

**IN THE SUPREME COURT OF PENNSYLVANIA
MIDDLE DISTRICT**

No. 149 MM 2020

IN RE NOVEMBER 3, 2020 GENERAL ELECTION

PETITION OF KATHY BOOCKVAR, SECRETARY OF
COMMONWEALTH OF PENNSYLVANIA

**BRIEF OF AMICUS CURIAE
THE URBAN LEAGUE OF GREATER PITTSBURGH**

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STATEMENT OF INTEREST

Pursuant to Pennsylvania Rule of Appellate Procedure 531(b)(1)(iii) and this Court’s Order of October 15, 2020, amicus curiae Urban League of Greater Pittsburgh (“Urban League”) submits this brief to protect the fundamental voting rights of its constituents and members. Urban League is a not-for-profit, nonpartisan voter access and education organization representing Pennsylvania voters whose fundamental right to vote would be affected by a denial of the Secretary’s requested declaratory relief. Among Urban League’s members are voters—including seniors, racial minorities, and medically vulnerable individuals—who face particular health risks from the COVID-19 pandemic and are likely to vote by mail-in ballot. Pursuant to Pa. R.A.P. 531(b), Urban League states that no other person or entity has paid for the preparation of, or authored, this brief in whole or in part.

SUMMARY OF THE ARGUMENT

Petitioner Kathy Boockvar, Secretary of the Commonwealth of Pennsylvania (the “Secretary”), commenced this action to request a declaratory judgment from this Court that the Pennsylvania Election Code (1) does not authorize county boards of elections to reject mail-in or absentee ballots based on signature comparisons, and (2) prohibits private party challenges to ballots based on perceived signature variations. *Application of Kathy Boockvar, Secretary of the Commonwealth of Pennsylvania for Invocation of King’s Bench Power to Declare Proper Construction*

of the Election Code (the “Secretary’s Application”), at 1. Urban League presents additional arguments concerning both requests.

First, Urban League agrees that signature matching on absentee and mail-in ballots will lead to the disenfranchisement of thousands of Pennsylvania voters in violation of the Free and Equal Elections Clause. *Id.* To the extent this Court finds, however, that the Election Code *does* authorize county boards of elections to conduct signature matching, Urban League alternatively contends that the Pennsylvania Constitution’s due process guarantee in Article I, Section I and its Free and Equal Elections Clause require that a voter be provided notice and an opportunity to cure before her vote is discarded because of a purported mismatched signature.

Although this Court recently concluded that the Free and Equal Elections Clause did not require notice and cure procedures, *see Pa. Democratic Party v. Boockvar*, No. 133 MM 2020, 2020 WL 5554644 (Pa. Sept. 17, 2020), that decision was in the context of *voters* casting incomplete or inaccurate ballots. When an election official makes a subjective judgment that the signature on a ballot does not match an earlier signature, the voter has not cast an incomplete or inaccurate ballot. Indeed, most commonly, the *election official* has made an inaccurate determination of a mismatch. As Justice Wecht explained in his concurrence, the Court did not address whether the Pennsylvania Constitution would require a notice-and-cure remedy for subjective signature matching. Moreover, the *Pa. Democratic Party*

decision likewise did not consider any due process claims under Pennsylvania’s Constitution, which separately requires that pre-deprivation notice and cure accompany any signature matching. Thus, should this Court disagree with the Secretary in this matter, the Urban League urges the Court to order any county board of elections engaging in signature matching to provide meaningful notice and an opportunity to cure before rejecting ballots.¹

Second, Urban League files this brief to raise additional arguments with respect to signature matching challenges by non-governmental officials. The Secretary contends that the Election Code’s plain text does not permit such challenges. Urban League files this amicus brief in part to explain that even if the Election Code were ambiguous, the Court should interpret the Election Code to prohibit non-governmental signature matching challenges to avoid the grave constitutional concerns of a contrary interpretation. If non-governmental officials are permitted to challenge ballots on the basis of signature matching, the door would open to improper, partisan motivations animating challenges to signatures. Although a notice-and-cure procedure may suffice to remedy the risk of erroneous deprivation when a governmental official is making neutral judgments about signatures, *no*

¹ To be clear, the Urban League’s notice-and-cure arguments are only applicable if this Court disagrees with the Secretary’s statutory interpretation. Intervenor-Petitioner notes that the U.S. District Court for the Western District of Pennsylvania came to the same conclusion as the Secretary this weekend, determining that “[a] plain reading of the Election Code demonstrates that it does not impose a signature-comparison requirement for mail-in ballots and applications.” Op. at 94, Dkt. 574, *Trump v. Boockvar*, No. 20-cv-00966-NR (W.D. Pa. Oct. 10, 2020).

procedure is constitutionally sufficient to ward against subjective and possibly ill-motivated challenges to signatures by third-party, non-governmental actors.

Because a system that permits such challenges would violate the Pennsylvania Constitution’s Free and Equal Elections Clause and its due process guarantee, this Court should adopt the Secretary’s statutory interpretation with respect to challenges by non-governmental officials following the doctrine of constitutional avoidance.

ARGUMENT

I. The Pennsylvania Constitution’s Due Process Guarantee Prohibits the Rejection of Ballots in the Absence of Pre-Deprivation Notice and an Opportunity to Cure.

If the Election Code permits absentee and mail-in ballots to be rejected on the basis of signature matching, then the Pennsylvania Constitution’s due process guarantee requires that voters be provided notice and an opportunity to cure before their ballots are rejected. In *Pennsylvania Democratic Party*, this Court concluded that the Free and Equal Elections Clause did not require notice and cure procedures “for mail-in and absentee ballots that voters have filled out incompletely or incorrectly.” 2020 WL 5554644, at *20. This reasoning does not apply to rejections on the basis of signature matching, however, because in such cases the voter has not made any error—rather, it is the county board of elections that has likely made the error in wrongly concluding a signature does not match. *See Id.* at *34 (Wecht, J., concurring) (“I view these issues as distinct from circumstances in which a ballot’s

validity turns on subjective assessments, such as signature mismatches assessed by poll workers with no training or expertise in matching signatures. . . . I do not view today’s Opinion as foreclosing the possibility of relief in a future case seeking the opportunity to address circumstances [such as signature matching.]”). Moreover, there was no due process argument presented in *Pennsylvania Democratic Party*, and just as nearly every federal court has concluded with respect to the federal Constitution’s Due Process Clause, the Pennsylvania Constitution’s due process guarantee likewise prohibits ballots from being rejected based upon subjective signature comparisons absent meaningful pre-deprivation notice and cure procedure.

The Pennsylvania Constitution’s due process protections derive from Article I, Section 1, which provides:

All [individuals] are born equally free and independent, and have certain inherent and indefeasible rights, among which are those of enjoying and defending life and liberty, of acquiring, possessing and protecting property and reputation, and of pursuing their own happiness.

Pa. Const. art. I, § I. This Court has held that the due process guarantees of the Pennsylvania Constitution “are not distinguishable from those of the 14th Amendment” and courts “may apply the same analysis to both claims.” *Pa. Game Comm’n v. Marich*, 666 A.2d 253, 255 n.6 (Pa. 1995) (citing *R. v. Com., Dep’t of Public Welfare*, 636 A.2d 142, 152-53 (Pa. 1993)). The co-extensiveness between the constitutions of both Pennsylvania and United States applies to both procedural

due process, *see id.*, and substantive due process rights, *see Nixon v. Com.*, 839 A.2d 277, 286 (Pa. 2003).

Determining whether a state action violates procedural due process follows a “‘familiar two-stage analysis,’ inquiring (1) whether ‘the asserted individual interests are encompassed within the fourteenth amendment’s protection of life, liberty, or property’; and (2) whether the procedures available provided the plaintiff with ‘due process of law.’” *Alvin v. Suzuki*, 227 F.3d 107, 116 (3d Cir. 2000) (quoting *Robb v. City of Philadelphia*, 733 F.2d 286, 292 (3d Cir. 1984)); *see also Marich*, 542 Pa. at 230–31 (applying same test).

First, voting is a protected liberty interest. Such protected interests “attain this constitutional status by virtue of the fact that they have been initially recognized and protected by state law, and the United States Supreme Court has repeatedly ruled that the procedural guarantees of the Fourteenth Amendment apply whenever the State seeks to remove or significantly alter that protected status.” *R.*, 636 A.2d at 147 (quoting *Paul v. Davis*, 424 U.S. 693, 710–11 (1976)) (alterations omitted). Under the Pennsylvania Constitution, “the franchise is guaranteed by the Free and Equal Elections Clause.” *Pa. Democratic Party*, 2020 WL 5554644, at *31 (Wecht, J., concurring) (citing Pa. Const. art. I, § V). This guarantee signifies that voting is a protected liberty interest because “[t]he Commonwealth recognizes the right of suffrage as ‘fundamental’ and ‘pervasive of other basic civil and political

rights.” *Applewhite v. Commw.*, No. 330 M.D. 2012, 2014 WL 184988, at *18 (Pa. Commw. Ct. Jan. 17, 2014) (quoting *Bergdoll v. Kane*, 731 A.2d 1261, 1269 (Pa. 1999)); *see also Pa. Democratic Party*, 2020 WL 5554644, at *9 (recognizing the “longstanding and overriding policy in this Commonwealth to protect the elective franchise” (citation omitted)).

The United States Constitution similarly recognizes voting as a fundamental right and protected liberty interest. In *Anderson v. Celebrezze*, for example, the U.S. Supreme Court stated that voting rights affect “interwoven strands of ‘liberty’” including “the right of qualified voters, regardless of their political persuasion, to cast their votes effectively.” 460 U.S. 780, 787 (1983) (quoting *Williams v. Rhodes*, 393 U.S. 23, 30–31 (1968)).² By definition, this includes “the right of qualified voters within a state to cast their ballots *and have them counted*[.]” *United States v. Classic*, 313 U.S. 299, 315 (1941) (emphasis added). Thus, the right to vote is a liberty interest protected by due process requirements.

Second, to determine what level of process is due, Pennsylvania courts “employ the methodology of the United States Supreme Court in *Mathews v.*

² Other federal courts have reinforced that voting is a protected liberty interest. *See, e.g., Burdick v. Takushi*, 504 U.S. 428, 433 (1992) (declaring that “voting is of the most fundamental significance under our constitutional structure” (citation omitted)); *Cook v. Randolph Cty.*, 573 F.3d 1143, 1152 (11th Cir. 2009) (noting that “[t]he Constitution guarantees procedural and substantive due process when a liberty interest is at stake,” including “the right to vote”); *Barefoot v. City of Wilmington*, 306 F.3d 113, 124 n.5 (4th Cir. 2002) (“The right to vote . . . is certainly a protected liberty interest[.]”).

Eldridge, 424 U.S. 319 (1976),” see *Marich*, 542 Pa. at 230–31, a three-part test balancing “(1) the private interest affected by the governmental action; (2) the risk of an erroneous deprivation together with the value of additional or substitute safeguards; and (3) the state interest involved, including the administrative burden the additional or substitute procedural requirements would impose on the state,” *Bundy v. Wetzel*, 646 Pa. 248, 258 (2018) (citation omitted). Applying this test, due process requires that any ballot rejection based on signature verification in Pennsylvania can occur only after notice to the voter and providing an opportunity to cure a potential defect.

The alternative of allowing counties to freely reject legitimate ballots using an arbitrary, unreliable signature verification process will result in Pennsylvania voters being erroneously denied their fundamental right to vote and violates the “essential principle of due process . . . that a deprivation of life, liberty, or property be preceded by notice and opportunity for hearing appropriate to the nature of the case.” *Cleveland Bd. of Educ. v. Loudermill*, 470 U.S. 532, 542 (1985) (citation omitted). Thus, this Court should follow the bevy of courts that have applied *Eldridge* and held that signature matching complies with due process guarantees only if accompanied by pre-deprivation notice and cure. See, e.g., *Arizona Democratic Party v. Hobbs*, No. CV-20-01143-PHX-DLR, 2020 WL 5423898, at *11–13 (D. Ariz. Sept. 10, 2020); *Richardson v. Texas Sec’y of State*, No. SA-19-

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A. The Private Interest at Stake is Fundamental.

The first *Eldridge* factor weighs heavily in favor of prohibiting signature verification that disenfranchises voters without notice and cure protections. The private interest affected by signature matching rejections is high because Pennsylvanian’s right to vote is fundamental. *See* Pa. Const. Art. I, § V. Indeed, “[t]here is no right more basic in our democracy than the right to participate in electing our political leaders.” *McCutcheon v. FEC*, 572 U.S. 185, 191 (2014); *see also Wesberry v Sanders*, 376 U.S. 1, 17 (1964) (“No right is more precious in a free

country than that of having a voice in the election of those who make the laws under which, as good citizens, we must live.”). Accordingly, courts considering mail-in signature verification programs without notice and cure safeguards have found that the first *Eldridge* factor strongly favors enhanced due process protections. *See, e.g., SAS*, 2020 WL 2951012, at *9 (finding that “[t]he private interest at stake is the fundamental right to vote, so this first factor is entitled to substantial weight.”); *Martin*, 341 F. Supp. 3d at 1338 (same).

The statutory character of Pennsylvanians’ right to vote by mail does not lessen this weighty private interest. “A liberty interest . . . may arise from an expectation or interest created by state laws or policies[.]” *Wilkinson v. Austin*, 545 U.S. 209, 221 (2005) (citations omitted); *accord Paul*, 424 U.S. at 710–11. Having affirmatively created a vote-by-mail system through which all eligible voters can exercise their fundamental right, the Commonwealth may not arbitrarily disenfranchise citizens who avail themselves of that process. *See Saucedo*, 335 F. Supp. 3d at 217 (“Having induced voters to vote by absentee ballot, the State must provide adequate process to ensure that voters’ ballots are fairly considered and, if eligible, counted.”); *Zessar*, 2006 WL 642646, at *5 (stating similar rule); *Martin*, 341 F. Supp. 3d at 1338 (same).

The reality that the COVID-19 pandemic makes the upcoming November election the first general election in Pennsylvania with widespread mail-in voting

further heightens the fundamental interests at stake. As the Center for Disease Control and Prevention (“CDC”) has advised, “[l]imiting face-to-face contact with others is the best way to reduce the spread of” COVID-19 and to safely administer elections, officials should provide “a wide variety of voting options,” including mail-in voting and “any other feasible options for reducing the number of voters who congregate indoors in polling locations at the same time.”³ Because Pennsylvania enables all voters to vote by mail to avoid these health risks, the volume of mail-in ballots will undoubtedly increase in the November 2020 election just as it did for the June 2020 primary election when compared to prior years.⁴ The Commonwealth itself has predicted the significant increase in and greater importance of mail-in voting in Pennsylvania in the 2020 election cycle, due in part to the COVID-19 pandemic. *See* Compl. For Decl. and Inj. Relief, Dkt. 1, at ¶ 42, *Commonwealth of Pennsylvania, et al. v. Louis DeJoy, et al.*, No. 2:20-cv-04096 (E.D. Pa. Aug. 21, 2020). That prediction has borne out, with one study aggregating Pennsylvania mail-

³ *See* “Social Distancing,” U.S. Centers for Disease Control and Prevention, Jul. 15, 2020, <https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/social-distancing.html> (retrieved Oct. 7, 2020); “Considerations for Election Polling Places and Voters,” U.S. Centers for Disease Control and Prevention, Jun. 22, 2020, <https://www.cdc.gov/coronavirus/2019-ncov/community/election-polling-locations.html> (retrieved Oct. 7, 2020).

⁴ *See* Kathy Boockvar, *Historic Primary Paves Way For Successful General Election In Pennsylvania*, THE BROOKINGS INST. (June 22, 2020), <https://brook.gs/2AWMGJa> (“In a matter of months, nearly 1.5 million voters cast their vote by mail-in or absentee ballot, 17 times the number that voted absentee in the 2016 primary, when approximately 84,000 absentee ballots were cast.”).

in voting data showing that 517,822 voters have already returned their mail-in ballot as of October 14th, with over two million requested mail-ballots still expected to be returned.⁵ Thus, the private interest at stake is the fundamental right to vote, including the right to do so by mail under Pennsylvania law. The increasing volume of Pennsylvanians opting for this route in the midst of a global pandemic makes shoring up procedural safeguards to prevent unfounded deprivations of that important interest particularly compelling.

B. Signature Matching Results in a Substantial Risk of Erroneous Deprivation of Voting Rights.

The second *Eldridge* factor—the probable value of additional process in reducing the risk of erroneous deprivations—also indicates that ballots may not be rejected based upon signature matching without meaningful pre-deprivation procedural safeguards. By providing voters with pre-rejection notice and opportunity to cure any perceived signature deficiencies, Pennsylvania would give eligible voters a chance to correct erroneous determinations and ensure that they are not disenfranchised because of benign discrepancies or election official errors.

Requiring pre-deprivation notice is the “default rule” in procedural due process cases. *Montanez v. Sec’y Pa. Dep’t of Corr.*, 773 F.3d 472, 483 (3d Cir.

⁵ See Professor Michael McDonald, U.S. Elections Project, *Pennsylvania Early Voting Statistics*, <https://electproject.github.io/Early-Vote-2020G/PA.html> (last updated Oct. 14, 2020) (compiling data sourced from Pennsylvania Secretary of State).

2014). And for good reason. Following the “general preference that procedural safeguards apply in the pre-deprivation timeframe” aligns with the overriding due process goal to “avoid[] erroneous deprivations before they occur.” *Bundy*, 646 Pa. at 258 (citing *Pa. Coal Mining Ass’n v. Ins. Dep’t*, 471 Pa. 437, 451 (1977)). This is especially true here because county boards of elections that engage in signature matching are virtually certain to erroneously reject valid ballots and do irreparable harm to voters.

Signature comparison is a complex, professionalized field that cannot be accurately performed by the untrained eye. As Dr. Linton A. Mohammed has opined, “[d]etermining whether signature features are ‘differences’ or ‘variations’ is one of the most difficult determinations in signature examinations, even for experienced [Forensic Document Examiners],” and laypeople “are highly likely to make mistakes when comparing signatures, particularly by erroneously rejecting signatures as inauthentic or non-matching when they are in fact written by the same individual.” Mohammed Decl. ¶¶ 28, 38 attached as Ex. A. Pennsylvania’s evidentiary rules codify this understanding by establishing that signature comparison is the province of expert testimony. 42 Pa. C.S. § 6111(c) (instructing that an expert’s signature opinion should be supported by his or her “statement of the principles on which he has based his work, the details of his work, and his opinion that the results are important to the point at issue, or the reasoning, analysis and investigation by which

he has arrived at his opinion”); accord *United States v. Velasquez*, 64 F.3d 844, 850 (3d Cir. 1995) (noting that “the field of handwriting analysis consists of scientific, technical or other specialized knowledge” that is uniquely in the purview of trained experts). Thus, because “[s]ignature comparison is a process fraught with the risk of error and inconsistent application, especially when conducted by lay people[,]” due process requires pre-deprivation safeguards. See *Pennsylvania Democratic Party*, 2020 WL 5554644, at *34 & n.15 (Wecht, J., concurring) (citing *United States v. Starzecpyzel*, 880 F. Supp. 1027, 1046 (S.D.N.Y. 1995)).

Disregarding the need for accurate expert analysis and permitting county boards of elections to engage in signature matching without due process protections would allow untrained laypeople to analyze the signatures of mail-in voters. This would result in uninformed decisions of the utmost constitutional consequence: whether to count a citizen’s validly cast vote. County election officials in Pennsylvania lack the tools and training to properly account for the fact that “illiterate writers, writers for whom English is a second language, elderly writers, disabled writers, and writers with health conditions tend to have less pen control than most other writers, and therefore would have a greater range of variation in their signatures.” Mohammed Decl. ¶ 31. In states where signature matching is conducted, election officials are not required to compare the signature on the voter’s ballot with more than one signature in the voter’s file, contrary to expert methodology that

“require[s] multiple specimen signatures for comparison with a questioned signature, and often more if issues such as age or illness are involved.” *Id.* ¶ 49. Election officials matching signatures also understandably cannot meet standard handwriting expert practices to spend significant time examining each individual signature to ensure an accurate comparison, and such “hasty decisions can lead to ballots being improperly rejected.” *Id.* ¶ 53. Thus, as a result of these sampling and time shortcomings, election officials “are more than 3 ½ times more likely to declare an authentic signature non-genuine” and mistakenly reject a valid ballot for this reason. *Id.* ¶ 40.

The important liberty interests at stake cannot be subjected to the whim of a flawed system that falls far short of due process standards. If Pennsylvania counties are permitted to conduct signature verification without pre-rejection notice and cure, voters have no recourse to establish the validity of their signature and ballot before it is too late; the right to vote in the affected election is irreversibly lost. Without a pre-deprivation process, “[i]t cannot be emphasized enough that the consequence of a moderator’s decision—disenfranchisement—is irredeemable.” *Saucedo*, 335 F. Supp. 3d at 218 (citation omitted); *see also Loudermill*, 470 U.S. at 542. (noting that the “root requirement of the Due Process Clause [is] that an individual be given an opportunity for a hearing *before* he is deprived of” the protected interest at stake) (emphasis in original) (citations omitted).

To avoid the substantial risks of erroneous disenfranchisement, numerous courts have routinely found that providing notice and cure opportunities can relieve the due process deficiencies of signature verification programs without encumbering state election administration. *See, e.g., SAS*, 2020 WL 2951012, at *9; *Martin*, 341 F. Supp. 3d at 1339; *La Follette*, 2018 WL 3953766, at *1; *Saucedo*, 335 F. Supp. 3d at 218; *Zessar*, 2006 WL 642646, at *9. Additional pre-deprivation procedures can be easily implemented in Pennsylvania because the voter’s verification information—including signatures—are contained on the outer envelope of the ballot. Thus, county election officials can compare signatures during the pre-canvassing period with ample time to notify voters and avoid erroneous rejections. In *Self Advocacy Solutions North Dakota v. Jaeger*, by comparison, the district court ordered county officials to “compare the signature[s]” during the pre-canvassing period “to identify whether the canvassing board is likely to determine that the signatures do not match” and facilitate notifying voters and offering cure opportunities. No. 3:20-CV-00071, 2020 WL 3068160, at *2 (D.N.D. June 5, 2020). This Court can fashion a similar remedy here and require county boards of elections to contact voters on a rolling basis as ballots are received and before final vote counting by the canvassing board. Doing so would diminish any administrative burden on election officials and maximize the amount of notice and cure time for voters.

In sum, because of the high risk of mistaken deprivations, the second *Eldridge* factor—and basic fairness principles underlying due process—favors mandating pre-deprivation protections to avoid disenfranchising eligible Pennsylvania voters due to signature verification.

C. Pennsylvania Has No Interest in Rejecting Ballots Without Providing Notice and an Opportunity to Cure.

The third *Eldridge* factor also counsels in favor of mandating pre-deprivation notice and cure if Pennsylvania law permits signature verification. States have no legitimate interest in disenfranchising eligible voters without due process of law. Any abstract risk of mail-voting fraud or perceived administrative burden of offering additional pre-deprivation procedure cannot afford a countervailing interest to override voters’ fundamental liberty interests at stake.

First, the Commonwealth has no cognizable interest in using signature matching without due process protections to prevent a risk of voter fraud. To begin with, mail-in voting fraud is vanishingly rare across the country despite numerous states using universal vote-by-mail systems for years,⁶ and there is no evidence that

⁶ See, e.g., Elaine Kamarck and Christine Stenglein, Low Rates of Fraud in Vote-By-Mail States Show the Benefits Outweigh the Risks, THE BROOKINGS INSTITUTION (June 2, 2020), <https://brook.gs/3ct24tJ> (analyzing elections in universal vote-by-mail states—Colorado, Hawaii, Oregon, Utah, and Washington—and discrediting fraud concerns); Wendy Weiser & Harold Ekeh, The False Narrative of Voter Fraud, BRENNAN CTR. FOR JUSTICE (Apr. 10, 2020), www.brennancenter.org/our-work/analysis-opinion/false-narrative-vote-mail-fraud (studying voter datasets and concluding it is “more likely for an American to be struck by lightning than to commit mail voting fraud”); Richard L. Hasen, ELECTION MELTDOWN 128 (2020) (summarizing

due process-free signature matching would address any risk of fraud that simply does not exist in the Commonwealth. Rather, requiring procedural safeguards *advances* that purpose by expanding the information available to election officials from the most direct source—the voters themselves. Moreover, Pennsylvania law already guards against any risk of vote-by-mail misconduct in ways that better avoid wrongful disenfranchisement. At the front end, Pennsylvania requires election officials to determine the validity of a mail-in voter’s qualifications during the application process by comparing the information provided on the application against the voter’s registration information. *See* 25 Pa. Stat. §§ 3150.11, 3150.12b(a). On the back end during the canvassing process, each county board of elections must also validate absentee and mail-in ballots by “examin[ing] the declaration on the envelope of each ballot . . . and shall compare the information thereon with that contained” in the applicable voter registration file. *Id.* § 3146.8(g)(3).

Accordingly, rejecting an eligible voter’s ballot based on a lay election officials’ conjectural inference of fraud from a supposed signature mismatch is ineffective to serve the Commonwealth’s election integrity interests, but would effectively “discourage[] voters from participating in the electoral process because

that “[t]he issue of organized voter fraud has now been put to the test in courts and in social science” and amounts to no more than “a sham perpetuated by people who should know better, advanced for political advantage”).

they have come to believe that” their vote does not count despite no fault of their own. *See League of Women Voters v. Commonwealth*, 178 A.3d 737, 814 (Pa. 2018). “Thus, if anything, additional procedures further the State’s interest in preventing voter fraud while ensuring that qualified voters are not wrongly disenfranchised.” *Saucedo*, 335 F. Supp. 3d at 220 (citation omitted).

Second, there is no reasonable argument that providing mail-in voters with notice and an opportunity to cure benign signature verification issues would place an undue fiscal or administrative burden on the Commonwealth. At the outset, as a matter of law any “administrative burden of a notice-and-cure remedy is outweighed by the threat to the fundamental rights of voters whose ballots otherwise would not be counted.” *Pennsylvania Democratic Party*, 2020 WL 5554644, at *34 (Wecht, J., concurring). But this is particularly true here because the Commonwealth is already “in a position to provide for pre-deprivation process[,]” *see Bundy*, 646 Pa. at 259, given that it currently possesses the information and infrastructure to administer signature match notice and cure opportunities without significant administrative encumbrance.

County boards of elections currently collect voters’ contact information through their registration and mail-in ballot applications, and can use that information to provide voters with the constitutionally required pre-rejection notice and opportunity to cure any perceived signature mismatches. Election officials are

also already required to provide notice to voters whose absentee ballot *applications* are rejected, 25 Pa. Stat. §§ 3146.2b(d); 3150.12b(c), and to provide notice and a hearing for voters whose ballots are challenged by another voter, *id.* § 3146.8(g)(5). Indeed, the statutory scheme creates a time window for voters to resolve such ballot challenge issues, *see id.* § 3146.8(h), and signature verification issues could also be resolved in that same window. And as stated above, because the signature is on the exterior of the envelope this Court could order county boards of elections to contact voters on a rolling basis as ballots are received and before final vote counting by the canvassing board. *See, e.g., SAS*, 2020 WL 3068160, at *2. These currently existing procedures establish that providing pre-rejection notice and cure for signature verification would not unduly burden the Commonwealth. *See Saucedo*, 335 F. Supp. 3d at 221 (concluding that pre-deprivation notice “would not entail significant administrative burdens,” especially when “procedures already exist which could be readily extended”); *SAS*, 2020 WL 2951012, at *10 (making similar considerations).

In sum, Pennsylvania’s dual interests in efficiently counting all eligible votes while promoting election integrity are best served by the pre-deprivation notice and cure opportunities that due process requires, and any countervailing administrative burden pales in comparison to the fundamental rights involved in this case. Therefore, the third *Eldridge* consideration also weighs in favor of applying due

process guarantees to mandate that signature verification must coincide with pre-deprivation notice and cure.

* * *

Pennsylvanians have a vital protected liberty interest at stake—the fundamental right to vote. The due process guarantees of Article I, Section I require that the Commonwealth may not deny voters this interest without first adopting and following appropriate procedural measures to guard against erroneous deprivations. Accordingly, if the Election Code is read to permit signature verification programs, then due process demands that voters be provided adequate notice and a meaningful opportunity to cure before any ballot may be rejected because of perceived signature deficiencies.⁷

⁷ Because the Election Code does not specify signature matching, it is likewise silent as to whether or not notice and cure procedures must be followed. This Court could thus declare the necessity of those requirements under the Pennsylvania Constitution without triggering Act 77's non-severability clause because such a determination would not declare any part of Act 77 invalid, it would merely require additional procedures to be followed.

Notably, the Trump campaign does not dispute that notice and an opportunity for cure must be provided for ballots slated for rejection because of signature matching; rather, it contends that the notice and hearing provision of § 1308(g)(5)-(7) applies to such ballots. *See* Summ. J. Br. (Sec'y Pet. Ex. D) at 18, *Donald J. Trump for President, Inc. v. Boockvar*, No. 20-cv-966 (E.D. Pa. Oct. 1, 2020). Regardless, the Pennsylvania Constitution demands that notice and an opportunity for cure be provided if signature matching is to occur.

II. The Pennsylvania Constitution’s Free and Equal Elections Clause Prohibits Signature Match Rejections Without Notice and Cure Procedures.

The Pennsylvania Constitution’s Free and Equal Elections Clause likewise prohibits signature match rejections in the absence of a meaningful pre-rejection notice and cure process. The Pennsylvania Constitution provides that “[e]lections shall be free and equal; and no power, civil or military, shall at any time interfere to prevent the free exercise of the right of suffrage.” Pa. Const. art. I, § V. This Clause is to be read “in the broadest possible terms” and was “specifically intended to equalize the power of voters in our Commonwealth’s election process.” *Pennsylvania Democratic Party*, 2020 WL 5554644, at *4 (quoting *League of Women Voters*, 178 A.3d at 804, 812 (2018)). Elections are free and equal under the Constitution when “the regulation of the right to exercise the franchise does not deny the franchise itself, or make it so difficult as to amount to a denial; and when no constitutional right of the qualified elector is subverted or denied him.” *Id.* at *19 (quoting *Winston v. Moore*, 91 A. 520, 523 (Pa. 1914)). “[I]n enforcing the Free and Equal Elections Clause, this ‘Court possesses broad authority to craft meaningful remedies when required.’” *Id.* at *18 (quoting *League of Women Voters*, 178 A.3d at 822).

Signature matching poses a high risk of erroneous deprivation—*i.e.*, it results in election officials wrongly identify signatures as being from different people—and

so a signature matching system that lacks notice and cure protections “den[ies] the franchise itself.” *Id.* at *19. Valid votes are thus tossed and not counted with no notice to the voter and no recourse. Such a process is the antithesis of a “free and equal” election, and thus would constitute a straightforward violation of the Free and Equal Elections Clause.

III. Allowing Private Signature Challenges Would Pose Grave Constitutional Concerns.

Signature verification challenges by non-governmental entities such as candidates, parties, or other private actors would give rise to serious constitutional concerns under both due process and the Free and Equal Elections Clause, and, accordingly, Pennsylvania’s Election Code should not be interpreted to permit such challenges. *See* Secretary’s Application at 22–24.

Due process concerns. Allowing non-governmental private actors or entities to challenge the validity of a ballot based on the voter’s signature violates the Pennsylvania Constitution’s due process guarantees in Article I, Section I. This “due process protection” in the Commonwealth guards against procedure-less interest deprivations as well as “against an unconstitutional potential for bias[.]” *Commonwealth v. Koehler*, 229 A.3d 915, 932 (Pa. 2020); *see also Marich*, 666 A.2d at 254 (holding “that a mere possibility of bias under Pennsylvania law is sufficient to raise the red flag of protection offered by the procedural guaranty of due process” (citation omitted)). Signature verification in general is rife with

error-prone determinations and the high risk of wrongful voting rights deprivations. If signature verification by officials were permitted, errors by county election officials tasked to uphold the neutral and outcome-blind application of the law can be at least partially addressed through pre-deprivation notice and cure.

Private actors, however, are even more lacking in objective expertise, further aggravating the risk of wrongful ballot rejection. Moreover, non-governmental signature verification would permit subjective assessments based not on ballot security, but on harassment or biases against a particular voter's ballot because of his or her suspected political preferences. Permitting private challenges to ballot signatures thus introduces a heightened risk of alarming political or other biases, which would amount to a severe due process violation that even pre-deprivation notice and cure could not relieve.

Free and Equal Elections Clause. The Free and Equal Elections guarantee for Pennsylvania voters also “guards against the risk of unfairly rendering votes nugatory.” *League of Women Voters*, 178 A.3d at 814. Allowing non-governmental entities or persons to challenge signature verification would violate this substantive guarantee, and enable private actors to disrupt the counting of eligible ballots from a certain subset of voters based on political or other illegitimate motivations. Notice and cure would not remedy this violation. The Election Code should be read to avoid such constitutional infirmities.

Challenges to ballots by non-governmental entities or actors based on signature matching would contravene “longstanding and overriding policy in this Commonwealth to protect the elective franchise” and canons of statutory interpretation to “construe[] [the Election Code] liberally in favor of the right to vote.” *Shambach v. Bickhart*, 577 Pa. 384, 392 (2004) (collecting cases). In keeping with these instructions, the Court should read the Election Code to prohibit non-governmental signature challenges “so as to avoid a finding of unconstitutionality” under both due process and the Free and Equal Elections Clause. *See Wolf v. Scarnati*, 233 A.3d 679, 696 (Pa. 2020) (citations omitted).

IV. The Court Has the Remedial Power to Order a Notice and Cure Procedure.

The Court has the remedial power to order a notice and cure procedure if it concludes that the Election Code permits signature matching. *See Pennsylvania Democratic Party*, 2020 WL 5554644, at *18. Such an order should require election officials to 1) make a determination upon receipt of absentee and mail-in ballots whether the board of elections is likely to conclude the signatures do not match and create a log of such ballots, 2) contact the voters by phone to confirm they voted the ballot and, if so, make a notation on the log to be accepted by the board of elections at the pre-canvass or canvass as proof the signatures match, and 3) send a mailed notice if the voter is not reached by phone informing the voter that their signature can be confirmed by calling, emailing, or mailing confirmation to the county board

of elections verifying that they voted the ballot. The same procedures should be followed for any additional ballot questioned at the pre-canvass or canvass, and voters should be afforded the duration of the provisional ballot period to confirm their signatures. Voters should not be required to submit new or additional signatures. Such a remedy is consistent with that recently ordered by the United States District Court for the District of North Dakota. *See* Permanent Injunction Ex. B, Dkt. 36, *Self Advocacy Solutions, N.D. v. Jaeger*, No. 3:20-cv-00071 (D.N.D. Aug. 28, 2020).

CONCLUSION

Amicus curiae Urban League hereby requests that the Court grant the relief requested in the Secretary's Application. In the event the Court concludes the Election Code permits signature matching, however, this Court should declare that the ballots may not be rejected without notice and an opportunity to cure consistent with the remedy proposed herein.

October 16, 2020

Respectfully submitted,



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PUBLIC ACCESS POLICY CERTIFICATE OF COMPLIANCE

It is hereby certified by the undersigned that this filing complies with the provision of the *Public Access Policy of the Unified Judicial System of Pennsylvania Case Records of the Appellate and Trial Courts* that require filing confidential information and documents differently than non-confidential information and documents.



John P. Lavelle, Jr. (PA Bar# 54279)

Dated: October 16, 2020

EXHIBIT A

DECLARATION OF DR. LINTON A. MOHAMMED

LINTON A. MOHAMMED does hereby declare and say:

1. I am a Forensic Document Examiner (“FDE”), certified by the American Board of Forensic Document Examiners. I have been engaged in this matter on behalf of Plaintiffs to opine on the reliability of the procedures and techniques of the Pennsylvania signature verification process for absentee ballots as set forth in Pennsylvania elections laws and guidance.

I. QUALIFICATIONS

2. I am a U.S.-certified and internationally recognized FDE, and the focus of my research and professional experience is on handwriting and signature identification and the scientific approach to analyzing questioned signatures. I am, and since 1998 continuously have been, certified by the American Board of Forensic Document Examiners (ABFDE), the certifying board for FDEs in North America. I am also certified in document examination by the Chartered Society of Forensic Sciences (United Kingdom). I specialize in the forensic science of analyzing genuine, disguised, and simulated signatures.

3. I co-founded and I am currently the principal at Forensic Science Consultants, Inc., where I conduct forensic document examination casework and research on handwriting and signature examination as well as other forensic document examination (e.g., document alterations, obliterations, indented impressions, or pages added or removed). I am also an adjunct professor at Oklahoma State University, where I teach graduate courses on the scientific examination of questioned documents.

4. During and prior to my time with Forensic Science Consultants, Inc., and for nearly fourteen years, I worked as Forensic Document Examiner and Senior Document Examiner for the San Diego Sheriff’s Department Regional Crime Laboratory. There, I conducted examinations of

signatures and handwriting for cases investigated by San Diego County agencies as well as by local police, state, and federal agencies. I also served as Technical Lead of the Questioned Documents Section of the Regional Crime Laboratory, trained investigators and attorneys, provided expert testimony, conducted research, and produced the Questioned Documents Section Quality Manuals. Prior to that, I worked internationally as an FDE at the Laboratory of the Government Chemist (England), the Caribbean Institute of Forensic Investigations Ltd. (West Indies), and the Trinidad and Tobago Forensic Science Center (West Indies). In those roles, I conducted forensic document examinations and testified in criminal and civil cases for multiple police forces and other government agencies.

5. I am a Fellow of the Questioned Documents Section of the American Academy of Forensic Sciences (“AAFS”), a Fellow and diplomate of the Chartered Society of Forensic Sciences, and a member of the Canadian Society of Forensic Science. I served as the Chair of the AAFS Questioned Documents Section from 2016 to 2018. I am an appointed member and Chair of the Academy Standards Board, which was formed by the AAFS to develop documentary consensus standards for the forensic sciences. I served as a member of the National Institute of Standards and Technology’s Expert Working Group on Human Factors in Handwriting Examination, the National Institute of Standards and Technology Organization of Scientific Area Committees’ Physics/Pattern Interpretation Scientific Area Committee, and the Scientific Working Group on Documents. I have previously served as President, Vice President, Treasurer, and Director of the American Society of Questioned Document Examiners (“ASQDE”).

6. I am the editor of the Journal of the American Society of Questioned Document Examiners. I served on the editorial review board of the Journal of Forensic Sciences from 2005-2020, and on the editorial review board of Forensic Science and Technology from 2015-2020. I

am a guest reviewer for the following journals: Forensic Science International, Science & Justice, Australian Journal of Forensic Science, Egyptian Journal of Forensic Sciences, and IEEE Transactions on Cybernetics.

7. I have published sixteen peer-reviewed articles on signature and handwriting examination, and forensic document examination. Many of my articles focus on the analysis of genuine and forged signatures, and handwriting examination. I have also given numerous presentations and workshops on signature and document examination worldwide, including the United States, Australia, Brazil, Canada, China, Latvia, Poland, Saudi Arabia, Scotland, and Turkey.

8. In 2019, I authored a book titled *Forensic Examination of Signatures*, which describes and discusses state of the art techniques and research in signature examination.¹ I co-authored a book in 2012 titled *The Neuroscience of Handwriting: Applications for Forensic Document Examination*, which integrates research in the fields of motor control, neuroscience, kinematics, and robotics to evaluate questioned signatures and handwriting.² The book sets forth, among other things, the scientific fundamentals of motor control as relevant to handwriting; the impact of age, disease, and medication on handwriting; and a quantitative approach to signature authentication, including kinematic and laboratory analyses of genuine versus disguised versus forged signatures.

9. In 2012, I received the American Board of Forensic Document Examiners' New Horizon Award "In Recognition of His Exceptional Contributions in Scientific Research for the Advancement of Forensic Document Examination." In 2019, I received the American Academy

¹ Mohammed, L. (2019). *Forensic Examination of Signatures*. San Diego: Elsevier.

² Caligiuri, M.P., & Mohammed, L.A. (2012). *The Neuroscience of Handwriting: Applications for Forensic Document Examination*. Boca Raton: CRC Press/Taylor & Francis Group.

of Forensic Sciences Questioned Documents Section Ordway Hilton Award “In Recognition of Outstanding Contributions to Forensic Document Examination.”

10. I have testified as an expert witness in court and depositions more than 150 times on issues of signature, handwriting, and document examination in both civil and criminal cases, including cases in the United States, England, Trinidad & Tobago, and St. Vincent.

11. I received a Ph.D. from La Trobe University in Melbourne, Australia in human biosciences, where I wrote my thesis on signature identification: “Elucidating static and dynamic features to discriminate between signature disguise and signature forgery behavior.” Prior to that, I received my undergraduate degree in science at the University of West Indies; underwent a two-year training program in document examination at the Trinidad and Tobago Forensic Science Center; and received a master’s degree in forensic sciences at National University in San Diego, California.

12. My *curriculum vitae* is attached as Exhibit A. I am being compensated at a rate of \$400.00 per hour. My compensation in this matter is not in any way contingent on the content of my opinion or the outcome of this matter.

I. SUMMARY OF CONCLUSIONS

13. Pennsylvania’s signature matching process does not set forth sufficient standards for determining reasonably whether a voter’s signature on the declaration accompanying their ballot matches their signature as displayed in the “Registered Absentee Voters File,” the absentee voters’ list and/or the “Military Veterans and Emergency Civilians Absentee Voters File.” This may lead to errors.

14. Based on my review of the election statutes and guidance documents, Pennsylvania also does not require election officials to have any training in signature examination and does not

require that election officials be provided examination equipment, such as proper light sources and microscopes.

15. Based on my experience and my review of the academic literature, it is my opinion that in these circumstances, Pennsylvania election officials are likely to make erroneous signature-comparison determinations.

16. Determining whether a signature is genuine is a difficult task for even a trained FDE, as signatures are written in different styles with varying levels of readability and variability. Laypersons, such as Pennsylvania election officials, have a significantly higher rate of error in determining whether signatures are genuine. Laypersons are also more likely to wrongly determine that authentic signatures are *not* genuine than to make the opposite error. In other words, Pennsylvania election officials are significantly more likely than trained examiners to make an incorrect signature-comparison determination and are particularly likely to incorrectly decide that the signatures are *not* signed by the same person.

17. The high rate of error among laypersons generally results from the inability to distinguish between normal “variations” in one individual’s signatures as opposed to “differences” resulting from multiple signers. An individual’s signatures may vary for myriad reasons, including age, health, native language, and writing conditions. Laypersons lack the tools and training to properly account for signature variation, which leads to erroneous mismatch determinations that are particularly pronounced in populations with greater signature variability, such as the elderly, disabled, individuals suffering from poor health, young voters (ages 18 to 21), and non-native English speakers.³

³ See Hilton, O. (1969). *Consideration of the writer’s health in identifying signatures and detecting forgery*. Journal of Forensic Sciences, Vol. 14, No. 2, pp. 157-166.

18. These signature-determination errors are further compounded for Pennsylvania election officials with diminished eyesight or “form blindness” (a type of impairment in visual perception defined below)—both of which impact an individual’s ability to make accurate handwriting authenticity determinations. While FDEs are screened for these traits, Pennsylvania law and guidance regarding signature comparison do not require election officials to undergo such screening.

19. Based on my review of the relevant statutes and guidance documents, it is my understanding that Pennsylvania does not require election officials to compare the signature on the ballot return envelope to more than one of the voter’s available signature(s) on file, or spend any minimum threshold of time in comparing signatures. These omissions are likely to lead to additional errors. At a minimum, multiple signature samples are required for an accurate signature determination to account for an individual’s signature variability, given proper examination conditions.⁴ For writers who are elderly or have poor health, a larger number of signature samples may be required to determine their range of variation. Further, because a minimum of two hours is required to accurately compare signatures, election officials with insufficient time to evaluate the signature on the ballot return envelope are likely to make additional errors. Based on my review of Pennsylvania laws and guidance, election officials are not allotted the required minimum amount of time to review voters’ signatures.

20. In sum, it is my opinion that Pennsylvania’s current signature matching rules and procedures, which allow individuals without adequate training—and without guidance—to reject the signature on the back of the absentee ballot envelope (the voter’s declaration), will result in a

⁴ Hilton, O. (1965). *A further look at writing standards*. The Journal of Criminal Law, Criminology and Police Science, Vol. 56, No. 3, p. 383 (recommending a minimum of ten signature samples for accurate signature comparison determinations).

significant number of erroneous rejections. In other words, Pennsylvania election officials are likely to reject properly cast ballots, signed by the voter to whom the ballot belongs, because of their incorrect determination that the signature on the absentee ballot envelope is not genuine.

II. BACKGROUND

21. For this Declaration, I reviewed the State of Pennsylvania Statute 25 P.S. § 3146.8 the Pennsylvania Department of State Envelope and Balloting Guidance, and relevant academic literature.

22. Under 25 P.S. § 3146.8, the local election board members “examine the declaration on each envelope not set aside and . . . compare the information thereon with that contained in the ‘Registered Absentee Voters File,’ the absentee voters’ list and/or the ‘Military Veterans and Emergency Civilians Absentee Voters File.’ If the county board has verified the proof of identification as required under this act and is satisfied that the declaration is sufficient and the information contained in the ‘Registered Absentee and Mail-in Voters File,’ the absentee voters’ list and/or the ‘Military Veterans and Emergency Civilians Absentee Voters File’ verifies his right to vote, the county board shall provide a list of the names of electors whose absentee ballots or mail-in ballots are to be pre-canvassed or canvassed.” *See* 25 P.S. § 3146.8(g)(3). My understanding is that 25 P.S. 3146.8 is interpreted by at least some Pennsylvania counties to require election officials to conduct a signature verification procedure, whereby the election officials and canvassing board conduct an examination and comparison of one signature (declaration) with one or more signatures available in the “Registered Absentee Voters File,” the absentee voters’ list and/or the “Military Veterans and Emergency Civilians Absentee Voters File.” It is also my understanding that where no signature is provided with the ballot, or the signatures do not match, the absentee ballot is rejected and not counted.

23. The Pennsylvania Department of State Envelope and Balloting Guidance provides no information as to whether or not signature verification procedures are enacted by counties within the Commonwealth of Pennsylvania, nor what procedures are used if they are.

24. It is my understanding that no guidance is given to the local election board members as to the number of comparison signatures required, nor the contemporaneousness of these signatures with the signature on the voter's declaration.

25. Based on my understanding, Pennsylvania election officials are lay individuals, meaning they are not required to have any training, certification, or experience in document examination or signature comparison.

26. Based on my understanding, there are no further written statewide standards or procedures for election officials to evaluate whether the signature on the application for absentee ballot matches the signature on the back of the absentee ballot envelope to ensure the signature match or non-match.

27. Further, it is my understanding that no guidance is given to the local election board on how signatures transmitted by fax or e-mail may appear to be different from a "wet ink" signature on a voter's declaration.

III. ANALYSIS AND OPINIONS

A. Pennsylvania Election Officials are likely to make erroneous signature comparison determinations.

28. Individuals untrained in signature examination, like Pennsylvania election officials, are highly likely to make mistakes when comparing signatures, particularly by erroneously rejecting signatures as inauthentic or non-matching when they are in fact written by the same individual. These rejections are considered "Type II" errors, and laypersons are more likely than FDEs to make such errors for several reasons. First, untrained election officials cannot reliably determine

whether signatures are written by different individuals or whether the signatures are written by one person but exhibit natural variations. Second, untrained reviewers do not account for the many reasons for naturally varying signatures, causing them to erroneously reject authentic signatures. This is particularly true for writers who have less formal education, learned English as a second language, elderly, disabled, young, or have adverse health conditions. Third, untrained election officials also fail to account for the different signature styles and features, leading to erroneous rejections. Lastly, Pennsylvania election officials are not tested for form blindness, a condition that impacts their ability to accurately review signatures.

B. Untrained laypersons are more likely than FDEs to erroneously determine authentic signatures are inauthentic.

29. There are two types of errors in signature examination. Type I errors occur when a non-genuine signature is deemed to be genuine, and a Type II error occurs when a genuine signature is concluded to be non-genuine. Type II errors are considered to be more egregious than Type I, as with a Type II error an innocent writer can be wrongfully criminally prosecuted for forgery.

30. Compared to FDEs, laypersons have higher so-called Type II error rates. In a 2001 study reviewing the error rates of FDEs and laypersons in comparing six genuine signatures with six non-genuine signatures, laypersons made Type II errors in 26.1% of cases while trained signature FDEs made such errors in 7.05% of cases.⁵ That means that laypersons are more than 3 ½ times more likely to declare an authentic signature non-genuine—which, in the case of signatures on ballot return envelopes, would mean that election officials would reject more than 3 ½ times the number of ballots than FDEs. It should be noted that for this study, six specimen signatures were used. If, as appears to be the case in Pennsylvania elections, only one genuine

⁵ Kam M., Gummadidala K., Fielding G., Conn R. (2001). *Signature Authentication by Forensic Document Examiners*. *Journal of Forensic Science*, 46(4):884-888.

signature is used for comparison, it is highly likely that the error rate for both experts and laypersons would increase significantly.

31. This study also found that laypersons are much more likely to make Type II errors than Type I errors.⁶ A Type II error is considered among FDEs as being more egregious than a Type I error for signature verification and would mean in Pennsylvania's mail voting system that a genuine signature is rejected as non-genuine, and the voter's ballot would not be counted.

C. Pennsylvania election officials cannot determine reliably whether signatures are written by different individuals, or by one individual exhibiting natural variation.

32. Determining whether signatures are made by the same or different individuals requires a reviewer to discern whether a feature or combination of features in signatures are "differences" or "variations." Signatures are the product of a motor program developed in the brain after practice, and then executed with neuro-muscular coordination. Many factors can influence an individual's motor program and neuro-muscular coordination. These factors cause variations in each person's signature.⁷ Variations are deviations of personal, subconscious characteristics normally demonstrated in the habits of each writer. Individuals may have narrow, moderate, or wide ranges of natural variation. A writer's range of variation can be determined when an adequate amount of specimen signatures is examined. A significant "difference" is a characteristic that is structurally divergent between handwritten items, is outside the range of variation of the writer, and that cannot be reasonably explained.⁸

⁶ *Id.*

⁷ Mohammed, L. (2019). *Forensic Examination of Signatures*. San Diego: Elsevier.

⁸ SWGDOC Standard for the Examination of Handwritten Items, available at <https://www.swgdoc.org/documents/SWGDOC%20Standard%20for%20Examination%20of%20Handwritten%20Items.pdf>.

33. In the field of signature examination, unexplainable “*differences*” between signatures suggest that different individuals wrote the signatures, whereas “*variations*” between signatures mean that one individual wrote the signatures. Determining whether signature features are “*differences*” or “*variations*” is one of the most difficult determinations in signature examinations, even for experienced FDEs.

34. Some writers may have a very wide range of variation. Figure 1 illustrates four signatures of one writer (redacted) that exhibit wide variation, and if compared in pairs, may easily be mistaken as signatures written by different individuals.

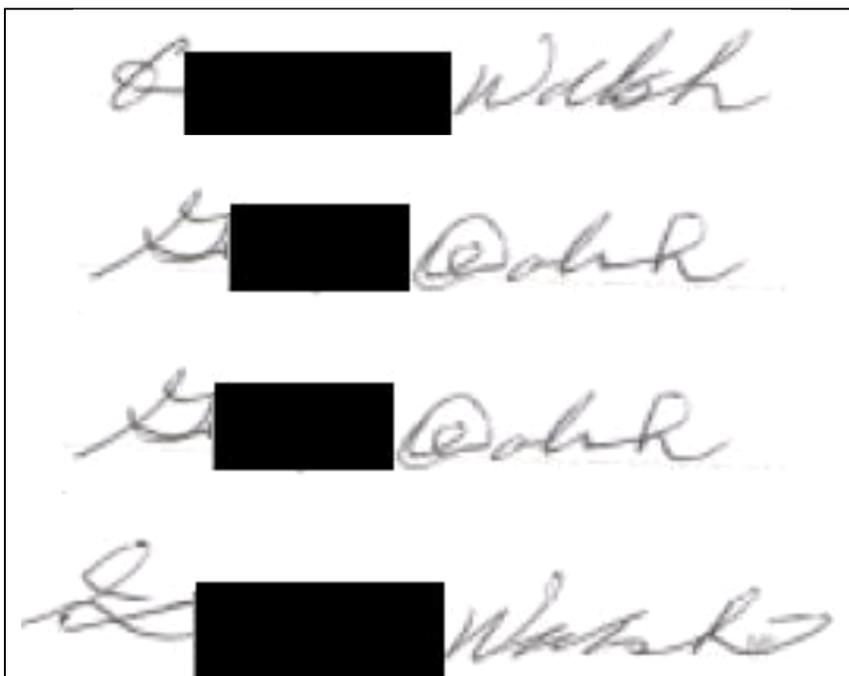


Figure 1 *Four signatures of one individual exhibiting a wide range of variation*

35. To make such a judgment reliably requires, at a minimum:

- Extensive training with different types of signatures: Becoming an FDE requires at least two, and typically three, years of full-time training with an experienced examiner, with at least eighteen months of training in the examination of signatures

and handwriting. FDEs learn the science of signature examination, gain experience in casework, and are tested for proficiency.

- Adequate magnification and lighting equipment.
- Excellent eyesight.
- Adequate time: Insufficient time examining signatures is conducive to making errors. For example, one study found that FDEs spent more time looking at the questioned and known signatures than laypersons, and their evaluations were more accurate.⁹

Without these elements, Pennsylvania election officials are likely to mistake legitimate and expected “variations” between one individual’s signatures for “differences” in signatures between two individuals, and conclude incorrectly that someone other than the registered voter signed the ballot return envelope.

D. Untrained reviewers erroneously reject authentic signatures because they do not account for the many reasons for naturally varying signatures.

36. Further, an individual’s signatures may vary for myriad reasons, and to properly determine whether signatures are written by the same individual, one must consider the various reasons why features of the same individual’s signatures may visually appear different. To do so, reviewers must possess an adequate number of sample signatures to demonstrate the writer’s range of variation. In one of the leading textbooks on handwriting examination, authors Roy Huber & A.M. Headrick identified twenty common reasons why individuals’ signatures may appear to show variations:

⁹ Merlino, M., Freeman, T., Dahis, V., Springer, V., et al. (Jan. 2015). *Validity, Reliability, Accuracy, and Bias in Forensic Signature Identification*. Department of Justice Grant 2010-DN-BX-K271, Document 248565, <https://www.ncjrs.gov/pdffiles1/nij/grants/248565.pdf>.

- Adequacy of standards (or samples)—inadequate standards in terms of quantity and contemporaneousness will not be representative of the writer’s range of variation. Variations may therefore be interpreted as differences.
- Accidental occurrences—i.e., these are one-off variations that will not appear in the specimen signatures.¹⁰ Misinterpretation may lead to a decision of difference versus variation.
- Alternative styles—i.e., some writers have alternate signature styles. This may not be represented in the specimens.
- Ambidexterity.
- Carelessness or negligence.
- Changes in the health condition of writer.
- Changes in the physical condition of writer—e.g., fractures, fatigue, or weakness may alter features of an individual’s signature.
- Changes in the mental condition or state of the writer.
- Concentration on the act of writing.
- Disguise or deliberate change.
- Drugs or alcohol.
- Influence of medications.
- Intentional change for later denial.
- Nervous tension.

¹⁰ A specimen signature is a signature that is known to have been written by a person. It is not disputed. Typical specimens are Driver’s Licenses and Identification Cards.

- Natural variations—i.e., inherent variation as a result of differences in neuro-muscular coordination.
- Writing conditions—e.g., the individual’s place or circumstances, such as in a moving vehicle or at a stationary table.
- Writing instrument—e.g., a pen versus a stylus.
- Writing position—e.g., the individual’s stance.
- Writing surface—e.g., paper versus electronic screen.
- Writing under stress.

Examiners must consider each of these reasons in determining whether a feature is “difference” created by different writers or whether the feature is simply a “variation” from the same writer. It is very unlikely that Pennsylvania election officials will have the knowledge, training, and experience to properly account for these factors. And the signature matching statutes and rules do not require election officials to consider adequate samples, as would be necessary for even an expert to distinguish a “difference” from a “variation.”

37. Studies have shown that illiterate writers, writers for whom English is a second language, elderly writers, disabled writers, and writers with health conditions tend to have less pen control than most other writers, and therefore would have a greater range of variation in their signatures.¹¹ And the increased variation in the signatures of these groups only compounds

¹¹ See, e.g., Hilton, O. (1969). *Consideration of the writer’s health in identifying signatures and detecting forgery*. *Journal of Forensic Sciences*, Vol. 14, No. 2, pp. 157-166; Hilton, O. (1965). *A further look at writing standards*. *Journal of Criminal Law, Criminology, and Police Science*, Vol. 56, No. 3, pp.383; Hilton, O. (1956). *Influence of serious illness on handwriting identification*. *Postgraduate Medicine*, Vol. 19, No. 2.

laypersons' tendencies to err on the side of incorrectly finding authentic signatures to be non-genuine.

38. Since signatures are developed as a motor program in the brain, the signatures of writers for whom English is a second language are more likely to exhibit wide ranges of variation, as these writers will have to discard their former learned motor program and develop a new one for their new signature style.¹² For instance, a writer who first learned to write in a non-Latin-based script, such as Chinese, will naturally show more variation when signing a document in English than a native writer. Likewise, where the writer's native language is written right to left, such as Urdu, the writer's signature may also be more likely to show variations in letter slanting. Cherokee is a Native American tribe that has its own syllabary¹³. Signatures written by individuals who learned to write using the Cherokee syllabary may appear different to an untrained eye. Qualified, experienced experts in the area of signature verification would know of and account for these factors in evaluating signatures. Pennsylvania election officials, even if put through a short training session, are unlikely to be able to accurately account for these differences, particularly in an expedient time frame or when only one or a few specimen signatures are available for comparison.

39. Furthermore, young voters (ages 18 to 25) are not likely to have fully developed signatures. According to one study, "the development and progress of one's handwriting passes through four stages in the course of a lifetime: (1) the formative stage, (2) the impressionable or adolescent stage, (3) the mature stage, and (4) the stage of degeneration."¹⁴ The signatures of young

¹² Mohammed, *supra* note 1 at pp. 5-1.

¹³ <https://www.britannica.com/topic/Cherokee-syllabary>

¹⁴ Huber, R.A. & Headrick, A.M. (1999). *Handwriting Identification: Facts and Fundamentals*. Boca Raton, FL: CRC Press.

voters will fall between stages 2 and 3. The U.S. Postal Service has reported that “writer[s] achieve[] graphic maturity by the 20th birthday.”¹⁵ Handwriting was developed as a means of communication, whereas signatures are developed as a means of identification.¹⁶ Signatures tend to be more personalized and can therefore be considered as an over-developed form of handwriting. It follows that young writers today will not have developed signatures until later in life. This is exacerbated as young writers will presumably need to sign less often due to the increased use of personal identification numbers (“PINs”) and other non-handwritten forms of identification. Their signature development can reasonably be expected to take longer than for previous generations. This will lead to an increased range of variation in a young writer’s signature. The handwriting of adolescents can cause difficulties even for trained FDEs. Comparisons by untrained individuals of young voters’ signatures on the ballot return envelopes will exacerbate the potential for error in rejecting their ballots.¹⁷

¹⁵ Bureau of the Chief Postal Inspector (1966), *20th Century Handwriting Systems and Their Importance to the Document Analyst*.

¹⁶ Plamondon, R., Srihari, S. (2000). *Online and off-line handwriting recognition: a comprehensive survey*. IEEE Transactions on Pattern Analysis and Machine Intelligence Volume: 22, Issue:1, Jan; Srihari S.N., Srinivasan H., Chen S., Beal M.J. (2008). *Machine Learning for Signature Verification*. In: Marinai S., Fujisawa H. (eds) *Machine Learning in Document Analysis and Recognition*. Studies in Computational Intelligence, vol 90. Springer, Berlin, Heidelberg, p. 389.

¹⁷ Cusack, C.T & Hargett, J.W. (1989). A Comparison Study of the Handwriting of Adolescents. *Forensic Science International*, 42(3):239-248.

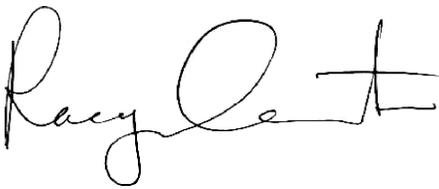
E. Pennsylvania elections officials also fail to account for the different signature styles and features, leading to erroneous rejections.

40. One of the reasons that accurate signature comparison determinations prove difficult, even for a trained FDE, is that signatures are written in three different styles¹⁸ as illustrated in Figure 2:

- Text-based: Nearly all the letters can be interpreted.

▪ 

- Mixed: More than two, but not all, letters can be interpreted.

▪ 

- Stylized: No letters can be interpreted.

▪ 

Figure 2 *Examples of three signatures styles*

These signature styles exhibit significantly different characteristics that impact the signature-matching analysis, and by extension, the determination of whether signatures are genuine. For example, kinematic features of signatures, such as size, velocity, changes of acceleration, and pen pressure are important in determining whether a signature is genuine. Yet these kinematic features

¹⁸ Mohammed, L., Found, B., Rogers, D. (2008). Frequency of signature styles in San Diego County. *Journal of the American Society of Questioned Document Examiners*, Vol. 11, No. 1.

vary between the same individual's signatures, with the degree of variations often dependent on the signature style. The kinematic features of stylized signatures, for example, vary more significantly than the kinematic features of text-based signatures. And the less legible a signature becomes, the more the election official depends on their pattern recognition ability. Thus, signature styles can have an impact on the determination of genuineness or non-genuineness. Unfamiliarity with the different signature styles may impact a reviewer's ability to determine whether two signatures come from the same person, and would likely cause a lay person to decide that the compared signatures exhibit "differences" when the changes in features are simply "variations."

41. To determine whether signatures are made by the same individual, a reviewer should focus on holistic features of signatures, such as alignment, slant, pen lifts, rhythm, the size of writing, the slope or slant of the letters, or other characteristics that are diagnostic of the process used to create signatures. These features are subtle, and a writer is usually unaware of the features, as they are excited by the writer's subconscious motor program. These subtle features provide significant evidence of genuineness because they occur in natural handwriting. Lay persons, however, often focus instead on more eye-catching features in evaluating signatures. For example, an eye-tracking study on signature examination found that "lay participants focused to a greater extent on individual features such as arches, eyelets, hooks, shoulders, connections, troughs, or other individual features" that catch the eye, and "appear[ed] less likely to use holistic features."¹⁹ But focusing on these eye-catching features is problematic because these are the types of features that a simulator will try to capture. Properly utilizing the subtle, holistic features of signatures to determine genuineness, however, requires both training and adequate time for review.

¹⁹ Merlino, *supra* note 9.

F. Pennsylvania election officials are not tested for form blindness, increasing the risk of erroneous signature match determinations.

42. A laypersons' ability to make consistently correct determinations as to the genuineness of a signature may also be impacted by a condition known as "form blindness," which impairs "the ability to see minute differences in angles, forms, and sizes."²⁰ Most ophthalmologists agree that form perception is not an eye problem but rather a translational problem. That is, "it is a perceptual inability to distinguish the small differences between shapes, colors, and patterns."²¹ Therefore, in most cases, form blindness goes undetected, but diminishes a reviewer's ability to make accurate determinations of a signature's genuineness.²² And while FDEs must pass a form blindness test before being trained in handwriting identification, Pennsylvania does not appear to require any such test for election officials. There is thus a risk that some election officials have form blindness and are particularly prone to making erroneous signature determinations.

G. Even trained FDEs are likely to make erroneous signature comparison determinations under Pennsylvania's signature matching procedures.

43. Even for trained FDEs, Pennsylvania's signature matching process would be prone to erroneous determinations due to the limited number of comparison signatures and the lack of proper equipment.

44. Normally, FDEs require multiple specimen signatures for comparison with a questioned signature, and often more if issues such as age or illness are involved. These specimens

²⁰ Bertram, D. (2009). Univ. of S. Miss. *Form Blindness Testing: Assessing the Ability to Perform Latent Print Examination by Traditional Versus Nontraditional Students* Dissertations. 996, p. 33; Byrd, J. & Bertram, D. (2003). Form-Blindness. *Journal of Forensic Identification*, 53(3):315-341.

²¹ Moody, Meredith G., "Form-Blindness and Its Implications: A Verification Study" (2016); Honors Theses; Paper 388.

²² *Id.*, p. 32.

are required to adequately determine the range of variation of the writer and properly account for the reasons for variation within an individual's signatures discussed above. Indeed, nobody signs the same way twice: no two complex, skillfully written, genuine signatures of one writer have ever been found to be exactly alike, but such a statement should be understood to be true speaking microscopically, and not as the carpenter measures.²³ Inadequate standards, or failure to use adequate specimens fully representing the range of variation in a writer's signature, is a well-known source of error.²⁴

45. Features observed in the questioned signature(s) may not be observed in the inadequate specimens. This may lead to an erroneous interpretation of a feature as a difference (two writers) not a variation (one writer). Because Pennsylvania election officials appear to only compare the signature on the ballot return envelope with one reference signature, they cannot distinguish accurately between features, variations, or differences.

46. Furthermore, Pennsylvania election officials may be required to compare a voter's original "wet-ink" signature on the ballot return envelope with the voter's digitized signature for those who submit online mail-in ballot applications using their drivers license number.

47. Comparing a digitized signature with an original "wet-ink" signature has many inherent limitations, some of which are caused by the resolution of the digitized signature, whether the digitized signature is being viewed on a monitor or as a printed item, and the writing instruments used for each signature. If the monitor's resolution is low, or if the digitized signature is a poor copy of the original signature to begin with, this would make it very difficult for an untrained

²³ Osborn, A. (1910). *Questioned Documents*. The Lawyers' Publishing Co.: Rochester, NY, p. 281.

²⁴ Huber, R.A. & Headrick, A.M. (1999). *Handwriting Identification: Facts and Fundamentals*. Boca Raton, FL: CRC Press.

examiner to assess the line quality of the signature. Striations made by ballpoint pens may appear to be gaps in the writing line, and may be interpreted mistakenly as evidence of simulation or forgery.

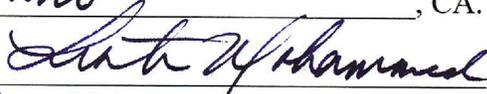
48. Finally, as discussed above, Pennsylvania does not seem to require election officials to use or be provided with proper equipment, such as magnification and lighting equipment. “[T]he microscope is the instrument which makes it possible to see physical evidence directly that otherwise may be invisible. . . .”²⁵ Without this type of equipment, even a well-trained eye may make errors in a signature authenticity determination.

IV. CONCLUSION

49. For the reasons stated herein, it is my professional opinion that Pennsylvania election officials are likely to make erroneous signature match determinations. In particular, Pennsylvania election officials that engage in signature matching are significantly more likely to erroneously conclude that authentic signatures are *not* genuine than they are to make the opposite error—to accept inauthentic signatures as genuine. These erroneous determinations result from the inherent difficulty in making reliable signature authenticity determinations, particularly where, as here, the reviewer lacks training, is provided with an insufficient number of comparison signatures, and does not have access to proper equipment. In this context, Pennsylvania’s signature matching procedures are all but guaranteed to result in the erroneous rejection of properly cast ballots.

* * *

Dated: August 10, 2020 at San Bruno, CA.


Linton Mohammed, Ph.D., D-ABFDE

²⁵ Osborn, A. S. (1929). *Questioned Documents*. 2nd. Ed. Boyd Printing Company, Albany, N.Y., USA.