence, “with no emergency ongoing, conducted thorough, after-the-fact analyses or examinations for the primary purpose of proving prior events potentially relevant to a future criminal prosecution.” Commonwealth’s Brief at 34-35. By contrast, the Commonwealth suggests that, here, the ShotSpotter incident reviewer, to the extent actually involved, sought “not to establish such past events[,] but, rather, to aid police by alerting them that gunshots had been fired in a certain area,” so that law enforcement could appropriately respond to an ongoing emergency situation. *Id.* at 35. Thus, the Commonwealth urges our Court to hold that the ShotSpotter Summary is not testimonial in nature and does not fall within the purview of the Confrontation Clause.^{16 17}

¹⁶ Like Appellant, the Commonwealth engages in a harmless error analysis, arguing that there was ample evidence justifying Appellant’s convictions even without the inclusion of the Summary into evidence. However, as with Appellant’s corresponding argument, we will not reproduce, at length, the Commonwealth’s arguments on this issue, given that our disposition eliminates the need to conduct a harmless error analysis in this case. See *supra* note 14.

¹⁷ The Pennsylvania Office of Attorney General (“OAG”) submitted an *amicus* brief supporting the Commonwealth’s position. Therein, OAG asserts that the Confrontation Clause does not apply to the Summary because it contains no out-of-court statements from human witnesses. In that regard, OAG contends that the Confrontation Clause extends only to “witnesses” against an accused, and not to information automatically generated by machine, proffering that several federal courts have concluded as much. See OAG’s Brief at 6 (discussing cases). Indeed, OAG avers that, because “computer (continued...) ”

III. Analysis

As noted above, the Confrontation Clause of the Sixth Amendment to the United States Constitution provides that, “[i]n all criminal prosecutions, the accused shall enjoy the right . . . to be confronted with the witnesses against him.” U.S. Const. amend. VI. This right of confrontation was extended to the individual states via the Fourteenth Amendment.¹⁸ See *Pointer v. Texas*, 380 U.S. 400, 403 (1965) (“We hold today that the

software cannot testify in open court for the jury to observe its demeanor and credibility,” *id.* at 8, machine-generated data simply does not implicate the concerns which the Confrontation Clause was intended to address. In OAG’s view, although human beings certainly program such computer systems in the first instance, thus permitting those systems to automatically generate raw data, “the way to test whether computer systems were programmed correctly is through authentication principles designed for mechanical processes, not Confrontation Clause principles designed for human ‘witnesses.’” *Id.* To underscore the lack of human involvement in ShotSpotter’s initial process, OAG emphasizes that “[n]o human being has the brainpower to generate precise raw data of th[e] kind” collected by the ShotSpotter program — namely, the timing of gunshots down to the thousandth of a second and the specific longitudes and latitudes of those gunshots based on triangulation technology. *Id.* at 9-10.

Relatedly, OAG maintains that the ShotSpotter Summary was nontestimonial, as the data reflected therein was captured automatically and sent immediately to first responders to enable them to address an ongoing emergency. According to OAG, the goal of the police response prompted by the ShotSpotter report “was not to bring [Appellant] into court,” but was, instead, intended “to end the physical threat and treat any injured persons.” *Id.* at 12.

OAG also avers that Appellant, by raising concerns about the Summary’s reliability and accuracy, overlooks that Pa.R.E. 901 provides a means to test the reliability and accuracy of automated computer programs via the process of authentication. OAG posits that, because Appellant failed to invoke Rule 901 before the trial court, he may not now challenge the reliability and accuracy of the Summary through alternate means.

¹⁸ The Constitution of our Commonwealth likewise delineates an accused’s right to confrontation, providing that, “[i]n all criminal prosecutions the accused hath a right . . . to be confronted with the witnesses against him.” Pa. Const. art. 1, § 9. As Appellant has not asserted that the Pennsylvania Constitution affords him greater protection than the United States Constitution with respect to the right to confrontation, see *supra* note 9, our analysis “would be the same under both the United States Constitution and the Pennsylvania Constitution.” *In re N.C.*, 105 A.3d 1199, 1210 n.15 (Pa. 2014) (citation omitted).

Sixth Amendment's right of an accused to confront the witnesses against him is likewise a fundamental right and is made obligatory on the States by the Fourteenth Amendment.""). Significantly, the Supreme Court of the United States has explained that "[t]he central concern of the Confrontation Clause is to ensure the reliability of the evidence against a criminal defendant by subjecting it to rigorous testing in the context of an adversary proceeding before the trier of fact." *Maryland v. Craig*, 497 U.S. 836, 845 (1990). The Confrontation Clause's language and "historical underpinnings" evince that the Clause safeguards a defendant's right to confront witnesses who "bear testimony" against him or her; as such, the right to confrontation applies only to testimonial statements. *Melendez-Diaz*, 557 U.S. at 309 (citation omitted).

In the past two decades, the high Court has grappled with the intended scope of the Confrontation Clause in a bevy of cases relevant to our current inquiry, placing a paramount focus on the purpose for which a statement was made in discerning whether a statement is testimonial and, thus, invokes the Clause's protections. First, in *Crawford*, a decision issued in 2004, the Court overruled *Ohio v. Roberts*, 448 U.S. 56, 66 (1980), under which testimonial witness statements were generally deemed admissible for Confrontation Clause purposes following a judicial determination of reliability. Pivoting from *Roberts*' "amorphous notions of 'reliability,'" *Crawford*, 541 U.S. at 61, the *Crawford* Court held that, where testimonial evidence is sought to be admitted, "the Sixth Amendment demands what the common law required: unavailability and a prior opportunity for cross-examination," *id.* at 68. While the Court declined to provide a comprehensive definition of the term "testimonial," it nonetheless proclaimed that the term encompasses, at a minimum, prior testimony and statements made during police interrogations. *Id.*

Two years later, in *Davis v. Washington, supra*, the high Court considered the meaning of testimonial in the context of statements made to law enforcement personnel during an emergency call and at the scene of a reported domestic disturbance. In the first of the two companion cases considered by the *Davis* Court, Michelle McCottry spoke to a 911 operator while in the midst of a domestic disturbance with her then-boyfriend, Adrian Davis. During that telephone call, McCottry stated that Davis was beating her with his fists, and she identified him by his full name in response to questions posed by the operator. Police officers arrived at the scene of the incident within four minutes of the 911 call and found McCottry visibly shaken, with fresh injuries on her forearm and face. Consequently, Davis was arrested and charged with a felony violation of a domestic no-contact order.

At Davis's trial, the prosecution called as witnesses the two police officers who responded to the 911 call; while the officers related that they observed fresh injuries on McCottry upon arriving at the scene, neither could identify the cause of those injuries. Thus, over Davis's objection pursuant to the Confrontation Clause, the prosecution admitted the recording of McCottry's 911 call. The jury ultimately convicted Davis.

In *Hammon v. Indiana*, No. 05-5705, the companion case to *Davis*, police officers responded to a reported domestic disturbance at the home of Hershel and Amy Hammon, whereupon they found Amy alone on the front porch of the house, looking frightened. Initially, Amy claimed that nothing was wrong, but, upon further questioning from the officers, she completed an affidavit, in which she detailed Hershel's physical attack on her. The State of Indiana thereafter charged Hershel with domestic battery and a probation violation, and the matter proceeded to a bench trial, at which the trial court admitted Amy's affidavit into evidence, despite her absence and over Hershel's objection. The trial court convicted Hershel.

Expanding upon *Crawford*'s brief foray into testimonial versus nontestimonial statements, the *Davis* Court held that:

Statements are nontestimonial when made in the course of police interrogation under circumstances objectively indicating that the primary purpose of the interrogation is to enable police assistance to meet an ongoing emergency. They are testimonial when the circumstances objectively indicate that there is no such ongoing emergency, and that the primary purpose of the interrogation is to establish or prove past events potentially relevant to later criminal prosecution.

Davis, 547 U.S. at 822. The Court clarified that its holding in this regard pertained to police interrogations because the statements relevant to the cases before it were clearly the result of differing types of police interrogations.¹⁹ However, the Court stressed that it did not intend to imply “that statements made in the absence of any interrogation are necessarily nontestimonial,” opining that “[t]he Framers were no more willing to exempt from cross-examination volunteered testimony or answers to open-ended questions than they were to exempt answers to detailed interrogation.” *Id.* at 822 n.1.

Applying its holding to the scenario presented in *Davis*, the Court concluded that McCottry's statements to the 911 operator during the emergency call were nontestimonial in nature. In so concluding, the Court reasoned that a 911 call, at least at the outset, “is ordinarily not designed primarily to ‘establish or prove’ some past fact, but to describe current circumstances requiring police assistance.” *Id.* at 827 (brackets omitted). Indeed, the Court emphasized that “the nature of what was asked and answered in *Davis*, . . . viewed objectively, was such that the elicited statements were necessary to be able to *resolve* the present emergency, rather than simply to learn . . . what had happened in the

¹⁹ The Court noted that, even if 911 operators “are not themselves law enforcement officers, they may at least be agents of law enforcement when they conduct interrogations of 911 callers,” and, thus, the Court deemed “their acts to be acts of the police” under the circumstances of *Davis*. *Davis*, 547 U.S. at 823 n.2.

past.” *Id.* (emphasis original). From the Court’s perspective, under the circumstances, “any reasonable listener would recognize that McCottry . . . was facing an ongoing emergency,” as her 911 call “was plainly a call for help against [a] bona fide physical threat.” *Id.* Hence, the Court determined that the “primary purpose” of McCottry’s statements to the 911 operator “was to enable police assistance to meet an ongoing emergency,” such that the statements were nontestimonial and beyond the scope of the Confrontation Clause. *Id.* at 828.

Conversely, in *Hammon*, the *Davis* Court found that the police officers’ interrogation of Amy in response to the reported domestic disturbance was clearly “part of an investigation into possibly criminal past conduct,” given that, once the officers arrived on the scene, there was no emergency in progress and no immediate threat of harm to Amy’s person or property. *Id.* at 829-30. According to the Court, when the officers questioned Amy after her initial response that nothing was wrong, they sought not to determine what was happening, “but rather ‘what happened,’” evincing that “the primary, if not indeed the sole, purpose of the interrogation was to investigate a possible crime” *Id.* The Court opined that Amy’s statements to police, in essence, amounted to “an obvious substitute for live testimony,” rendering them “inherently testimonial.” *Id.* Juxtaposing Amy’s statements in *Hammon* against McCottry’s statements in *Davis*, the Court explained:

The statements in *Davis* were taken when McCottry was alone, not only unprotected by police (as Amy Hammon was protected), but apparently in immediate danger from Davis. She was seeking aid, not telling a story about the past. McCottry’s present-tense statements showed immediacy; Amy’s narrative of past events was delivered at some remove in time from the danger she described.

Id. at 831-32.

The Court next contended with the definition of testimonial under the Confrontation Clause in *Melendez-Diaz*, *supra*, wherein the Court was tasked with determining whether affidavits²⁰ which reported the results of a forensic analysis — and, critically, included a bald representation that the seized substance was examined and found to contain cocaine — were testimonial. These affidavits were admitted into evidence at Melendez-Diaz’s trial on drug charges, over his objection that, pursuant to *Crawford*, the analysts who certified the results via the affidavits were required to testify in person. Exploring the primary purpose of the documents, the Court opined that the affidavits undoubtedly “[f]ell within the ‘core class of testimonial statements’” described in *Crawford*, *Melendez-Diaz*, 557 U.S. at 310, given that they were “functionally identical to live, in-court testimony,” *id.* at 310-11. Indeed, the Court explained that the affidavits were admitted at Melendez-Diaz’s trial to prove that the substance in his possession was indeed cocaine, which was “the precise testimony the analysts would be expected to provide if called at trial.” *Id.* at 310. Therefore, the Court concluded that the affidavits, which were “made under circumstances which would lead an objective witness reasonably to believe that the statement would be available for use at a later trial,” *id.* at 311 (quoting *Crawford*, 541 U.S. at 52), were testimonial statements, such that “the analysts were ‘witnesses’ for purposes of the Sixth Amendment,” *id.*

In 2011, the Court again considered two cases involving challenges brought under the Confrontation Clause. In the first case, *Michigan v. Bryant*, 562 U.S. 344 (2011), the trial court admitted as evidence against the defendant, Richard Bryant, statements made by the victim – identifying and describing his assailant – to police officers who had discovered him fatally wounded in a parking lot. Significantly, the Court deemed these

²⁰ The affidavits were described, under Massachusetts law, as “certificates of analysis.” However, the high Court determined that the documents were “quite plainly affidavits.” *Melendez-Diaz*, 557 U.S. at 310.

circumstances to require it, for the first time, to consider the “ongoing emergency” language employed in *Davis* in the context of “a nondomestic dispute, involving a victim found in a public location, suffering from a fatal gunshot wound, and a perpetrator whose location was unknown at the time the police located the victim.” *Id.* at 359. This scenario, the Court explained, raised the question of whether an “ongoing emergency” may “extend[] beyond an initial victim to a potential threat to the responding police and the public at large.” *Id.*

To that end, the Court highlighted that *Davis* and *Hammon* “involved domestic violence, a known and identified perpetrator, and, in *Hammon*, a neutralized threat,” such that the *Davis* Court “focused only on the threat to the victims and assessed the ongoing emergency from the perspective of whether there was a continuing threat to them.” *Id.* at 363 (citation omitted). Accordingly, the *Bryant* Court found that the assessment of the emergency situation in those matters was of narrow scope, focusing solely on the victims, without contemplating threats to the public or police. Indeed, the Court reasoned that “[a]n assessment of whether an emergency that threatens the police and public is ongoing cannot narrowly focus on whether the threat solely to the first victim has been neutralized because the threat to the first responders and public may continue.” *Id.* (citations omitted). Likewise, the Court reasoned that “the duration and scope of an emergency may depend in part on the type of weapon employed,” again differentiating the circumstances before it from *Davis*, wherein both perpetrators utilized only their fists in attacking their victims, thus allowing the police to bring the victims to safety simply by removing them from the vicinity of the perpetrators. *Id.* at 364. Bearing in mind the foregoing, the Court concluded that the victim’s statements made to police in the parking lot while mortally wounded were properly admitted at trial and did not violate Bryant’s right to confrontation, given that, when the victim made the relevant statements, “there was an

ongoing emergency . . . where an armed shooter, whose motive for and location after the shooting were unknown, had mortally wounded [the victim] within a few blocks and a few minutes of the location where the police found [the victim].” *Id.* at 374.

In the second Confrontation Clause case decided by the Court in 2011, *Bullcoming, supra*, the Court addressed the prosecution’s use of a forensic laboratory report containing a certification which the prosecution introduced via the testimony of a scientist who did not sign the certification, perform the underlying test detailed therein, or observe the test. See 564 U.S. at 652. Ultimately, the Court deemed the scientist’s testimony to be “surrogate testimony” which did “not meet the constitutional requirement,” as the defendant enjoyed the right “to be confronted with the analyst who made the certification, unless that analyst [was] unavailable at trial, and the accused had an opportunity, pretrial, to cross-examine that particular scientist.” *Id.* In so doing, the Court determined that, “[i]n all material respects, the laboratory report . . . resemble[d] those in *Melendez–Díaz*,” falling within the “core class” of testimonial statements, as the documents contained representations from the certifying scientist regarding issues which were solely evidentiary in nature, “made in aid of a police investigation.”²¹ *Id.* at 664-65. Thus, the Court concluded that admission of the report into evidence violated the Confrontation Clause.

Finally, a year later, the Court issued an opinion announcing the judgment of the Court in *Williams v. Illinois*, 567 U.S. 50 (2012), wherein a plurality of the Court seemingly

²¹ Pertinently, in her concurring opinion, Justice Sonia Sotomayor emphasized that the Court was not speaking to the propriety of a prosecuting authority’s use of “only machine-generated results, such as a printout from a gas chromatograph,” given that the forensic reports at issue contained a scientist’s statements, including with respect to the forensic procedures utilized in assessing the defendant’s blood alcohol concentration. *Bullcoming*, 564 U.S. at 673 (Sotomayor, J., concurring). As such, Justice Sotomayor cautioned that the Court’s opinion did not “decide whether[] . . . a State could introduce (assuming an adequate chain of custody foundation) raw data generated by a machine in conjunction with the testimony of an expert witness.” *Id.* at 674 (citation omitted).

expanded the “primary purpose” inquiry in considering the interplay of the Confrontation Clause and expert testimony. At the defendant’s bench trial on various sexually-based offenses, including rape, the prosecution proffered testimony from an expert witness who relied on the results of a DNA report (detailing the results of the rape kit performed on the victim) which was not admitted into evidence or shown to the finder-of-fact, was not quoted by the expert witness or read aloud, and was not identified by the witness as the source of her opinions. Noting that “[i]t has long been accepted that an expert witness may voice an opinion based on facts concerning the events at issue in a particular case even if the expert lacks first-hand knowledge of those facts,” *id.* at 67, the Court distinguished *Bullcoming* and *Melendez-Diaz*, in which the forensic reports in question were introduced into evidence to prove the truth of the matter asserted therein, whereas the DNA report introduced at Williams’ rape trial was not. Thus, the Court found that the expert witness’s testimony relying on the DNA report did not violate the defendant’s right to confrontation.

Notably, the Court further opined that, even if the DNA report had been introduced into evidence, there would have been no Confrontation Clause violation because the report “plainly was not prepared for the primary purpose of accusing a targeted individual.” *Id.* at 84. From the Court’s perspective, “the primary purpose of the [DNA] report, viewed objectively, was not to accuse [the defendant] or to create evidence for use at trial.” *Id.* Instead, the Court reasoned that the document’s “primary purpose was to catch a dangerous rapist who was still at large, not to obtain evidence for use against [the defendant], who was neither in custody nor under suspicion” at the time of the document’s creation. *Id.* Accordingly, the Court concluded that the expert’s testimony and the DNA report fell beyond the purview of the Confrontation Clause.

In his concurring opinion, Justice Clarence Thomas opined that the plurality had essentially created a new primary purpose test, which he viewed as chiefly focused upon whether a statement was intended to accuse a targeted individual engaged in criminal conduct; however, Justice Thomas submitted that this version of the test “lacks any grounding in constitutional text, in history, or in logic.” *Williams*, 567 U.S. at 114 (Thomas, J., concurring in result). In dissent, Justice Elena Kagan wrote that the expert’s testimony was “functionally identical to the ‘surrogate testimony’ that New Mexico proffered in *Bullcoming*.” *Id.* at 124 (Kagan, J., dissenting).²² Moreover, Justice Kagan, like Justice Thomas, derided the plurality’s newly declared focus of the primary purpose test, stressing that none of the Court’s prior cases “has ever suggested that,” to be testimonial in nature, “the statement must be meant to accuse a previously identified individual.” *Id.* at 135 (citation omitted). Relatedly, Justice Kagan criticized the plurality’s determination that the DNA report was intended to respond to an ongoing emergency in which a rapist was still at large, finding such a characterization of the DNA report to be an unjustifiable stretch of both the Court’s prior “ongoing emergency” jurisprudence and the facts of the case. *Id.* at 136. In sum, Justice Kagan would have concluded that the DNA report was inadmissible, absent the testimony of any analysts involved in its creation, based on *Melendez-Diaz* and *Bullcoming*.

With this background in mind, we return to the case *sub judice*. For the following reasons, we find that the ShotSpotter Summary is nontestimonial in nature under the high Court’s primary purpose test,²³ given that the ShotSpotter system recorded the data in an

²² Justices Antonin Scalia, Ruth Bader Ginsburg, and Sonia Sotomayor joined in Justice Kagan’s dissent.

²³ While, as discussed, *Williams* arguably invoked a new primary purpose test which focuses on whether a statement targets a specific individual for future prosecution, this innovation was endorsed by only a plurality of the Court; accordingly, we will adhere to the primary purpose test set out in the Court’s decisions spanning from *Crawford* to (continued...)

effort to assist law enforcement in responding to an ongoing emergency.²⁴ Plainly, examining the circumstances of the Summary's creation objectively, as the high Court instructs, see *Bryant*, 562 U.S. at 360 (“[T]he relevant inquiry is not the subjective or actual purpose of the individuals involved in a particular encounter, but rather the purpose that reasonable participants would have had, as ascertained from the individuals’ statements and actions and the circumstances in which the encounter occurred.”); *Davis*, 547 U.S. at 822 (“Statements are nontestimonial when made in the course of police interrogation under circumstances objectively indicating that the primary purpose of the interrogation

Bullcoming. Nevertheless, even under the *Williams* version of the primary purpose test, we would conclude that the Summary is not testimonial, as it clearly did not accuse Appellant, or any other individual, but, instead, merely informed law enforcement that gunshots had been fired, without regard to who fired them. See *Dyarman*, 73 A.3d at 574 (“Whether *Williams* creates a ‘new’ test, superseding *Melendez–Diaz* and *Bullcoming*, does not need to be addressed here, for the certificates at issue are nontestimonial for purposes of the Confrontation Clause under both *Melendez–Diaz/Bullcoming* and *Williams*.”). Notably, when the Bureau dispatched its officers to investigate whether shots had indeed been fired at the Shadeland Avenue location indicated by the ShotSpotter Summary, Houston and Lamb had not yet appeared at the police station to report that Appellant had fired shots at them.

²⁴ As a prefatory matter, we agree with the Commonwealth that the July 3, 2019 print date of the Summary is ultimately irrelevant, as the raw data contained in the Summary was collected contemporaneously to the December 15, 2018 shooting incident underlying Appellant’s convictions. In our view, the relationship between ShotSpotter’s initial raw data collection and the subsequent inclusion of that data in printed form is analogous to an initial recording of a 911 call and the subsequent copying of that recording to a disc or drive for purposes of use at trial. Plainly, extraction of the data for such use in no way alters the underlying purpose for which such data was collected. Here, it is undisputed that the ShotSpotter system compiled the relevant data on December 15, 2018, and the formatting of that same data for use at trial (*i.e.*, the Summary) did not supersede the initial emergency response function of the data. *Cf. State v. Jackson*, 748 S.E.2d 50, 55 (N.C. Ct. App. 2013) (“[W]e hold that the tracking data from the electronic monitoring device worn by defendant stored on the secured server is a data compilation and that Exhibit 16, the CD containing the video file plotting the data from defendant’s electronic monitoring device on the evening of 30 July 2009, is merely an extraction of that data produced for trial.”).

is to enable police assistance to meet an ongoing emergency.”), the Summary falls within the class of nontestimonial statements.

Indeed, the record reveals that the ShotSpotter program automatically calculates shot counts, times, and locations the moment a relevant sound is detected by the acoustic sensors and records this information in its system. See ShotSpotter Summary at 2; N.T. Jury Trial, 12/4/19, at 92-93. As indicated in the Summary, within seconds of the initial data retrieval, the ShotSpotter program transmits the information pertaining to the number of shots, timing, and location to the subscribing police force, which may then dispatch officers to the location of the possible shooting.²⁵ See ShotSpotter Summary at 3. In the instant case, this is precisely the manner in which the events unfolded: the ShotSpotter system detected gunfire at Shadeland Avenue in the North Side neighborhood of Pittsburgh; the program simultaneously collected the relevant data related to the gunfire; and the program, within seconds, transmitted the data pertaining to the possible shooting to the Bureau, thus permitting it to send officers to investigate. See *id.* at 1-2.

Given the contemporaneous nature of the data collection and transmission, we conclude that the primary purpose of the Summary was not “to establish or prove past events potentially relevant to later criminal prosecution.” *Davis*, 547 U.S. at 822. In this regard, we find that the ShotSpotter Summary is similar to the statements at issue in *Davis* and *Bryant*, which the high Court found to be nontestimonial. Just as the victim’s statements to police in *Bryant* were uttered for the primary purpose of assisting the police in apprehending an armed and dangerous assailant who posed a threat to the public, and McCottry’s statements to the 911 operator in *Davis* were meant to address an ongoing domestic violence situation, the data in the Summary was created to aid law enforcement

²⁵ Appellant does not dispute that the ShotSpotter operates in this manner, nor does he claim that the system deviated from this process with respect to the December 15, 2018 shooting incident.

in combating a particular instance of gun violence and, more specifically, to permit the Bureau to immediately dispatch officers to the Shadeland Avenue location to investigate and discern whether shots had been fired. The ShotSpotter Summary's function distinguishes it from the evidence deemed testimonial in cases such as *Melendez-Diaz* and *Bullcoming*, wherein forensic reports essentially functioned as substitutes for live testimony, see *Melendez-Diaz*, 557 U.S. at 310 (finding that the analysts' affidavits were "incontrovertibly . . . affirmation[s] made for the purpose of establishing or proving some fact" in a criminal proceeding); *Bullcoming*, 546 U.S. at 664 (determining that the certificate in question served the same purpose as the affidavits in *Melendez-Diaz*), as well as *Hammon*, in which the victim's statements to police after the domestic violence incident had abated were made during "an investigation into possibly criminal past conduct," see *Davis*, 547 U.S. at 829.

Our conclusion that the ShotSpotter Summary is nontestimonial also comports with our own jurisprudence interpreting and applying the high Court's primary purpose test. Indeed, in *Dyarman*, *supra*, we determined that the admission of accuracy and calibration certificates for breathalyzer testing machines did not violate the defendant's Sixth Amendment right to confrontation, despite the lack of testimony from the individual who performed the testing and prepared the certificates. In doing so, we explained that the circumstances surrounding the creation of the certificates — including that the certificates did not prove any element of the offense, provided no information regarding the defendant or her blood alcohol concentration, and were prepared weeks before the defendant committed her driving under the influence offense — established that "they were not prepared for the primary purpose of providing evidence in a criminal case." *Dyarman*, 73 A.3d at 569.

We reached the opposite conclusion in *Yohe, supra*. Specifically, therein, we found that a toxicology report was testimonial under the Confrontation Clause, as it addressed the main fact at issue at Yohe’s trial — *i.e.*, whether he was driving while intoxicated — “by identifying the alcohol content of his blood,” thus “serving the identical function of live, in-court testimony.” *Yohe*, 79 A.3d at 537 (citing *Melendez-Diaz*, 557 U.S. at 311). We explained:

In all material respects, the Toxicology Report at issue herein resembles those in *Melendez-Diaz* and *Bullcoming*, because here, as in those cases, a law enforcement officer provided evidence to a laboratory for scientific testing, which produced a report concerning the result of this analysis formalized in a signed document.

Id. (citations omitted).²⁶

More recently, in *Brown, supra*, we considered whether an autopsy report was testimonial in nature when introduced into evidence to prove the victim’s cause of death, without corresponding testimony from the report’s author. Observing that Pennsylvania law “requires the preparation of autopsy reports in all cases of sudden, violent, and suspicious deaths, or deaths by other than natural causes[] . . . to determine whether the death occurred as the result of a criminal act,” 185 A.3d at 329 (citing 35 P.S. § 450.503; 16 P.S. § 1237), and that coroners conducting such autopsies must “consult and advise the local district attorney to the extent practicable,” *id.* (citing 16 P.S. § 1242), we determined that the primary purpose for preparation of an autopsy report “is to establish or prove past events potentially relevant to a later criminal prosecution,” *id.* Thus, because the coroner who prepared the autopsy report was not present at trial to proffer

²⁶ Nevertheless, we concluded that Yohe’s right to confrontation had not been violated, as the Commonwealth properly offered the testimony of the scientist who analyzed the data and certified and signed the toxicology report at Yohe’s trial. See *Yohe*, 79 A.3d at 541.

his testimony, we concluded that admission of the report into evidence ran afoul of the defendant's Sixth Amendment right.

While *Dyarmen*, *Yohe*, and *Brown* did not, as here, focus upon the “ongoing emergency” facet of the primary purpose test, they nonetheless remain instructive in assessing the other circumstances under which the Summary was created. Specifically, just as the accuracy and calibration certificates at issue in *Dyarmen* bore no direct relation to the defendant or her criminal trial, as they were completed weeks before she committed her offense, the Summary contains no references whatsoever to Appellant, and the data depicted therein was collected before he became a suspect in the shooting incident. In this regard, the Summary also diverges in function from the toxicology report and autopsy report at issue in *Yohe* and *Brown*, respectively, given that those documents were created with the purpose of serving as proof at trial — the toxicology report to establish the defendant's blood alcohol concentration, and the autopsy report, by virtue of the statutes governing its creation, to demonstrate the circumstances of the victim's death; by contrast, the Summary is little more than a tool to aid law enforcement in responding to potentially dangerous emergency situations involving gunfire.

For these reasons, we hold that, under the standards set forth by the high Court, and consistent with our own jurisprudence, the ShotSpotter Summary is nontestimonial in nature, such that admission of the document at Appellant's trial did not run afoul of Appellant's Sixth Amendment right to confrontation.²⁷ Accordingly, we affirm the order of the Superior Court.

²⁷ In light of our determination that the Summary is not testimonial under the Confrontation Clause, we leave for another day the question of whether a purely machine-generated statement implicates the Confrontation Clause despite the lack of a human declarant. We likewise need not determine whether the Summary is generated solely by machine, as the Commonwealth asserts, despite the evidence indicating human involvement in the ShotSpotter process. Indeed, human involvement notwithstanding, the data contained in (continued...)

Justices Donohue, Dougherty, Wecht, Mundy and Brobson join the opinion.

Justice Wecht files a concurring opinion.

Justice Brobson files a concurring opinion in which Justice Dougherty joins.

the Summary was generated in response to an ongoing emergency, similar to the 911 call in *Davis*, which indubitably involved human questioning and screening, and human responses.