



LAKE WYLIE HIGH SCHOOL CHARGERS CROSS COUNTRY

COURSE STANDARDS REPORT • CASE STUDY AND 2026 SEASON REVIEW

COURSE ACCURACY AND STANDARDS IN SC CROSS COUNTRY

**Case study: 2026 Run In Starlight Invitational (10/17/2026,
Riverside HS, Greer SC)**

An evidence review of whether the October 17, 2026 Starlight course at Riverside High School, Greer, SC was a full 5,000 m, set in the context of a season-wide course speed index for 41 South Carolina meets, with a proposal for statewide course accuracy ratings.

STATUS: PUBLIC-RECORD REVIEW • FINAL V1.1

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OCTOBER 21, 2026 • FINAL V1.1



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About this report

This report is a push for statewide South Carolina course standards. Sections 1–14 review whether the 2026 Run In Starlight Invitational course was a full 5,000 m, the clearest case study of the problem. Sections 15–21 show how course speed varies across the 2026 season, how it distorts rankings, and propose course accuracy ratings. The criticism is of standards, not of any meet, host, coach or athlete: athletes ran honest races and are not at fault. Athletes' names are omitted; public results are linked, and each GPS recording is cited by a source code held in a private key. **Disclosure:** the report author designed and measured the Clover Classic and Victory Bolt courses, two of the three anchors of the 2026 course speed index. Section 17 shows that Starlight remains the largest outlier when those courses are taken out of the reference, and the same-day comparison with the Bob Jenkins York County Cross Country Championships ("York County Championships") at Catawba Bend Preserve, Rock Hill SC, rests on a course laid out and wheel-measured by the author and Coach Chris Ardis (Northwestern HS).

Status: Final v1.1, Oct 21, 2026 (adds Appendices J and K), a public-record review.

ABSTRACT

THE STUDY IN BRIEF

The 2026 Run In Starlight Invitational (10/17/2026, Riverside HS, Greer SC) was listed as 5,000 m. The evidence in this report indicates that the course was most likely about **4,850–4,900 m**, 2–3% short (plausible 4,780–4,950 m, or 1–4.4% short). The 39 public 2026 watch recordings had a median of 3.01 mi, against 3.15 mi at the same venue in 2025. The host's course description changed from 3 loops to 4. Runners were a median 6.2% faster than their own 2026 season bests. In a paired-runner course speed index of 41 SC meets, Starlight ran 6.6% faster than the reference in the base case (roughly 5–9% across plausible fitness trends and race groups). It was the largest outlier in the state, and it stays the largest outlier when the report author's courses are taken out of the reference. As a check on one of the author's own courses, **7 public GPS recordings** of the 2026 Victory Bolt XC Invitational read a **mean of 3.117 mi against 3.107 mi for 5K** (median 3.14 mi; range 3.06–3.16 mi). They give **no evidence that Victory Bolt ran short**. They cannot certify its distance either: seven self-selected readings are a small sample (below this report's $n \geq 8$ confidence rule), and watch GPS can be off by several percent in either direction on wooded or turning courses (Section 16A). The athletes did nothing wrong. It recommends that SCHSL and SCTCCCA require published course measurements and proposes statewide accuracy ratings: A certified, B measured, C unverified, X irregular.

What this report does not claim

- **No misconduct.** The Riverside layout has changed from year to year (2024, 2025 and 2026 each differ). The report does not claim to know why the 2026 course ran fast; its marks are treated as non-standard until a published measurement exists. Riverside runs a well-organized, popular night meet.
- **No change to places, team scores or awards.** Everyone ran the same course, and every athlete raced honestly.
- **GPS is not a measurement.** Watches are used only as corroboration. A published wheel measurement of the 2026 layout would replace every estimate here.
- **Disclosure.** The author designed and measured the Clover Classic and Victory Bolt courses, two of the three 2026 anchors in the course speed index; the Victory Bolt host is the author's school; the author and Coach Chris Ardis (Northwestern HS) laid out and wheel-measured the York County course at Catawba Bend, and the author's team raced there the same day; and the reference GPS watch is the author's. Those data are included and labelled, and the main findings do not depend on them (Appendix G).

How to read the numbers

Kind of statement	Examples in this report	How much weight it carries
Public record, re-checked 10/19/2026	Host course descriptions (3 loops to 4), meet dates and venues, Lights Out host text, Missouri's ± 30 m rule, published research	Verified against the source (Appendix H)
Computed from public data	Season-best and PR rates, Woodmont comparisons, course speed index, GPS medians from public Strava activities	Reproducible from MileSplit results and the activity IDs in Appendices A–E
Estimates	Course length (most likely 4,850–4,900 m), weather allowances, terrain adjustment, ranking corrections	Judgments with stated ranges; marked "est." or "estimate" in tables and figures
Stated by coaches, no public record yet	Tier B* courses: Catawba Bend (the author and Coach Chris Ardis), Trojan / Northwestern HS (host staff), Clover and Victory Bolt (the author)	Treated as measured; each becomes tier B when its measurer, method, date and map are posted

Status of this edition

Final v1.1, October 21, 2026. It reconciles two earlier drafts (v14 and v17), adds Appendix J, which ties this report to the State Qualifier Seeding report, and Appendix K, which tests the finding against five established courses; every change is listed in Appendix F. This is a public-record review.

ONE-PAGE BRIEF FOR GOVERNING BODIES AND RESULTS PLATFORMS

For: SCHSL, SCTCCCA, MileSplit SC and SCRrunners. Status: public-record review.

The finding

The 2026 Run In Starlight Invitational (10/17/2026, Riverside HS, Greer SC) was listed as 5,000 m but was most likely about **4,850–4,900 m** (plausible 4,780–4,950 m): about **2–3% short** (plausible 1–4.4%). The athletes did nothing wrong; the gap is in course standards, not in anyone's effort.

- **Evidence that does not rely on any course the report author designed or measured.** The same runners on the same watches read shorter at Starlight than on their own other courses (7 of 7 runners; median gap 0.08 mi), and all 4 other-school runners read shorter at Starlight than at McAlpine, a wheel-measured course in Charlotte. Watches at the same venue read a median 3.01 mi in 2026, against 3.15 mi in 2025. The host's own course description changed from 3 loops to 4. The same runners were 6.4% faster than at Woodmont two weeks earlier, against 2.5% slower in 2025 (Sections 2–7).
- **Statewide context.** In a paired-runner course speed index of 41 SC meets, Starlight 2026 ran 6.6% faster than the reference in the base case (roughly 5–9% across plausible fitness trends and race groups), the largest outlier in the state. It stays the largest outlier with the reference set by Trojan alone (–7.3%), by McAlpine alone (–7.7%) or by the median of all 41 meets (–6.6%). On the same night it ran about 2.8–2.9 points faster than Lights Out at Blythewood HS, another night course that its host describes as flat. The York County Championships at Catawba Bend that morning are the hilliest course in the set; after allowing for that climb, Starlight was about 1.9–2.1 points faster, with wide uncertainty (Sections 10, 15–19).
- **Why it matters.** Starlight 2026 supplied 64% of the boys' and 56% of the girls' all-class top-25 season bests in this data set. Rankings and seeding have no field for whether a course was accurate (Section 20).

What is asked

1. **SCHSL and SCTCCCA:** require a published course measurement (method, measurer and map) before a course counts toward rankings standards. Until one exists for the 2026 layout, its marks are treated as non-standard; this report will be updated when one is published.
2. **SCHSL and SCTCCCA:** adopt a numeric tolerance (for example Missouri's ± 30 m, wheel-measured on the tangents) and require a short measurement statement and map for sanctioned meets (Section 14).
3. **MileSplit SC and SCRrunners:** add a course-tier flag to each meet: A certified, B measured, C unverified, X irregular race (Section 21).
4. Treat Starlight 2026 marks as non-standard for PRs, rankings and seeding. If a correction is used, make it distance-only: about 3% (plausible 1–4.4%) (Section 13).

Disclosure. The report author designed and measured the Clover Classic and Victory Bolt courses, two of the three anchors of the 2026 index. The evidence in the first bullet does not use them, the index result holds without them (Section 17), and Lights Out is a course the author had no part in; the author and Coach Ardis measured York County's. The reference GPS watch used for the elevation profiles in Section 8 is also the author's, and its Starlight distance and climb were read from screenshots; the terrain model uses the athletes' own watches instead.

SECTION 1 SUMMARY

The athletes did nothing wrong.

Every runner at Starlight 2026 ran the course they were given, and ran it honestly. Places, team scores and medals stand on their own. Getting the distance right is the job of race directors, coaches and governing bodies. Right now South Carolina gives them no strict, enforced measurement standard for invitational courses. This report uses Starlight 2026 as the clearest case study of a season-wide problem: short or questionable courses listed as 5K are a disservice to athletes and the sport, and they distort rankings, because the rankings have no score for whether a course was accurate. It is not an accusation against any host. Riverside runs a well-organized, popular night meet, and this report recommends that SCHSL and SCTCCCA require published course measurements.

+6.2%

median amount faster than each runner's own 2026 season best (1,095 runners)

84%

ran a lifetime XC 5K PR (948 of 1,126), vs 30% at the same venue in 2025

3.01 MI

median of 39 watch recordings (≈4,840 m). Only 1 of 39 reached 3.10 mi

≈4,850 M

central estimate of course length (most likely 4,850–4,900 m; plausible 4,780–4,950 m), from GPS calibrated on full courses and weather-adjusted times

- 1. Same runner, same watch, shorter at Starlight.** All 7 runners with public September races recorded less at Starlight than the median of their own other courses (median gap 0.08 mi, about 130 m), and all 4 other-school runners recorded less at Starlight than at McAlpine, a wheel-measured course in Charlotte, on the same device. For scale, at the wheel-measured York County Championships course (Catawba Bend) the same team's watches read a median 0.04 mi under each runner's own other-course median (Sections 7 and 16).
- 2. GPS watches came up short.** The 39 public 2026 recordings had a median of 3.01 mi, against 3.15 mi for 40 recordings at the same venue in 2025; 36 of 40 read at least 3.10 mi in 2025, 1 of 39 in 2026. A 3.01 mi median is not normal watch error. The reading alone is not unique (Lake Murray and Warrior, Pawleys Island, also read about 3.00 mi; Section 15); what is unique is the combination of a same-venue drop from 3.15 to 3.01 mi, a published layout change and the largest index move in the state. One team's watches show the baseline: Lake Wylie Chargers runners read a median 3.055–3.15 mi at every full SC meet they raced in 2026 (3.10 mi across all 150 recordings), including 3.07 mi on the same day as Starlight at the hillier York County Championships, held in 2026 at Catawba Bend Preserve, Rock Hill SC ("Catawba Bend"; Section 16).
- 3. The layout changed.** The layout has differed from year to year (2024, 2025 and 2026 each differ), and every edition from 2019 to 2025 (all at Riverside HS) was described as a **3-loop** course (2016: 2.5 loops). The 2026 course was about 900 m on the track followed by **4 shorter loops** (Sections 2 and 8).
- 4. Times swung from 2025 to 2026 at the same venue.** Runners were a median 6.2% faster than their 2026 season best and 6.4% faster than at Woodmont two weeks earlier; in 2025 the same Woodmont comparison was 2.5% slower. **95.7%** beat their season best and **84.2%** ran a lifetime XC 5K PR, against 41.1% and 29.9% in 2025 (Sections 3–4).
- 5. The same runners were faster than on trusted SC courses:** 7.3% faster than at the 2025 State Meet at Aiken and 9.5% faster than at the 2025 Coaches Classic. The 2025 Starlight field was 2.8% and 5.9% faster (Section 5).
- 6. Weather helped; terrain did not.** It was a cool, dry night (about 48–60°F), which explains part of the raw time gap but not the GPS readings. On the athletes' own watches, Starlight (median 85 ft of climb, n=39) was about as flat as Northwestern HS (median 82 ft, n=55), a course trusted as a full 5K. The share of the race on the track was similar in both years (the host's 2025 race-day document put about 2,000 m on the track; the 2026 layout has about 2,100 m), so the track is not used to explain the faster times, and no layout can change a GPS reading (Sections 8 and 10).
- 7. Statewide, Starlight is the largest outlier.** On the same night, Starlight ran about **2.8–2.9 points faster** than Lights Out at Blythewood HS, another night course that its host describes as flat, under every fitness assumption tested. The York County Championships at Catawba Bend that morning, a wooded course wheel-measured by the author and Coach Ardis, ran 6.2–6.4 points slower than Starlight on the raw index, but most of that is York's much greater climb: after the terrain allowance the gap is about 1.9–2.1 points, with wide uncertainty (–6.8 to +2.8 across the terrain slope's 95% interval). In a season-wide course speed index of 41 SC meets, Starlight 2026 ran **6.6% faster in the base case (roughly 5–9% across plausible fitness trends and race groups)** than the trusted reference (team-clustered 95% CI 5.9–7.2%; n=1,050 paired runners), against +0.3% in 2025. It stays the largest outlier when the report author's courses are taken out of the reference (Section 17). The same runners were 9.6%, 7.0% and 3.9% faster than at Lake Murray, Pink House and Warrior (Pawleys Island), 7.9% faster than at the measured Victory Bolt XC Invitational (n=64), and 13.3% faster than at the measured, hilly Clover Classic Eagles Nest XC Invitational ("Clover Classic"; n=73; Boys Varsity race excluded; that gap mixes terrain, race mix and distance). In 2025 the first three gaps were 0.3%, none and 0.8%, and Clover's was 5.4% (Victory Bolt began in 2026) (Sections 15–17, 19).
- 8. Course speed distorts the rankings.** Eight fast, unverified courses produced 20–24% of 2026 results but **76% of the boys' and 80% of the girls'** all-class top-25 season bests; Starlight alone produced 64% and 56%. Correcting Starlight for its likely distance shortfall alone (about 3%) moves 7 boys and 5 girls out of the all-class top 25 (2–13 boys and 1–5 girls across the plausible 1–4.4% range). Distance is not the only factor: surface, terrain and heat matter too (Sections 18 and 20).
- 9. It matters for the athletes.** 38 of 39 public Starlight posts celebrated PRs or best efforts. Inflated marks can make an honest full 5K later feel like a step backward (Section 12).
- 10. A constructive fix.** Course accuracy ratings (A certified, B measured, C unverified, X irregular race), published measurements, and honest reporting of safety changes, as Clover did with its 2026 copperhead re-route (Section 21).

Disclosure. The report author designed and measured the Clover Classic and Victory Bolt courses, two of the three 2026 anchors of the course speed index. Items 1–4 above do not use those courses. With the author's courses taken out of the reference (Trojan only, McAlpine only, or the median of all 41 meets), Starlight is still the largest outlier (–7.3%, –7.7% and –6.6%; Section 17), and the Lights Out comparison rests on a course the author had no part in.

Bottom line

The course was most likely about **4,850–4,900 m**, 2–3% short (plausible 4,780–4,950 m: **50–220 m, or 1–4.4%, short**). Raw times alone suggest a larger shortfall, up to about 7%, but ideal weather, late-season sharpening and the changed layout account for part of the time gap. The central estimate is about five times the only published numeric cross-country tolerance found (Missouri, ±30 m), and even the plausible low end is beyond it (Section 11). Starlight 2026 times should be flagged as non-standard and not counted as true 5K PRs, rankings or seeding marks. If a correction is used, it should be distance-only: about 3% (plausible 1–4.4%) (Section 13).

SECTION 2

THE COURSE: 3 LOOPS (2021–2025) VS 4 LOOPS (2026)

Starlight has been held on the Riverside High School campus in Greer every year from 2021 to 2026, and MileSplit lists every earlier edition at Riverside HS as well. The host's published course descriptions show that the loop structure changed in 2026.

EDITION	DATE	VENUE	HOST'S COURSE DESCRIPTION
2016 Starlight Reservation Run	Oct 14, 2016	Riverside HS, Greer SC	"2.5 loop course... under the lights"(250553)
2019 Starlight Run at the Reservation	Oct 19, 2019	Riverside HS, Greer SC	"3 loop course" (355129); moved to a morning schedule
2020 Starlight Run	Oct 17, 2020	Riverside HS, Greer SC	"3 loop course... on the Riverside High School's campus"; split-day COVID format (388277)
2021 Starlight Run	Oct 16, 2021	Riverside HS, Greer SC	"3 loop course... on the Riverside High School's campus"
2022 Starlight Run	Oct 15, 2022	Riverside HS, Greer SC	"3 loop course"
2023 Starlight Run	Sep 30, 2023	Riverside HS, Greer SC	"3 loop course"
2024 Starlight Invitational Run	Nov 9, 2024	Riverside HS, Greer SC	"3 loop course"; text reused in 2025
2025 Starlight Invitational Run	Oct 18, 2025	Riverside HS, Greer SC	"3 loop course"
2026 Run In Starlight Invitational	Oct 17, 2026	Riverside HS, Greer SC	"4 loop course"

Footnote: every edition from 2015 to 2026 was held at Riverside High School, 794 Hammett Bridge Rd, Greer SC (Suber Road parking; "Riverside High School campus" course; MileSplit meets 250553, 355129, 388277, 436710, 472052, 547046, 619413, 680896 and the 2026 edition). The course has been adjusted over the years: the host described a 2.5-loop course in 2016, 3 loops in every edition from 2019 to 2025, and 4 loops in 2026. MileSplit counts 11 editions before 2026 (2015–2025), all at Riverside HS. The 2015, 2017 and 2018 meet pages give no loop count, and no GPS recordings were found for 2015–2019, so those editions are not analyzed. The 2020 edition is listed for its course description only; its split-day COVID format makes its times a poor comparison. MileSplit's meet records for Starlight cover all editions from 2015 to 2025, but its venue records split them: the 2020, 2025 and 2026 editions sit under its "Riverside HS" venue (45942), and the 2015–2019 and 2021–2024 editions sit under an older "Riverside" venue record (14552) that carries an erroneous Spindale, NC address and is really Riverside HS. Timing and results: Split Second Timing SC, as stated on the 2026 MileSplit meet page. Sources: Section 23.

	2024–2025 MILESPLIT TEXT (3 LOOPS)	2026 (4 LOOPS)
Opening	About 900 m on the track, exit on the Visitors side	Start on the field, about 900 m on the track, exit on the Visitors side
Each loop	Behind the Visitors stadium; loop the softball batting cages ; through the maintenance-shed lot and along the access road ; enter and loop the practice field ; baseball outfield; re-enter track and run 300 m	Dirt/gravel road along the back of campus; enter the practice field and run directly toward the baseball field; follow the outfield fence; re-enter track and run 300 m
Finish	On the last loop, after the 3-mile mark, run onto the football-field grass, around the discus slab and down the field	Finish at the end of the home stretch of the track

Why the loop count matters

After about 900 m on the track, a true 5,000 m needs the loops to add about 4,100 m. That means each of four loops must be about **1,025 m**. The 3-loop course had up to about 1,367 m per loop plus a finish extension. The 2026 loop drops the batting-cage, shed-lot and practice-field-loop pieces, and the finish drops the discus section. On a multi-loop course, small errors multiply: every 50 m missing from one loop takes about 200 m off a 4-loop race. No public measured distance for the 2026 layout could be found. MileSplit SC published 2026 course videos (823301, and a faster version, 823304) and a Riverside team tempo run on the course (823469).

The layout changes every year

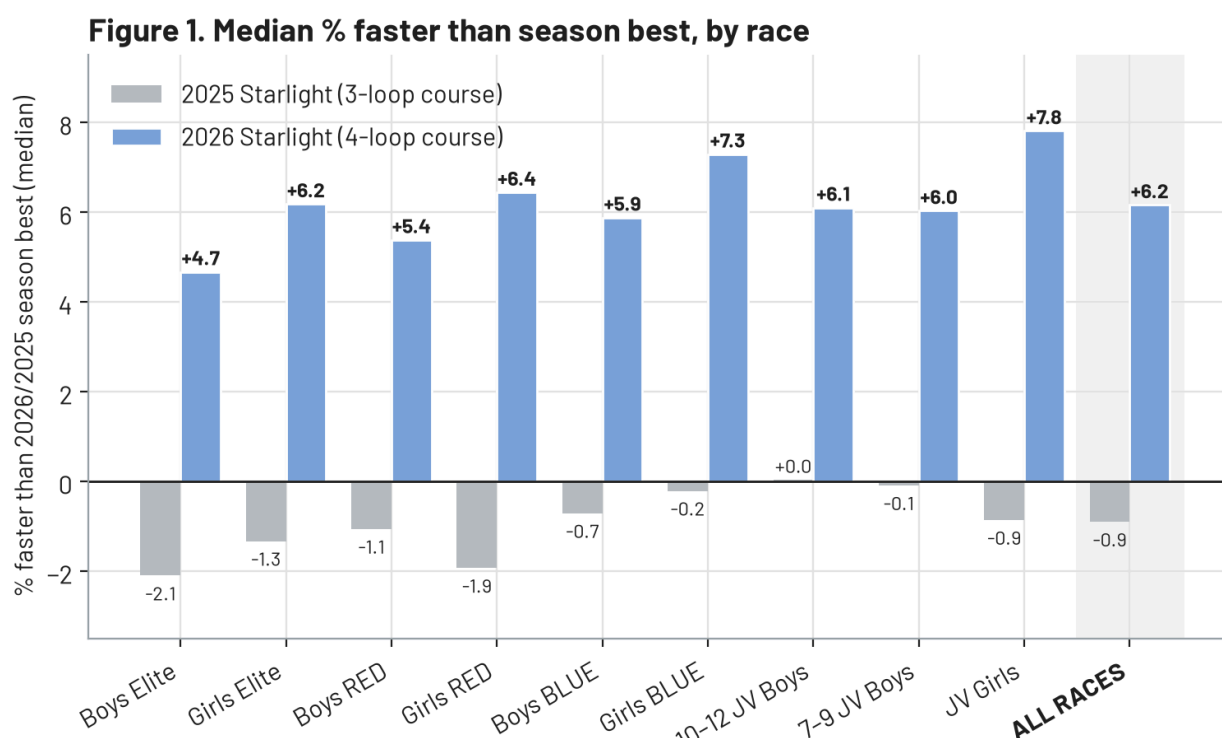
The Riverside layout has not stayed fixed: the 2024, 2025 and 2026 courses were each different. The "3 loop course" route text on the MileSplit pages was carried over unchanged from 2021 to 2025, so it does not describe each year's layout. The host's 2025 race-day document, for example, describes a start on the football field, about 800 m on the track, 3 large loops and a final lap of the track before the finish on the field, with about 2,000 m on the track in all; the 2026 document describes about 900 m on the track, 4 loops with about 300 m of track in each, and a finish at the end of the home stretch. A changing layout is not itself a problem. What matters is whether each year's layout was measured, and no measurement of the 2026 layout has been published.

SECTION 3 THE TIMES EVIDENCE

Data. MileSplit results list 1,215 finishers in 10 races. The Community 5K (57 runners, mostly unattached adults) has no athlete IDs and is left out. That leaves 1,158 school-race finishers. Of these, **1,110** had a 2026 cross-country 5K on MileSplit before October 17. After excluding a few gaps over 20% (likely data errors), **1,095** remain. Each runner is compared only with **their own** earlier marks. % faster = (reference time – Starlight time) ÷ reference time.

COMPARISON, SAME RUNNERS	2026 STARLIGHT	2025 STARLIGHT (SAME VENUE)	SWING
vs season best before the meet	+6.2% (n=1,095)	-0.9% (n=1,406)	+7.1 pts
vs most recent 5K	+7.8% (n=1,075)	+2.3% (n=1,407)	+5.6 pts*
vs Woodmont Invitational (two weeks earlier)	+6.4% (n=429)	-2.5% (n=401)	+8.8 pts
vs Yellow Jacket Invitational (Greer HS, September)	+6.9% (n=492)	+4.2% (n=343)	+2.8 pts
Share who beat their season best	95.7% (1,062 of 1,110)	41.1% (581 of 1,415)	

Medians shown. * Swings are computed from unrounded medians, so they can differ by 0.1 from the rounded columns. These are raw comparisons, not adjusted for weather (see Section 10). Normal mid-season racing on a true 5K looks like the 2025 column: fewer than half the field beats its season best, and the median sits near zero.



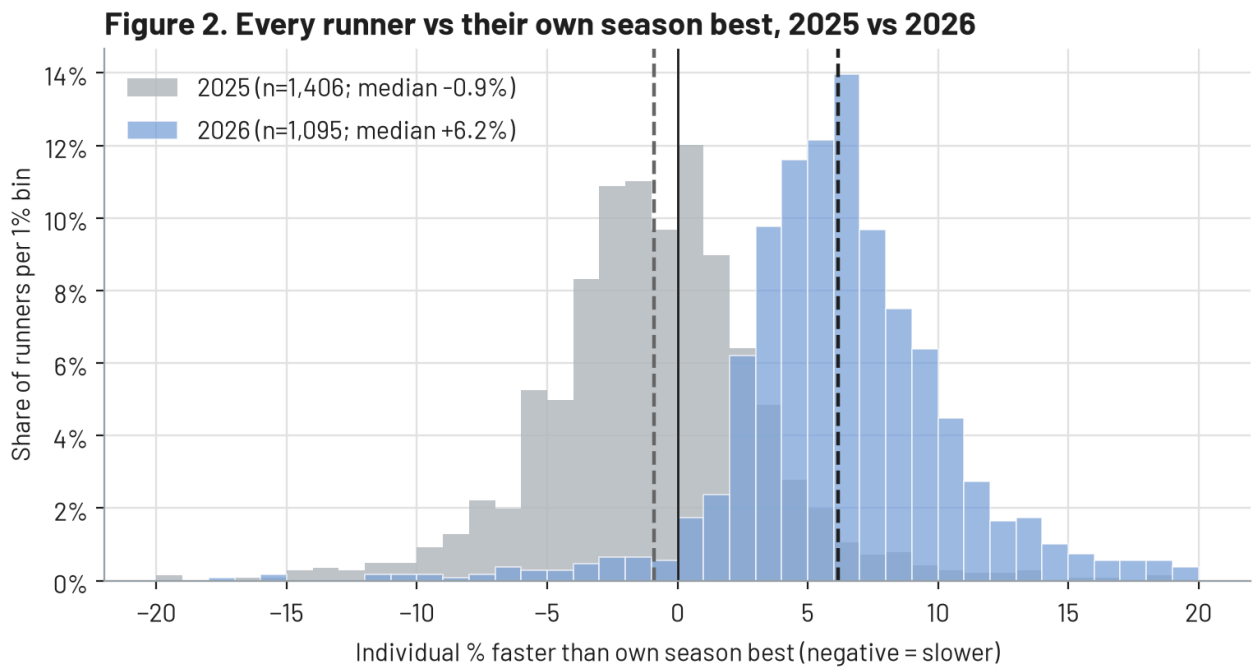
Source: MileSplit results (meets 717632, 680896) and athletes' MileSplit season marks before each meet. Positive = faster than SB. Pairs >20% excluded.

Every one of the nine races was 4.7–7.8% faster than season bests in 2026. In 2025 every race at the same venue was level or slower.

Per-race detail (all 9 school races)

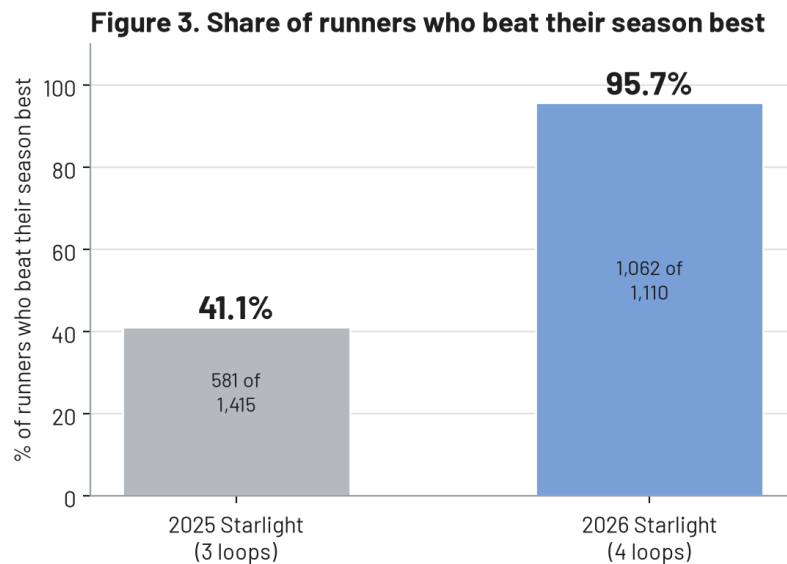
Race	n	vs SB	vs last 5K	vs Woodmont (n)	vs YJ (n)	Impl. m Woodmont	Impl. m vs SB	2025 vs Woodmont (n)	2025 vs SB	Swing (pts)	Impl. m vs 2025
Boys Elite	123	+4.7%	+5.6%	+4.8% (51)	+5.3% (45)	4789	4766	-2.9% (53)	-2.1%	+7.7	4616
Girls Elite	107	+6.2%	+7.5%	+7.0% (26)	+7.5% (38)	4678	4691	-2.2% (32)	-1.3%	+9.2	4539
Boys RED	114	+5.4%	+7.4%	+5.8% (53)	+5.7% (54)	4739	4731	-2.9% (56)	-1.1%	+8.7	4564
Girls RED	107	+6.4%	+8.0%	+6.4% (49)	+7.5% (68)	4708	4678	-2.9% (39)	-1.9%	+9.3	4534
Boys BLUE	63	+5.9%	+7.7%	+7.1% (15)	+6.1% (11)	4676	4706	-3.0% (24)	-0.7%	+10.1	4495
Girls BLUE	63	+7.3%	+10.1%	+6.4% (16)	+9.9% (4)	4711	4636	-1.8% (27)	-0.2%	+8.2	4590
10-12 JV Boys	140	+6.1%	+7.4%	+6.5% (72)	+6.8% (82)	4702	4695	-0.7% (43)	+0.0%	+7.2	4640
7-9 JV Boys	161	+6.0%	+7.5%	+5.8% (68)	+7.2% (71)	4741	4698	-2.0% (56)	-0.1%	+7.8	4610
JV Girls	217	+7.8%	+9.3%	+8.1% (79)	+8.7% (119)	4625	4610	-2.0% (71)	-0.9%	+10.1	4494
All varsity	577	+5.7%	+7.5%	+5.9% (210)	+6.4% (220)	4734	4713	-2.7% (231)	-1.2%	+8.6	4571
ALL RACES	1095	+6.2%	+7.8%	+6.4% (429)	+6.9% (492)	4712	4692	-2.5% (401)	-0.9%	+8.8	4558

Implied m = 5,000 × (1 – median % faster), before any weather adjustment. The Woodmont column takes off 0.6% for two weeks of in-season fitness. The last column uses the 2025 edition as a control (2026 Woodmont gap minus 2025 Woodmont gap). Recomputed from the official results with one matching rule for every year, so the 2025 Woodmont columns now match the table above and Figure 8 (all races: -2.5%, n=401).



Source: same as Figure 1. All school races; Community 5K excluded (no athlete IDs). Bins span -20% to +20%, the full range kept after the $|\text{gap}| \geq 20\%$ filter, so every runner is drawn (2025 n=1,406, 2026 n=1,095).

The whole 2026 distribution moved, not just a few outliers.



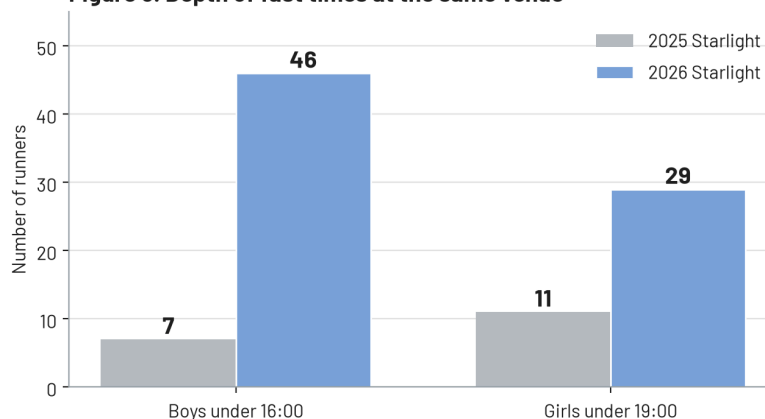
Source: MileSplit results and season marks before each meet; all runners with a prior season mark.

Share of runners beating their season best: 41.1% in 2025 vs 95.7% in 2026.

The same pattern across every group

- **Every race moved by a similar amount.** The swing against Woodmont, 2026 vs 2025, ranges from +7.2 to +10.1 points across the nine races.
- **The host team moved with everyone else.** Riverside's own runners (n=53) were a median 8.2% faster than their season best and 6.2% faster than at Woodmont (n=20), in line with the field. In 2025, Riverside runners at the same venue were 2.2% slower than their season best (n=63).
- **Boys varsity is the cleanest comparison,** because these athletes improve least during the season. Boys Elite were +4.7% vs season best and +4.8% vs Woodmont. In 2025, Boys Elite at this venue were 2.9% slower than Woodmont.
- **Elite depth jumped.** Across all races, 46 boys broke 16:00 and 29 girls broke 19:00, compared with 7 and 11 at the 2025 edition (counts from the full official results of the school races; MileSplit's elite-performance list for the meet shows 28 girls under 19:00 because one Girls Elite finisher in the official results is not on that list). The **Boys Elite winner (14:45.82)** and **Girls Elite winner (16:48.16)** ran outstanding races and earned their wins.
- **Meet bests.** Before 2026, MileSplit SC listed the meet's all-time bests over its 11 editions as 15:03 for boys and 17:24 for girls, both set in 2024 by the previous meet-record holders (MileSplit SC all-time Starlight lists, Oct 14, 2026; 15:03.43 and 17:24.3 in the 2024 results). The 2026 Boys and Girls Elite winners beat those marks by about 18 s (15:03.43 – 14:45.82 = 17.6 s) and about 36 s (17:24.3 – 16:48.16 = 36.1 s). MileSplit's meet records for Starlight cover all editions from 2015 to 2025; its venue records do not (Section 2). Faster marks sometimes attributed to earlier Starlight editions (14:57 in 2022, 15:06 in 2023) were run at the Eye Opener in Spartanburg, not at Starlight (Section 23), and are not used.

Figure 6. Depth of fast times at the same venue

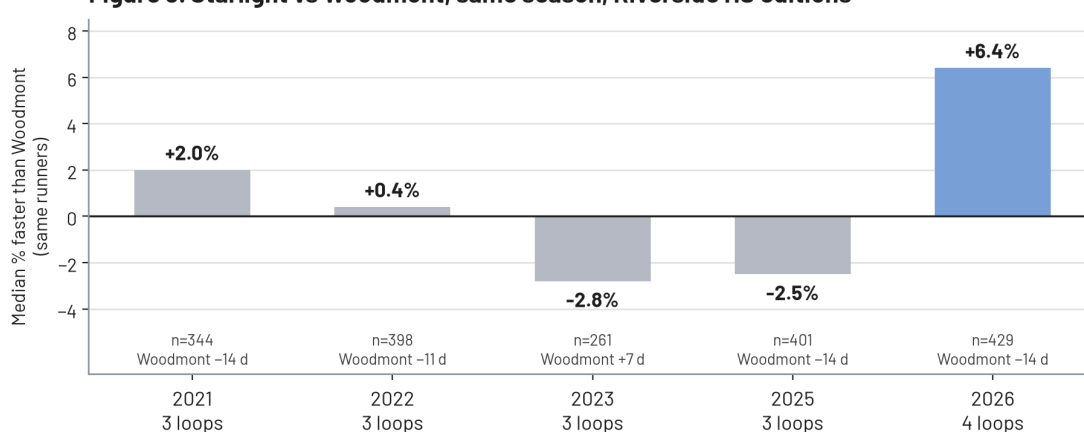


Source: MileSplit results, all school races at each meet.

Depth of fast times, all school races.

Every Starlight edition at Riverside HS

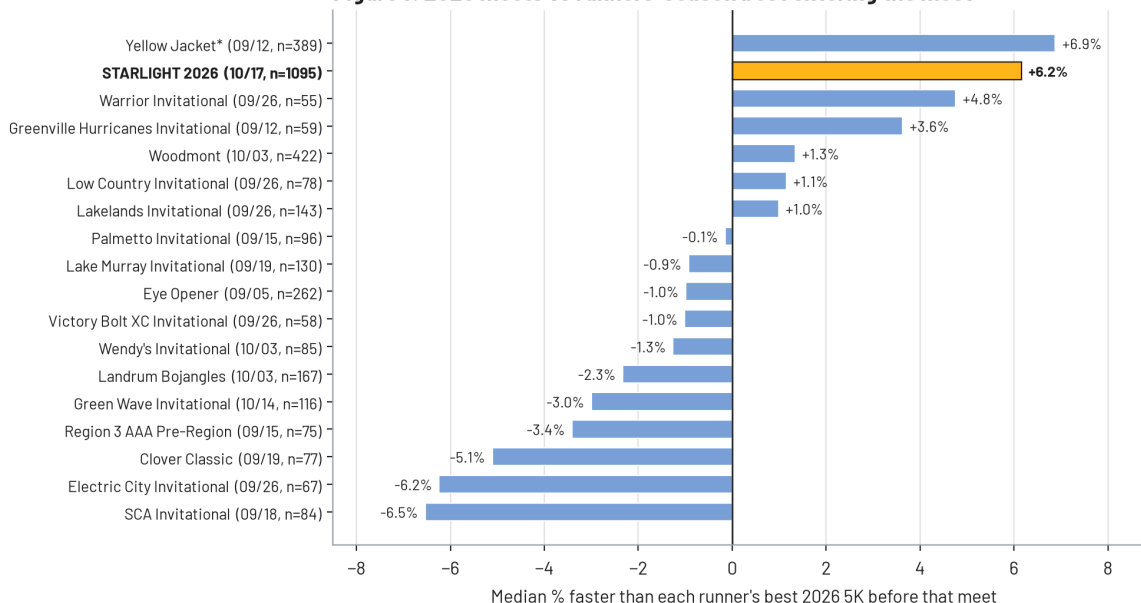
Figure 8. Starlight vs Woodmont, same season, Riverside HS editions



All editions at Riverside HS, Greer SC. Day gap = Woodmont date minus Starlight date (MileSplit meet dates; 2023 Woodmont ran a week after Starlight). 2024 (Nov 9) had no Woodmont bridge. Pairs: each athlete's best 5,000 m mark in both meets' MileSplit results, plus official-results finishers whose MileSplit record holds the Woodmont mark. Not weather-adjusted. Pairs with |gap| ≥ 20% excluded.

Same season, same runners: each bar compares Starlight with that season's Woodmont Invitational; the label under each bar is the day gap (Woodmont date minus Starlight date: -14, -11, +7, -14, -14). The 3-loop editions at Riverside HS (2021, 2022, 2023 and 2025) ran between 2.8% slower and 2.0% faster than the same runners at Woodmont; in 2023 Woodmont came a week after Starlight. The 4-loop 2026 edition was 6.4% faster.

Figure 7. 2026 meets vs runners' season best entering the meet



Every 2026 meet with at least 55 athletes who also ran Starlight 2026 (one threshold for every meet). Eye Opener is dated 9/5, the day its high-school races ran.
 *Yellow Jacket (9/12) baseline is mostly the season-opening Eye Opener (9/5); see text.

Every 2026 meet with at least 55 matched Starlight runners (17 meets; one threshold for every meet). Apart from Yellow Jacket (note below), they came in between 6.5% slower and 4.8% faster than the runners' best mark going into the meet. Starlight 2026 was +6.2%.

Note on Figure 7: Yellow Jacket (Sept 12) also shows a large gain (+6.9%). For most of those runners (247 of the 389 shown), the only earlier 2026 mark was the season-opening Eye Opener a week earlier (9/5), which ran slow. Early-season baselines are soft. Starlight was still 6.9% faster than those same runners' Yellow Jacket times.

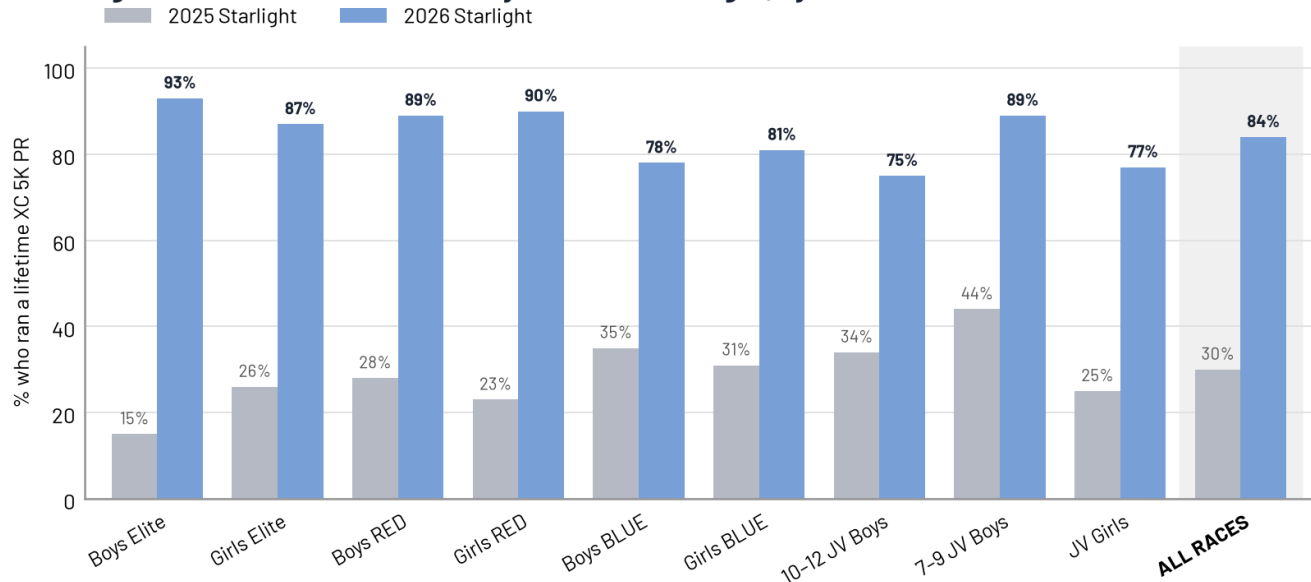
SECTION 4

LIFETIME PRS FOR EVERY ATHLETE

For every school-race finisher with a MileSplit athlete ID, the Starlight time was compared with the athlete's **fastest cross-country 5,000 m mark on MileSplit before that meet, in any season**. If the Starlight time was faster, it counts as a lifetime XC 5K PR. Exactly **1,154** of the 1,158 school-race finishers in 2026 were assessed (4 JV runners have no MileSplit ID). Of those, 1,126 had at least one earlier XC 5K mark and 28 were running their first recorded XC 5K. For 2025, 1,432 of 1,455 school-race finishers were assessed: 1,424 with earlier marks and 8 debuts.

Race	Finishers	Assessed	First XC 5K	Lifetime PRs / with prior marks	2026 lifetime-PR rate	Beat 2026 SB / with SB	2026 SB rate	2025 lifetime-PR rate	2025 SB rate
Boys Elite	123	123	0	115 / 123	93.5%	120 / 123	97.6%	15.4% (21/136)	23.5%
Girls Elite	109	109	2	93 / 107	86.9%	106 / 107	99.1%	25.8% (33/128)	35.2%
Boys RED	114	114	0	101 / 114	88.6%	110 / 114	96.5%	27.9% (39/140)	37.4%
Girls RED	108	108	0	97 / 108	89.8%	105 / 107	98.1%	22.5% (23/102)	29.4%
Boys BLUE	65	65	0	51 / 65	78.5%	58 / 65	89.2%	34.8% (48/138)	45.7%
Girls BLUE	63	63	0	51 / 63	81.0%	60 / 63	95.2%	31.5% (34/108)	48.1%
10-12 JV Boys	157	157	6	114 / 151	75.5%	136 / 141	96.5%	33.7% (67/199)	50.3%
7-9 JV Boys	181	178	9	151 / 169	89.3%	152 / 165	92.1%	43.6% (99/227)	48.7%
JV Girls	238	237	11	175 / 226	77.4%	215 / 225	95.6%	25.2% (62/246)	40.8%
ALL RACES	1158	1154	28	948 / 1126	84.2%	1062 / 1110	95.7%	29.9% (426/1424)	41.1%

Figure 10. Lifetime cross-country 5K PRs at Starlight, by race



Base: runners with at least one earlier XC 5K mark on MileSplit (2026 n=1,126; 2025 n=1,424). Debut 5Ks not counted as PRs.

Lifetime XC 5K PR rate by race, 2025 vs 2026.

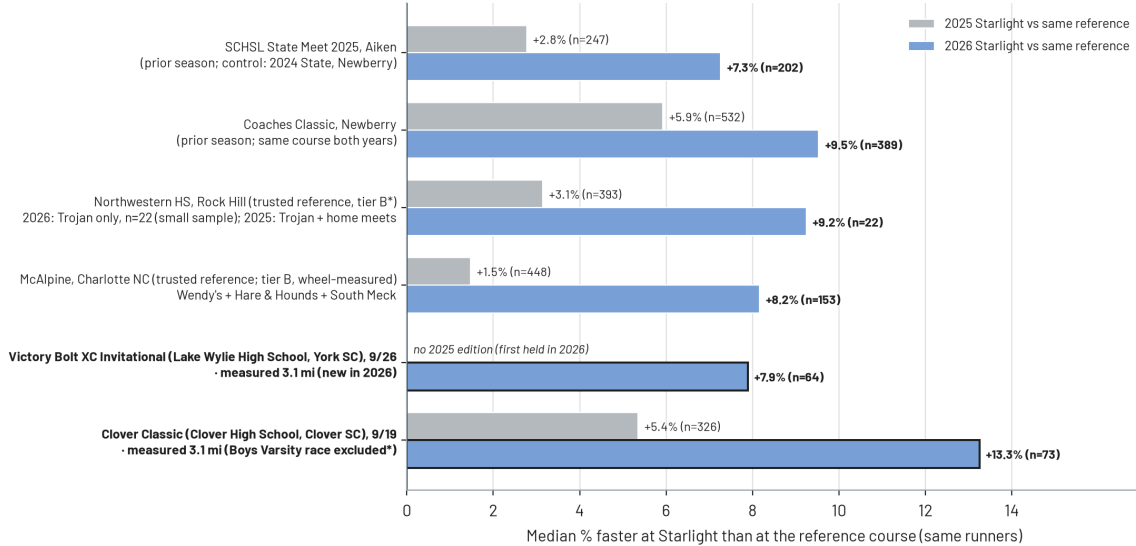
84.2% of runners with an earlier mark set a lifetime cross-country 5K best, against **29.9%** at the same venue in 2025. The most experienced group, Boys Elite, went from 15.4% to 93.5%. For athletes who have raced cross country for several seasons, often including the state meet, such a high lifetime-PR rate is very unusual.

How marks were handled. Only MileSplit cross-country marks listed as 5,000 m were used. 3-mile (141 marks), 2-mile, 3,200 m, 4,000 m and other distances were excluded and never converted. MileSplit's athlete stats do not flag estimated or converted marks, so none could be separated. Any 5,000 m mark from a course that was itself short stays in the athlete's history. That makes a PR harder to achieve, so the PR counts are conservative. Malformed marks (under 11:40 or over 60:00) were dropped. First-time 5K runners are not counted as PRs. Season-best counts match Section 3 exactly (1,062 of 1,110 in 2026; 581 of 1,415 in 2025). Weather is not adjusted here; see Section 10.

SECTION 5 COMPARISON WITH TRUSTED REFERENCE COURSES

The trusted reference courses include Northwestern HS in Rock Hill (the Trojan Invitational and the Northwestern home meets), a course the Lake Wylie staff trust as a full 3.1 mi and where the Chargers' watches read a median 3.10 mi across three meets; the Bob Jenkins SCTCCCA Coaches Classic at Newberry; and the SCHSL State Meet course (Aiken in 2025). The Clover Classic and Victory Bolt courses are both measured at a full 3.1 mi by the report author (tier B*: measured by a coach, with no independent public record). (Course credits: Section 22.) Many SC athletes also race the **Larry McAfee Cross Country Course at McAlpine Park** in Charlotte ("McAlpine"), home of the South Meck, Providence, Wendy's, Hare & Hounds and Foot Locker (later Brooks) South meets, which are pooled here as one venue. McAlpine is a trusted, highly credentialed reference course, rated tier B (Measured): a wheel-measured championship course. Larry McAfee designed and built it and has maintained and measured it since 1978; it hosted the Foot Locker South Regional from 1982 and has hosted NCHSAA state championships for all four classes. In September 2015 McAfee re-measured the course and added 50–60 m to restore a full 5,000 m after years of trail widening, the model of good course stewardship that Section 21 proposes for every course. No USATF certification record was found, so this report does not call it certified (sources: Section 23). A second NC venue, **WakeMed Soccer Park** in Cary (the WakeMed Soccer Complex), hosts both the Great American XC Festival and the adidas XC Challenge, which are pooled as one venue. No public certification or measurement record was found for it, so it is rated tier C (Unverified) and is shown only as a comparison, not as an anchor. No device-recorded GPS activity from Cary has been found yet, so its GPS coverage is pending. The table compares the same athletes' Starlight times with their marks on these courses. The 2025 Starlight field, measured the same way, is the control.

Figure 9. Starlight vs trusted reference courses, 2025 and 2026



Source: MileSplit athlete marks. Prior-season rows include a year of growth in both years. Northwestern HS 2026 rests on 22 runners (Trojan only; no shared home-meet marks), so its value is uncertain by a point or more; its 2025 pool includes the 2025 York County Championships, held at Northwestern HS. Victory Bolt began in 2026 (no 2025 control). Not weather-adjusted. * Clover 2026: girls' races and the boys' non-varsity race only. The Boys Varsity race was diverted around a copperhead and is excluded. Clover is the hilliest anchor (193 ft median watch climb), so its gap is the largest; its 2025 control is +5.4% (5.35%, n=326, same method as Section 15).

Same runners: Starlight vs reference courses. In every row with a 2025 edition, the 2026 gap is much larger. Victory Bolt, new in 2026, shows the same 2026 gap (+7.9%, n=64). Clover, the hilliest anchor (girls' and boys' non-varsity races; Boys Varsity race excluded), shows the largest: +13.3% (n=73) vs +5.4% in 2025. Northwestern HS 2026 rests on Trojan marks only (n=22), a small sample with wide uncertainty.

REFERENCE COURSE	2026 STARLIGHT RUNNERS	2025 STARLIGHT RUNNERS (CONTROL)	NOTE
SCHSL State Meet, prior season	+7.3% (n=202; 2025 State at Aiken)	+2.8% (n=247; 2024 State at Newberry)	A year of growth in both columns; different state venues
Coaches Classic, Newberry, prior season	+9.5% (n=389; 2025 edition)	+5.9% (n=532; 2024 edition)	Same course; a year of growth in both columns
Northwestern HS, Rock Hill (Trojan Invitational + home meets, pooled), same season - trusted reference	+9.2% (n=22)	+3.1% (n=393)	2026: Trojan marks only (no Starlight runner ran a 2026 home meet), a small sample. 2025 includes the York County Championships, held at Northwestern HS that year
McAlpine, Charlotte NC (pooled) - trusted reference, tier B (wheel-measured championship course)	+8.2% (n=153)	+1.5% (n=448)	South Meck, Hare & Hounds and Wendy's together
↳ Wendy's Invitational	+7.4% (n=85)	+0.7% (n=192)	2026 Wendy's was hot and humid (Section 10)
↳ Hare & Hounds	+8.4% (n=49)	+2.2% (n=218)	September meet
WakeMed Soccer Park, Cary NC (Great American XC Festival + adidas XC Challenge, pooled) - tier C (unverified: no public measurement record)	+9.0% (n=18; adidas only)	+1.4% (n=149)	NC comparison course, not an anchor; GPS coverage pending
Victory Bolt XC Invitational (Lake Wylie High School, York SC), 9/26 - measured 3.1 mi	+7.9% (n=64)	no 2025 edition	First held in 2026; full field of 536
Clover Classic (Clover High School, Clover SC), 9/19 - measured 3.1 mi*	+13.3% (n=73)	+5.4% (n=326)	Hilliest anchor (about 200 ft of climb)

* Clover 2026: girls' races and the boys' non-varsity race only. The Boys Varsity race was diverted around a copperhead and is excluded. Clover's climb makes its gap the largest in both years. Clover 2025 uses the same matching as Section 15 (+5.35%, n=326). WakeMed 2026 rests on 18 runners from a single meet (the adidas XC Challenge), so it is a small, one-meet sample. Northwestern HS 2026 rests on the Trojan Invitational alone (n=22), also a small sample.

The cleanest, most weather-neutral comparisons are the two prior-season championship-style meets. The Coaches Classic (Oct 11, 2025 and Oct 12, 2024) and the 2025 State Meet at Aiken (Nov 14-15) were both run in cool, dry conditions. Against the Coaches Classic, the 2026 field ran 9.5% faster at Starlight, while the 2025 field ran 5.9% faster. The 3.6-point difference narrows to about 0.5-2.5 points after allowing for the warm 2025 Starlight night (Section 10). Against the flat Aiken state course, 2026 Starlight runners were 7.3% faster a year later, including 7.6% for boys varsity (n=95). The 2026 Coaches Classic (10/10) was canceled, and the 2026 State Meet has not been run. None of these athletes ran a 2026 Northwestern home meet, so the Northwestern HS row rests on the Trojan Invitational alone. The **Victory Bolt XC Invitational (Lake Wylie High School, York SC), 9/26 - measured 3.1 mi** is a same-season reference: 64 runners from its full field (536 finishers) also ran Starlight 2026, and they were a median **7.9% faster at Starlight**. It was first held in 2026, so it has no 2025 control.

SECTION 6 GPS EVIDENCE

Race-day efforts on the public Strava segment that covers the Riverside HS track (Riverside High School Track) were reviewed for every year. Warmups, cooldowns and watches clearly left running well past the finish were excluded. The screening was not equally close in every year: the 2026 recordings were checked one by one (device, timing and, for the reviewed runners, the official results), while the 2021, 2022 and 2025 recordings were screened less closely (date and distance only). An earlier draft gave a count of 554 screened efforts; no list of those efforts survives, so that count cannot be reproduced and is not relied on. Six 2022 recordings have activity IDs that date from a week to nine months after the race and may not be race recordings; without them the 2022 median moves from 3.09 mi (n=34) to 3.10 mi (n=28). That leaves **130 race recordings**, 39 of them from October 17, 2026. Each one is listed by year, distance and source code in Appendix A (key: Appendix F). Names are omitted.

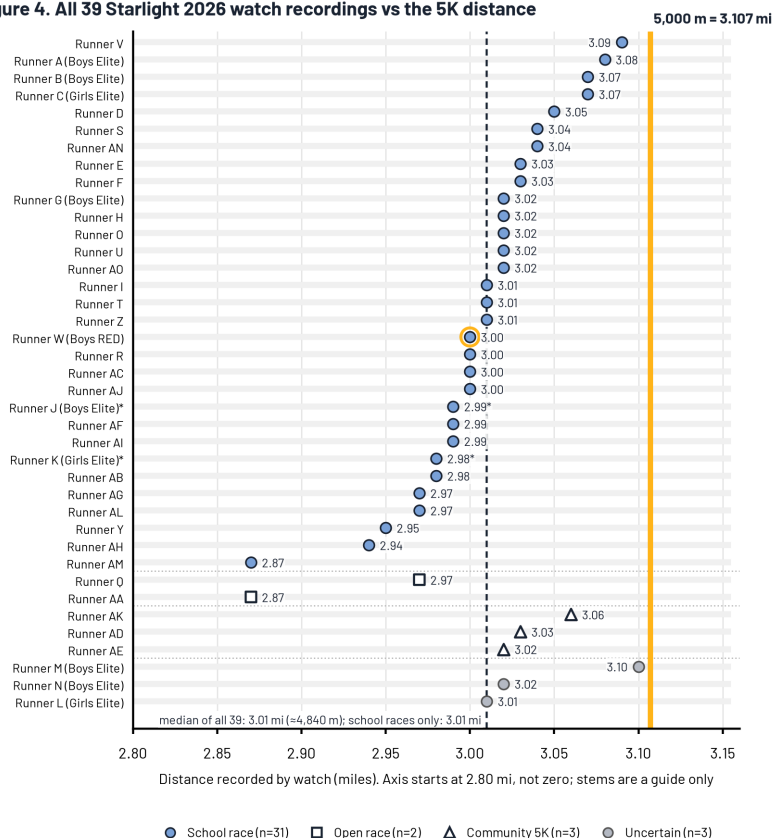
Key line

36 of 40 watches at the 2025 edition read at least 3.10 mi. At the 2026 edition, **1 of 39** did.

2026 RECORDINGS BY TYPE	N	MEDIAN (MI)	RANGE (MI)	REACHED 3.10 MI
School race	31	3.01	2.87-3.09	0
Open race	2	2.92	2.87-2.97	0
Community 5K	3	3.03	3.02-3.06	0
Uncertain	3	3.02	3.01-3.10	1
All 2026 recordings	39	3.01	2.87-3.10	1

The 2026 median is **3.01 mi** (≈4,840 m) for all 39 recordings and 3.01 mi for the 31 school-race recordings alone; the school-race median is the primary figure. Open-race, Community 5K and uncertain readings are flagged but do not change the result. Devices at Starlight are unknown, the posters are self-selected, and auto-pause and start/stop timing vary, so single readings mean little; the median is what counts.

Figure 4. All 39 Starlight 2026 watch recordings vs the 5K distance



Source: public Strava activities, Oct 17, 2026 (codes in Appendix A). Only 1 of 39 reached 3.10 mi. *Watch ran past the finish. Gold ring = Runner W (Figure 11). Names omitted.

All 39 recordings from 2026: range 2.87-3.10 mi; median 3.01 mi; school races only (31): median 3.01 mi. A full 5,000 m is 3.107 mi.

Recordings reviewed in detail

Fifteen of the 2026 recordings were reviewed one by one against the official results. Race labels come from the public results. Climb is the watch's total elevation gain.

Runner (name omitted)	Type	Distance (mi)	Watch time	Climb (ft)	Code
2026 Runner A (Boys Elite)	School race	3.08	key	56	S001
2026 Runner B (Boys Elite)	School race	3.07	key	82	S002
2026 Runner D	School race	3.05	key	75	S003
2026 Runner E	School race	3.03	key	93	S004
2026 Runner F	School race	3.03	key	120	S005
2026 Runner G (Boys Elite)	School race	3.02	key	69	S006
2026 Runner H	School race	3.02	key	109	S007
2026 Runner I	School race	3.01	key	36	S008
2026 Runner J (Boys Elite)	School race	2.99*	—	98	S009
Runner W (same athlete, 2025 and 2026) (Boys RED)	School race	3.00	key	66	S010
2026 Runner K (Girls Elite)	School race	2.98*	key	95	S011
2026 Runner C (Girls Elite)	School race	3.07	key	95	S012
2026 Runner L (Girls Elite)	Uncertain	3.01	key	66	S013
2026 Runner M (Boys Elite)	Uncertain	3.10	key	43	S014
2026 Runner N (Boys Elite)	Uncertain	3.02	key	104	S015

* The watch kept running past the finish (elapsed / moving time shown where both appear), so the true race distance is, if anything, shorter. Runner L's activity is titled "Evening Run": it matches the meet in date, place and time but is not confirmed as the race. Runner M (3.10 mi) and Runner N (3.02 mi) show no map or splits. Runner M's recording is reported as given but is **uncertain** (no map, no splits); it is the single 2026 reading at 3.10 mi. Watch times were cross-checked against the official results; exact official times are not reproduced in this report.

How to read the GPS numbers

- **On a full course, watch error is small and roughly cancels out.** In a controlled test of eight sport watches, recorded distance was overestimated on an open 400 m track (mean absolute percentage errors 0.9–4.1%) and underestimated in urban and forest areas (Gilgen-Ammann et al., 2020; one test runner, 2019-era watches); errors of a few percent are also reported in race conditions (Johansson et al., 2020). The best local check is one team's own watches: Lake Wylie Chargers runners read a median **3.10 mi** on 150 recordings at the full SC meets they raced this season (Section 16), essentially the 3.107 mi of a 5K. Course to course, their medians ranged from 3.055 to 3.15 mi (–1.7% to +1.4% of 3.107 mi; the low end is Clover, which is included).
- **A runner's real path is longer than the shortest legal route** that courses are measured on (NFHS Rule 8-1-1). Pack running and wide turns on the track add distance to a watch.
- **Open, track-heavy courses read at or slightly over true distance.** About 2.1 km of the 2026 course is on the track (the 900 m opening plus about 300 m per loop). In the controlled test above, every watch read long on the open track, and in another study curvilinear running read about 2.6% long (Rawstorn et al., 2014, a team-sport GPS unit); under-reads came from rapid direction changes (shuttle running), not from gentle curves. So the track, if anything, pushes Starlight readings up, not down. The course-level band used in this report comes from one team's own watches: their meet medians ran from 3.055 to 3.15 mi on full SC courses this season (–1.7% to +1.4%), about ±1.5%; Starlight's 3.01 mi is below every one of them. 3.01 mi is a central estimate within that band, not a hard ceiling.
- **Calibrated to the team baseline, 3.01 mi points to about 4,855 m:** $5,000 \times 3.01 \div 3.10 \approx 4,855$ m (about ±65 m).

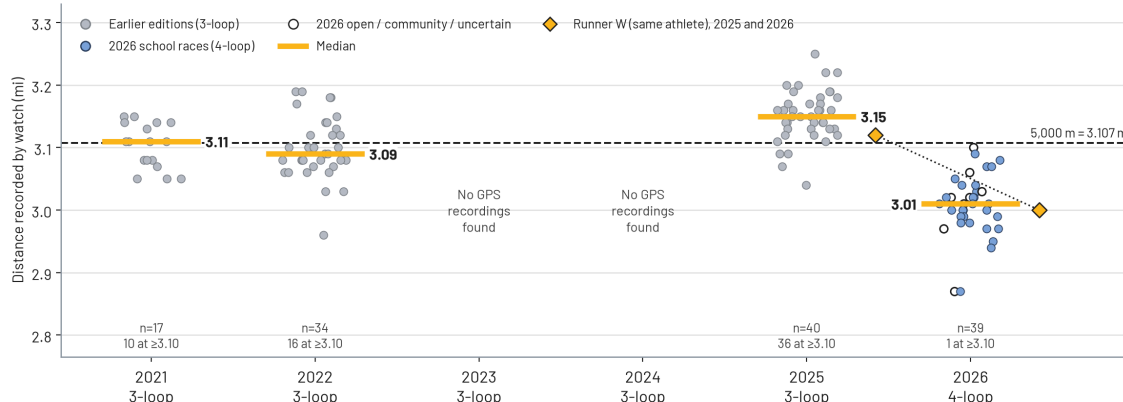
GPS is not a measuring tool, and every measurement guide in Section 14 says not to measure courses with it. Here it is used only as independent corroboration. GPS readings are not affected by weather.

GPS distance by year at Riverside HS

The same segment leaderboard holds race-day recordings from earlier Starlight editions at Riverside HS, Greer SC. No recordings were found for 2023 or 2024.

Edition	Layout	Recordings	Median (mi)	Mean (mi)	Range (mi)	Reached 3.10 mi	Median (m)
2021 (Oct 16)	3-loop	17	3.11	3.103	3.05–3.15	10 of 17	≈5,005
2022 (Oct 15)	3-loop	34	3.09	3.099	2.96–3.19	16 of 34	≈4,975
2025 (Oct 18)	3-loop	40	3.15	3.151	3.04–3.25	36 of 40	≈5,070
2026 (Oct 17)	4-loop	39	3.01	3.009	2.87–3.10	1 of 39	≈4,845

Figure 11. Starlight GPS distance by year, Riverside HS, Greer SC



Source: public Strava race-day recordings (Riverside High School Track segment leaderboard; IDs in Appendix A). Names omitted. Different watches each year; layout changed over the years. GPS is corroboration, not measurement. 2022 median is 3.10 mi (n=28) without six activities dated after race day (Section 6).

Each dot is one public watch recording; gold bars are medians; counts under each year show how many reached 3.10 mi. The dashed line is 5,000 m (3.107 mi).

2025 vs 2026, the most direct comparison. The 2026 median is 0.14 mi (about 225 m, 4.4%) below the 2025 median at the same venue. 2025 times were slow compared with Woodmont (Section 3), which fits a full-length course, and its watches read about 1.4% long. If 2025 was a full 5K and watches read the same way both years, the GPS ratio puts 2026 at about **4,780 m** ($5,000 \times 3.01 \div 3.15$; bootstrap 4,747–4,809 m). That is the low end of this report's plausible range (4,780–4,950 m), because 2025 itself read long. In 2021 and 2022 the medians were 3.11 and 3.09 mi, with 10 of 17 and 16 of 34 watches reaching 3.10 mi.

Same runner, same meet, one year apart

Runner W (same athlete, 2025 and 2026), the same MileSplit athlete in both years (one reading each year, so this rests on a single 2026 reading), recorded **3.12 mi in 2025 and 3.00 mi in 2026** (2025 activity · 2026 activity). The official time was about 6% faster in 2026 (exact times are not reproduced), but per mile recorded by the watch, pace was only about 2% faster. The shorter recorded distance accounts for most of the time difference; the warmer 2025 night (Section 10) plausibly accounts for some of the rest. Note: it is not confirmed that the same device was used both years.

Caveats. Different athletes wore different watches each year, the samples are self-selected (runners who post publicly), and the Riverside layout has changed over the years. The 2022 median (3.09 mi) is slightly below 3.107 mi, so earlier 3-loop editions may not all have been identical (without the six late-ID 2022 recordings it is 3.10 mi). GPS is used here only as corroboration. The year-to-year pattern still matches the rest of the evidence: the 2026 readings are the lowest of any edition. Section 7 removes the device question altogether by comparing each runner's watch with itself on other courses.

SECTION 7

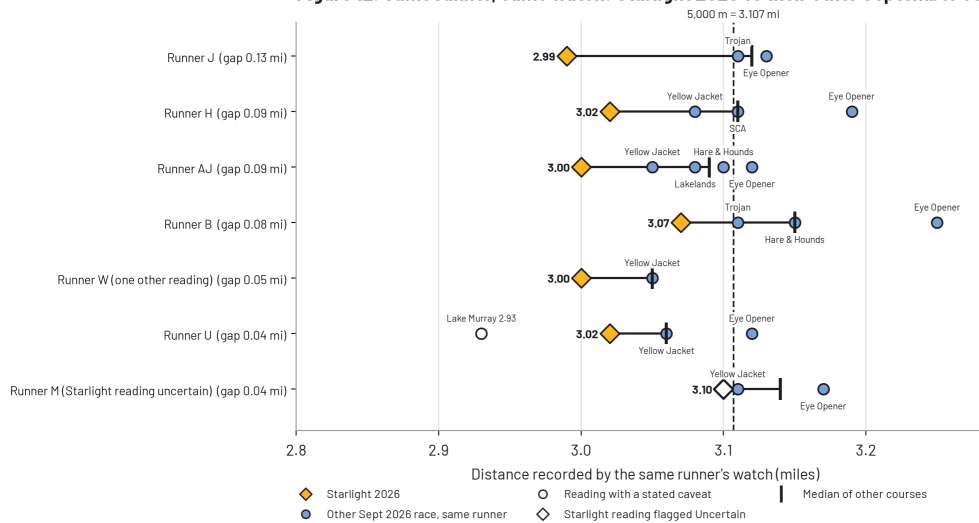
SAME RUNNER, SAME WATCH, OTHER COURSES

The strongest test of a GPS reading is to hold the runner and the watch constant and change only the course. Seven 2026 Starlight runners with public Strava profiles also posted race recordings from other September 2026 meets: 18 recordings on 7 courses. Most athletes' profiles are private, so these seven are all that could be checked. Each runner keeps the label used in Figure 4 and Section 6.

Key line

7 of 7 runners recorded a shorter distance at Starlight 2026 than the median of their own other courses. The median gap was **0.08 mi (about 130 m)**. Device differences cancel out here, because each runner is compared only with their own watch.

Figure 12. Same runner, same watch: Starlight 2026 vs their other September courses



Each row is one runner and one watch. Gold diamond = Starlight 2026; blue dots = the same runner's other September 2026 races; the black tick is the median of those other courses. Every Starlight reading sits to the left of its runner's median.

Runner	Starlight 2026 (mi)	Other September 2026 races, same runner (mi; source codes in the key)	Other-course median	Starlight gap
Runner J	2.99	Eye Opener 3.13 · Trojan 3.11	3.12	-0.13 mi (≈210 m)
Runner AJ	3.00	Eye Opener 3.12 · Yellow Jacket 3.05 · Hare & Hounds 3.10 · Lakelands 3.08	3.09	-0.09 mi (≈140 m)
Runner H	3.02	Eye Opener 3.19 · Yellow Jacket 3.08 · SCA 3.11	3.11	-0.09 mi (≈140 m)
Runner B	3.07	Eye Opener 3.25 · Trojan 3.11§ · Hare & Hounds 3.15	3.15	-0.08 mi (≈130 m)
Runner W	3.00	Yellow Jacket 3.05	3.05	-0.05 mi (≈80 m)
Runner U	3.02	Eye Opener 3.12 · Yellow Jacket 3.06 · Lake Murray 2.93‡	3.06	-0.04 mi (≈60 m)
Runner M	3.10	Eye Opener 3.17 · Yellow Jacket 3.11	3.14	-0.04 mi (≈60 m)
All 7	median 3.02	7 of 7 runners recorded less at Starlight than on their other courses		median -0.08 mi (≈130 m)

Sorted by gap. Full details (dates and climb) are in Appendix B; watch times are in the source key. Runner M's Clover race was the Boys Varsity race, which was diverted around a copperhead and is excluded (not listed); the Clover course itself is a measured 3.1 mi. ‡ Lake Murray: a single reading. § Trojan for Runner B is inferred from date and location (activity titled as a generic run).

What this shows

- **The pattern holds for every runner.** Gaps range from 0.04 mi (Runners M and U) to 0.13 mi (Runner J). No runner recorded more at Starlight than the median of their own other courses. For scale, at the wheel-measured York County Championships course (Catawba Bend) the Chargers' watches read a median 0.04 mi under each runner's own other-course median (16 of 18 read lower), so part of a 0.04 mi gap is ordinary; the 0.08 mi median gap here is twice that.
- **A nearby course reads close to full.** Yellow Jacket, also in Greer and also an open-campus course, read **3.05–3.11 mi** on five of these watches. The same five watches read 3.00–3.10 mi at Starlight, lower in every case.
- **It points to the same length as the other methods.** If each runner's other-course median is taken as what that watch reads for a 5K, Starlight scales to a median of about **4,870 m** (range across runners 4,790–4,940 m). That agrees with the GPS-calibrated estimate of about 4,850 m (Section 11).

Caveats. This is a small sample: 7 public profiles out of more than 1,100 finishers. The other courses are not all certified, and Eye Opener readings ran long (3.12–3.25 mi), which is one reason medians are used. The Clover course is a measured 3.1 mi; one runner's Clover race was the Boys Varsity race, which was diverted and is excluded. Lake Murray (2.93 mi) is a single reading; it is shown as an open circle and does not change any runner's result. Two Yellow Jacket climb readings (280 and 297 ft) are far above the other three (59–108 ft) and are most likely barometric noise; they affect climb (Section 8), not distance. GPS is corroboration, not measurement.

Other schools' runners: McAlpine vs Starlight, same watch

Four runners from other schools recorded both a race at McAlpine (a trusted, wheel-measured course; Section 5) and Starlight 2026 on the same device. Only device-recorded GPS activities are used.

Runner	Device	McAlpine race	McAlpine mi	Starlight 2026 mi	Starlight gap	Note
Runner B	COROS PACE 3	Hare & Hounds, 9/19	3.15	3.07	-0.08 mi	
Runner J	Forerunner 55	Hare & Hounds, 9/19	3.11	2.99 (–)	-0.12 mi	Starlight watch time not shown (watch may have kept running)
Runner N	Forerunner 165	Wendy's, 10/3	3.10	3.02	-0.08 mi	
Runner AP	Forerunner 245	Wendy's, 10/3	3.06	3.03	-0.03 mi	matched to the athlete by name
4 of 4 read shorter at Starlight					median -0.08 mi	

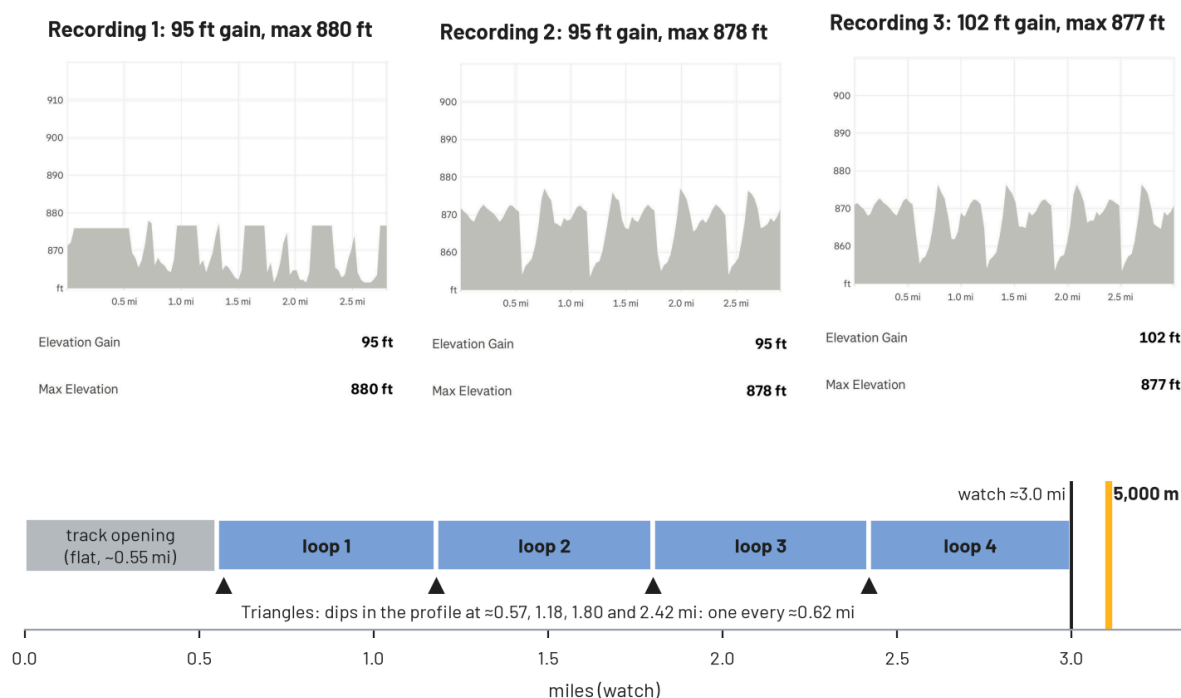
Each code resolves to the public activity in the source key. Runners B, J and N are the same labels used in Section 6 (B and J also appear in the table above, which uses their other SC and NC meets); Runner AP is a new label, and AP's Starlight recording is not one of the 39 segment recordings in Section 6, so it does not change any Section 6 figure. Runner N's Starlight recording is one of the three marked uncertain in Section 6, so N's row is indicative only. Only rows whose device is recorded at both meets are used; unconfirmed devices and any Clover Classic Boys Varsity (diverted) race are left out. Distances are as listed on the activities.

SECTION 8

ELEVATION AND COURSE PROFILE COMPARISON

Starlight is often described as a flat, fast course. The profiles say it is flat, but **no flatter than a course trusted as a full 5K**. A single reference GPS watch, the report author's own, recorded the 2026 Starlight course three times: **95, 95 and 102 ft** of climb, with a maximum elevation of about 877–880 ft (values read from screenshots of the three activities). The athletes' own watches at Starlight read a median **85 ft** (n=39), and that is the value the terrain model uses. The same watch recorded **39 ft** on the Aiken State course, **102 ft** at Northwestern HS, a course the Lake Wylie staff trust as a full 3.1 mi (team GPS agrees: median 3.10 mi), **115 ft** at the Victory Bolt XC Invitational course at Lake Wylie High School, York SC (measured 3.1 mi), **200 ft** at the Clover Classic course (Clover High School, Clover SC), a measured 3.1 mi course and one of the hardest courses in the state, and **205 ft** at Newberry / The Farm (Figure 14). Starlight sits in the middle of that range on that watch, and on the athletes' watches too.

Figure 13. Starlight 2026 elevation profiles (reference GPS watch) and the layout they show



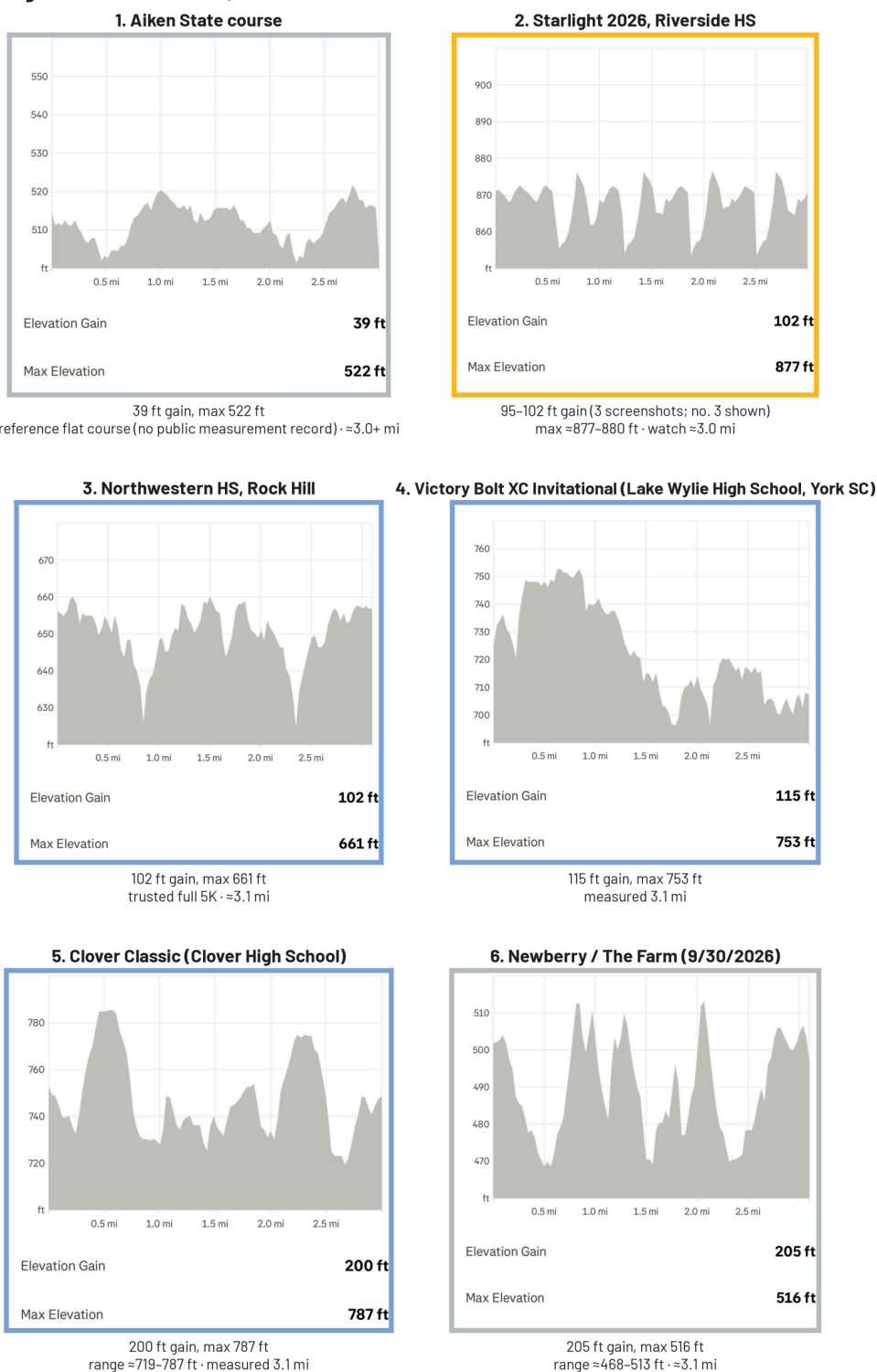
Strava elevation profiles (reference GPS watch). Schematic below is read from the profiles; loop lengths are approximate.

Three Starlight 2026 recordings from the reference GPS watch. All three show the same shape: a flat opening on the track, then four near-identical loops. Strava elevation profiles.

What the profiles show about the layout

- **A flat track opening of about 0.55 mi**, as expected for the roughly 900 m on the track described by the host (Section 2).
- **Four near-identical loops**, each marked by a dip in the profile at about 0.57, 1.18, 1.80 and 2.42 mi: one every **~0.62 mi (~1,000 m)**. This matches the host's "4 loop course" description.
- **A total of about 3.0 mi on the watch**. Read off the profile, an opening of ~890 m plus four loops of ~1,000 m comes to roughly 4,900 m. That is a rough GPS reading, not a measurement, but it points the same way as Section 2: a 4-loop 5K needs about 1,025 m per loop, and each loop appears to fall a little short.

Figure 14. Six courses, flattest to hilliest



Strava elevation profiles from the reference GPS watch, which is the report author's own watch; the Starlight values are read from screenshots (no activity files). Gold border = Starlight 2026; blue = full-length courses measured by a coach or trusted (tier B*); grey = reference flat course (Aiken) or other. Each panel keeps Strava's own auto-scaled vertical axis, so compare the gain figures, not the heights of the shapes. The terrain model uses athletes' watch medians (Figure 16).

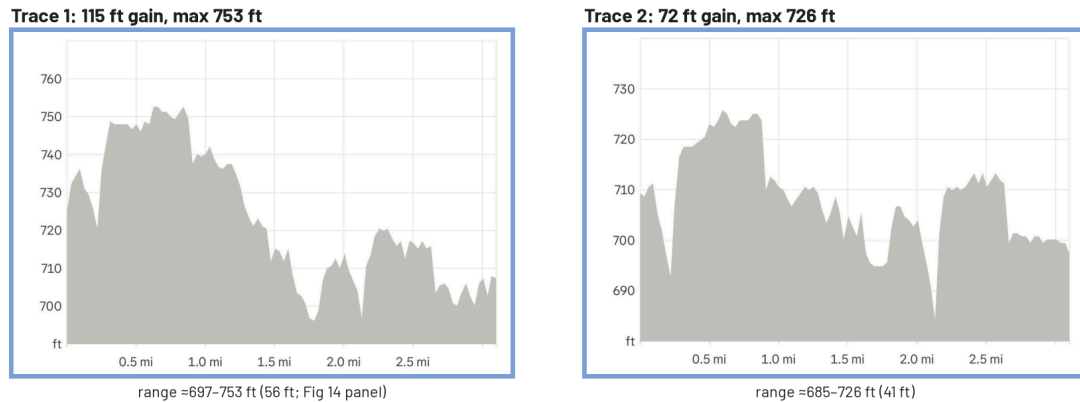
The reference GPS watch on six courses, ordered from flattest to hilliest. The Aiken State course (the State course layout recorded in 2026; not necessarily identical to the 2025 State Meet layout) climbs only 39 ft. Starlight 2026 shows four short, repeating dips of about 20 ft and 95–102 ft in total, the same as Northwestern (102 ft), a course trusted as a full 5K. The Victory Bolt XC Invitational course at Lake Wylie High School, York SC (115 ft, measured 3.1 mi by the report author) climbs to about 750 ft from 0.3 to 0.9 mi, descends to about 697 ft at 1.75 mi, and rises again near 2.0 and 2.25 mi. Clover (200 ft) and Newberry / The Farm (205 ft) are the genuinely hilly courses: Clover has two big climbs peaking near 0.5 and 2.3 mi, and Newberry has big climbs near 0.8, 1.0, 1.25 and 2.05 mi. Strava elevation profiles.

Figure 15. Victory Bolt XC Invitational (Lake Wylie High School, York SC): course map and two traces

A. Official course map



B. Two watch traces of the same course (Strava): same shape, different gain



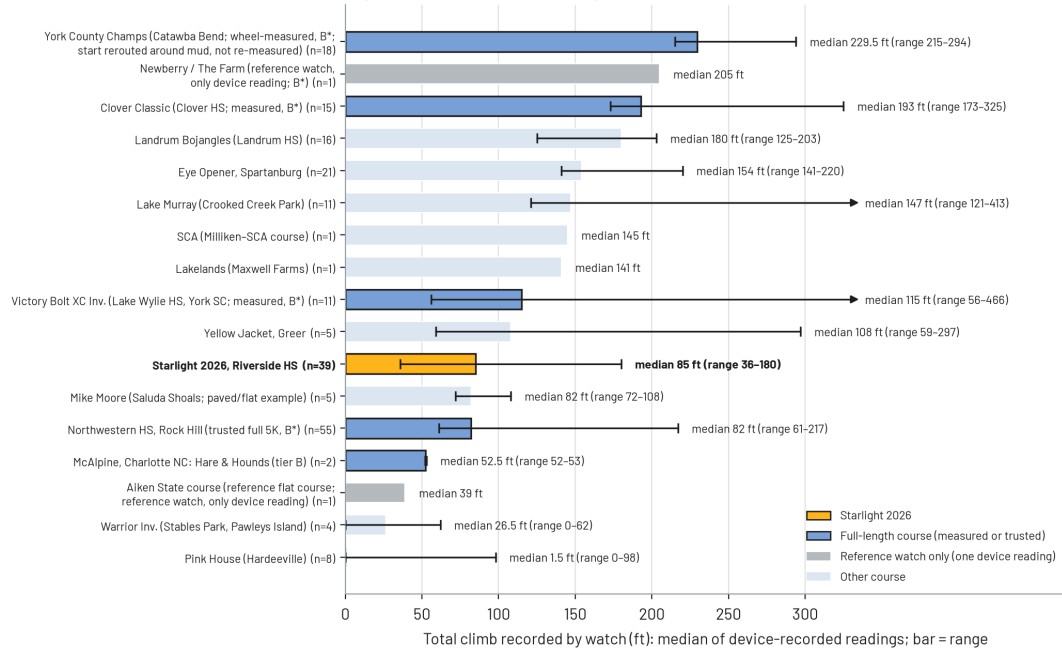
A: course map prepared by Lake Wylie (the meet host; not an independent document): 5,000 m, 3.12 mi, ~85 ft elevation gain, 27 ft relief, two-lap grass / packed-earth loop. Staff and footer strips cropped. B: both traces are the same course; 72 vs 115 ft gain is device / GPS variance. The traces span 41–56 ft of elevation, more than the map's 27 ft relief: GPS and barometric elevation are noisy and smoothed differently from map contours, so neither range is a survey. Strava elevation traces.

Victory Bolt XC Invitational course, Lake Wylie High School, York SC. (A) The official course map (the Coaches' Race Map): 5,000 m, 3.12 mi, about 85 ft of elevation gain and 27 ft of relief on a two-lap grass and packed-earth loop. The meet staff box and footer strip are cropped. (B) Two Strava traces of the same course, shown side by side the way the three Starlight recordings are in Figure 13. Trace 1: 115 ft gain, max 753 ft (the Figure 14 panel). Trace 2: 72 ft gain, max 726 ft, range about 685–726 ft. The shape is the same; the 72 vs 115 ft difference is device and GPS variance, which is why the climb table gives a range. The map's 27 ft of relief (highest minus lowest point) is a different measure from total climb: on a two-lap course every rise is climbed twice and every small undulation adds to the total, so 85 ft of gain is consistent with 27 ft of relief. The map is a Lake Wylie course document.

Not flatter than a trusted full 5K

On the athletes' own watches, Starlight 2026 (median 85 ft) sits with Northwestern (82 ft): well above the Aiken State course (39 ft on the reference watch) and well under Clover (193 ft) and Newberry / The Farm (205 ft). The reference watch (95–102 ft at Starlight, 102 ft at Northwestern) gives the same picture. Flatness alone cannot explain the drop in times, and it cannot explain the GPS readings at all (Sections 6 and 16).

Figure 16. Total climb: Starlight 2026 vs other courses



One rule for every course: the median of device-recorded watch readings (athletes' public Strava activities and Lake Wylie Chargers' watches; Appendices A, B, D, E), with no readings dropped; manual entries excluded. Aiken and Newberry have only the reference GPS watch (the report author's). These medians are the climb inputs of the terrain model (Figure 22; floor 39 ft). Barometric climb readings vary by device, so ranges are wide (ranges above 330 ft are cut and end in an arrow).

Total climb by course, one rule for every course: the median of the device-recorded watch readings (bar), with the range of readings (line) and the number of watches. These are the same climb inputs the terrain model uses (Figure 22). Starlight 2026 (85 ft, n=39) sits with Northwestern (82 ft) and below Victory Bolt (115 ft). York County Championships (Catawba Bend; start rerouted on race day, not re-measured) is the hilliest at 229.5 ft. Aiken and Newberry have only the reference-watch reading.

Course	Climb used (ft; median)	Watches	Range (ft)
Pink House, Hardeeville	1.5	8	0-98
Warrior, Pawleys Island	26.5	4 ^o	0-62
Aiken State course (reference GPS watch only)	39	1 ^o	-
McAlpine, Charlotte NC	52.5	2 ^o	52-53
Northwestern HS, Rock Hill (Trojan + home meets)	82	55	61-217
Mike Moore, Saluda Shoals	82	5	72-108
Starlight 2026, Riverside HS (athletes' watches)	85	39	36-180
Yellow Jacket, Greer HS	108	5	59-297
Victory Bolt, Lake Wylie HS (B*)	115	11	56-466
Lakelands, Greenwood	141	1 ^o	-
SCA	145	1 ^o	-
Lake Murray, Chapin	147	11	121-413
Eye Opener, Spartanburg	154	21	141-220
Landrum	180	16	125-203
Clover Classic (B*)	193	15	173-325
Newberry / The Farm (reference GPS watch only)	205	1 ^o	-
York County Championships, Catawba Bend (B*)	229.5	18	215-294

COURSE	LAKE WYLIE COURSE SCALE (AIKEN STATE = 0)
Northwestern / Trojan, Rock Hill	-9
Aiken State	0
Victory Bolt	+5
Landrum	+20
Newberry	+34
Clover	+60

† Northwestern: 102 ft from the reference GPS watch (max 661 ft; range about 625-661 ft; about 3.1 mi), shown in Figure 14. ‡ Newberry / The Farm: reference GPS watch on 9/30/2026 (205 ft gain, max 516 ft, range about 468-513 ft, about 3.1 mi), shown in Figure 14. § Clover Classic course (Clover High School, Clover SC): measured 3.1 mi (course credits: Section 22); the reference GPS watch recorded 200 ft gain, max 787 ft, range about 719-787 ft, about 3.1 mi (Strava), shown in Figure 14. * Aiken State course: the reference GPS watch recorded 39 ft (max 522 ft, range about 502-522 ft, about 3.0+ mi) on the State course layout recorded in 2026, shown in Figure 14; it is not claimed to be identical to the 2025 State Meet layout. ¶ Victory Bolt XC Invitational course, Lake Wylie High School, York SC: measured 3.1 mi (course credits: Section 22). Reference Strava profile: 115 ft gain, max 753 ft, about 697-753 ft over 3.1 mi (Figure 14). A second trace of the same course reads 72 ft gain, max 726 ft (about 685-726 ft); Figure 15 shows the two traces side by side, and the difference is device and GPS variance. The official course map gives 3.12 mi, about 85 ft gain and 27 ft relief (Figure 15). Other Strava traces read 72-115 ft (72 ft is common), including a Strava trace (recording S016: 3.16 mi, 72 ft). 11 of the 17 Chargers recordings report climb: median 115 ft; readings split between about 56-74 ft (5 watches) and 213-227 ft (4), with one at 115 ft and one outlier at 466 ft (Appendix E). That spread shows how noisy single-watch climb readings are, which is why this report uses the reference profiles and ranges for climb rather than single readings. **Climb used in the model.** The left-hand table, Figure 16 and the terrain model in Section 19 use one rule for every course: the median of the device-recorded watch readings (athletes' public Strava activities, Section 7 and Appendix D, and the Chargers' recordings, Appendix E). Aiken and Newberry have only the reference-watch reading. No reading is dropped: the two high Yellow Jacket readings (280 and 297 ft) stay in, and the median (108 ft) is robust to them. ° Fewer than five readings: low confidence. The course-scale ratings (right-hand table) are Lake Wylie coaching-staff reference values. A higher scale number means a harder, slower course.

The flattest course in the comparison tells the same story. The Aiken State course (37-39 ft; 39 ft on the reference GPS watch) has well under half of Starlight's climb (39 ft, against 85 ft on the athletes' watches and 95-102 ft on the reference watch) and is the SCHSL state course. If flat ground alone produced Starlight-2026-like times, the 2025 State Meet at Aiken would have produced them too. It did not: the same athletes ran **7.3% faster** at Starlight 2026 than at Aiken, against 2.8% for the 2025

Starlight field a year earlier, a 4.5-point swing in which both columns already include a year of growth (Section 5). Terrain explains part of any fast day. It does not explain a gap of this size against an equally flat Northwestern and a far flatter Aiken.

SECTION 9

ATHLETE OBSERVATIONS

A few athletes noted the distance in their public Strava posts. They are included only as observations from the people who ran the race, not as measurements. They reflect athletes paying attention to their sport.

"course is mad sus... 150m short"
2026 Runner G (Boys Elite), public Strava
"Sus course though"
2026 Runner D, public Strava
"course was slightly short and very flat"
2026 Runner P (Boys Elite), public Strava

Runners D and G are the same labels used in the GPS table (Section 6). Runner P's Strava entry has no GPS data, so that runner is not in the GPS table. Section 12 returns to what the athletes wrote, and why it matters.

SECTION 10

CONSIDERATIONS AND POSSIBLE EXPLANATIONS

A fair review has to ask what else could produce fast times. Each factor below is considered on its merits: what it can explain and what it cannot.

Weather

Meet (race window)	Station	Temp (°F)	Dew point (°F)	Humidity	Wind (kt)	Temp + dew point	Rough heat slowdown
Starlight 2026, Oct 17 (5-10 PM)	KGSP	60 → 48	36-38	41-68%	3-8	86-98	none
Starlight 2025, Oct 18 (5:15-9:30 PM)†	KGSP	78 → 67	58-61	54-73%	6-9	125-138	≈1-3%
Woodmont 2026, Oct 3 (8-11 AM)*	KGSP	72-77	70-71	82-93%	3-4	142-148	≈3-4.5%
Woodmont 2025, Oct 4 (8-11 AM)*	KGSP	58-65	53-56	73-83%	6-9	111-121	≈0.5-1%
Wendy's 2026, Oct 3 (8-11 AM)*	KCLT	73-75	70-71	87-90%	3-5	143-146	≈3-4.5%
SCHSL State 2025, Aiken, Nov 14-15 (9 AM-1 PM)	KAIK	55-74	25-44	19-57%	5-13	88-119	≈0-1%
Coaches Classic 2025, Newberry, Oct 11 (8 AM-12 PM)	KEOE	55-63	48	59-77%	8-14	104-111	≈0-1%

Hourly airport observations (Iowa Environmental Mesonet ASOS archive). KGSP (Greenville-Spartanburg) is about 5 miles from Riverside HS. Open-Meteo reanalysis for the school's location agrees for Oct 17, 2026 evening: 52-57°F, 49-59% humidity, wind 8-9 mph, no rain. The 2026 Starlight races ran from 5:15 to 9:30 PM; the row uses the hourly observations from 5:53 to 9:53 PM. The 2025 row assumes the host's tentative race schedule on the 2025 MileSplit meet page (about 5:15 to 9:30 PM); that row also uses the observations from 5:53 to 9:53 PM. The wider window adds a warmer early evening but leaves the rough slowdown at about 1-3%, so no weather adjustment in this report changes. †The host's 2025 race-day document also listed a "Weather Caution Schedule" about 2 hours earlier (first race 3:15 PM, Boys Elite 7:30 PM); public sources do not say which schedule was used. *Race windows for Woodmont and Wendy's are assumed to be morning and were not confirmed. "Rough heat slowdown" uses the temperature + dew point guide popularized by coach Mark Hadley. It is a coaching rule of thumb, consistent in direction with peer-reviewed findings that distance running slows progressively in warmer conditions (Ely et al., 2007), but it is not a precise model.

- What it explains:** a real part of the raw gap. Starlight 2026 was a cool, dry night, which is near-ideal for running. Woodmont 2026 was hot and humid. Starlight 2025 was warm. Allowing for these with a coaching rule of thumb (not a precise model), the Woodmont comparison falls from 5.8% (after fitness) to roughly 1.3-2.8%, and the 2025-vs-2026 swing falls from 8.8 points to roughly 2-6 points.
- What it doesn't explain:** the GPS readings, which weather cannot affect. It also doesn't explain the gaps against cool-weather reference meets: 7.3% faster than the Aiken state course and 9.5% faster than the Coaches Classic, against 5.9% for the 2025 field. And it doesn't explain why 84% set lifetime bests when many of those bests were run in cool late-season championship conditions.

Surface and layout mix

The share of the race on the track was about the same in both years: about 2,100 m in 2026 (the 900 m opening plus about 300 m per loop), and "≈2000 meters of the race is on the track" in 2025, according to the host's own 2025 race-day document. Track running is therefore not used here to explain the faster times. The 2026 layout does drop the grass sections (the practice-field loop and the football-field finish around the discus slab) and runs along a dirt/gravel road. A faster surface lowers times with no change in distance. **Explains:** part of the time gap, a confounder alongside distance. **Doesn't explain:** the GPS readings. A faster surface does not shorten what a watch records. If anything, open track running tends to make watches read at or slightly over true distance (Section 6), so the roughly 2 km of track makes the short readings more notable, not less. The ±1.5% band on the GPS estimate comes from one team's course-to-course spread, not from the track.

Last-minute course changes for safety

An evening race in the dark raises real concerns: lighting, footing on gravel, wet or blocked sections. A host could reasonably reroute a section on race day. **Explains:** a one-time shortfall of any size, with no intent involved. **Doesn't explain:** the change from 3 loops to 4 was published in advance in the 2026 host document, not made on the night. If a section was rerouted, a quick re-measurement or a note in the results would settle it.

Turn markers or flagging moved or misread

At night, a moved flag or a cone knocked over between races could let runners cut a corner. **Explains:** a shortfall in one race or one loop. **Doesn't explain:** all nine races, from 5:15 PM to 9:30 PM, were fast by a similar amount (4.7-7.8% vs season best). A course-marking problem that came and went would show up as uneven results between races.

A new 4-loop design, possibly not re-measured

The 2026 layout is new. If it was laid out from the old course or from a map, and not wheel-measured after the change, a shortfall of 100–300 m is easy to produce: about 25–75 m per loop. **Explains:** a consistent shortfall across every race, which is the pattern in the data, and the GPS readings. This is the most likely and most innocent explanation. **Doesn't explain:** it cannot be confirmed from public records alone.

Competitive draw, fast fields and pack racing

Starlight draws deep fields under the lights, with music and an announcer, and pack racing helps runners go faster. **Explains:** a modest boost, mostly at the front of elite races. **Doesn't explain:** JV and BLUE races moved as much as the Elite races. The 2025 edition had the same format and atmosphere at the same venue and ran slower than Woodmont.

Night racing

Racing under the lights on a cool evening, with music and a crowd, may help. **Explains:** a modest boost. **Doesn't explain:** Lights Out at Blythewood HS (MileSplit 764730) was also a night race on 10/17 and ran –3.7% on this report's course speed index (n=384, tier C). Its host describes the course in writing: "The course is flat and promises to be fast" and "Less than 700 meters of the race is on a track surface." That is a host description, not a measurement, and no climb value is available, so the model compares it with a flat-course floor. On the same night, in the same weather and at the same point in the season, Starlight still ran about 2.8–2.9 points faster on the index under every fitness assumption tested (–6.6% vs –3.7% in the base case), and about 4.2 points faster after the terrain adjustment (–6.9% vs –2.7%; Section 19). Both courses are flat; the terrain step adds 1.4 points only because Lights Out's unknown climb is set at the 39 ft floor. A raw gap of about 3 points fits a course about 3% short. The 2025 Starlight edition, also a night race at the same venue, indexed +0.3%; it is the only earlier edition with an index value. The 2021–2023 editions, also evening races, ran between 2.8% slower and 2.0% faster than the same runners at Woodmont (Section 3). Earlier night editions here means 2021–2025 only: the 2019 edition was moved to a morning schedule and the 2020 edition ran in daytime COVID waves. Night racing also cannot change a GPS reading.

Late-season taper and sharpening

Mid-October is late in the season. Many teams are tapering and sharpening workouts ahead of championship season, which naturally produces fast times and PRs. **Explains:** part of a fast night, across every race and every team, which is the pattern in the data. **Doesn't explain:** earlier Starlight editions were held at the same point in the calendar (Oct 16, 2021; Oct 15, 2022; Oct 18, 2025), so those runners were tapering too. Yet only 29.9% ran lifetime XC 5K PRs in 2025, against 84.2% in 2026 (Section 4), and watches at those editions read medians of 3.09–3.15 mi, against 3.01 mi in 2026 (Section 6). Taper cannot change what a GPS watch records. It explains part of a fast night, but not the 2026 jump or the GPS distance.

In-season fitness

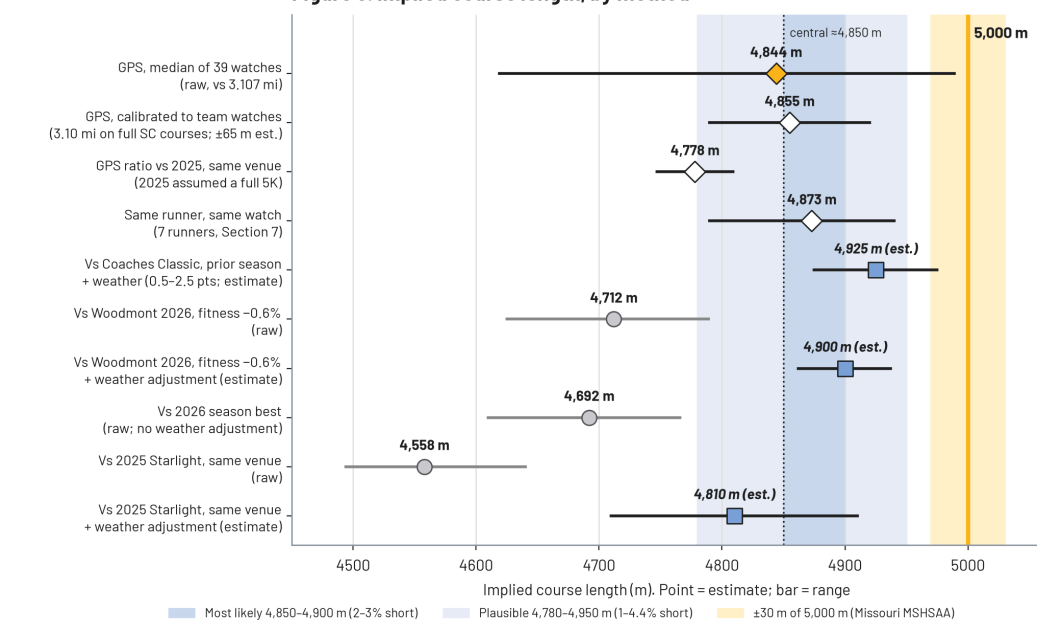
Runners do get fitter during the season, especially younger athletes and girls. **Explains:** perhaps 0.3% per week (0.6% is allowed for the two weeks since Woodmont) and part of the larger JV and girls gaps. The season-wide index (Section 17) assumes a faster rate, about 0.6% per week; at that rate the raw Woodmont estimate would move from 4,712 m to about 4,740 m, which changes no conclusion. **Doesn't explain:** the 2025 edition, run on the same date in the season, shows no comparable jump. Boys Elite, the group that changes least during the season, still moved 7.7 points against Woodmont compared with 2025.

Recommended next step: a public standard, not an assumption

This report asks nothing of the host. The public-record step is for SCHSL to adopt a course-measurement standard (Section 21 tiers), so every course's distance is measured and published the same way, and to treat marks from courses without a published measurement, including Starlight 2026, as non-standard. Nothing here suggests bad faith.

HOW SHORT? IMPLIED DISTANCE AND TOLERANCE

Figure 5. Implied course length, by method



Grey circles = raw time methods; blue squares = weather-adjusted ESTIMATES (a coaching rule of thumb with no published error, Section 10; values are judgments, not data); gold diamond = raw GPS; white diamonds = GPS calibrated against full courses (team watches; 2025 same venue; same runner's own watch). The calibrated-GPS bar (±65 m) is an ESTIMATE of course-level watch bias, not a sampling interval. Dotted line = central estimate (≈ 4,850 m).

GPS methods (diamonds) cluster at about 4,780–4,870 m: calibrated to the team watches, the 2025 same-venue ratio and the same-runner, same-watch test. Weather-adjusted time methods (blue squares; marked est., because the weather allowance is a rule of thumb) give about 4,710–4,975 m; raw time methods (grey circles) 4,558–4,710 m. The shaded band is the plausible range (4,780–4,950 m); the most likely range is 4,850–4,900 m.

METHOD	ESTIMATE	RANGE	KEY ASSUMPTION
GPS, median of 39 watches (raw, vs 3.107 mi)	≈ 4,844 m	4,619–4,989 m	No calibration (range = sampling only)
GPS, calibrated to team watches on full SC courses (3.10 mi)	≈ 4,855 m	4,790–4,920 m	Watches read here as on full SC courses (±65 m course-level bias)
GPS ratio vs 2025, same venue	≈ 4,780 m	4,747–4,809 m	2025 was a full 5K and read the same way
Same runner, same watch (Section 7)	≈ 4,870 m	4,790–4,940 m	Each watch reads Starlight as it reads its own other courses
vs Coaches Classic, prior season, + weather	≈ 4,925 m	4,875–4,975 m	The 0.5–2.5-point gap left after weather (Section 5) is all distance
vs Woodmont 2026, –0.6% fitness (raw)	4,712 m	4,625–4,789 m	Same conditions at both meets
vs Woodmont 2026, + weather adjustment	≈ 4,900 m	4,862–4,937 m	Woodmont 2026 heat costs about 3–4.5%
vs 2026 season best (raw)	4,692 m	4,610–4,766 m	No allowance for fitness or weather
vs 2025 Starlight, same venue (raw)	4,558 m	4,494–4,640 m	2025 3-loop course was a full 5K
vs 2025 Starlight, + weather adjustment	≈ 4,810 m	4,710–4,910 m	As above, plus the weather in the Section 10 table

Time-based estimates assume time scales in proportion to distance; with Riegel scaling (power law, $\text{time} \propto \text{distance}^b$; Riegel, 1981) and $b = 1.06$, a common approximation, they move by only about 15–20 m. Riegel's own fitted exponents were 1.077 for men's and 1.083 for women's world records. Weather adjustments use a coaching rule of thumb with no published error, so the time methods carry less weight than the GPS calibration.

Taken together, the evidence points to a course of most likely about **4,850–4,900 m**, 2–3% short (plausible **4,780–4,950 m**, about **50–220 m** or **1–4.4% short**). How the figures are set: the calibrated GPS ($5,000 \times 3.01 \div 3.10 \approx 4,855$ m) and the same-runner, same-watch median (≈ 4,870 m) give the centre; the 2025 same-venue GPS ratio (≈ 4,780 m, which assumes the long-reading 2025 watches were exact) sets the low end; the weather-adjusted time methods (Woodmont ≈ 4,900 m; Coaches Classic 4,875–4,975 m) set the high end. Raw time methods (4,558–4,710 m) are lower because they also contain the ideal weather, late-season sharpening and the faster layout. Earlier drafts gave 4,700–4,900 m on the assumption that watches over-read by 1–3%; the team-watch baseline shows they do not, so that range is replaced.

Acceptable tolerance: what the rules say

- **Road racing (USATF Rule 240.3(a)):** "Courses meet certification standards if the measurements demonstrate that the course is at least the stated distance. In order to ensure that a course is not short, the measurement must include an addition of 1/1000th of the stated race distance." The USATF Road Running Technical Council calls this 0.1% the "short course prevention factor." A certified course is measured so that it is not short.
- **Cross country (NFHS Rule 8-1-1, adopted by SCHSL):** no numeric tolerance. Courses are 2,500–5,000 m, "measured along the shortest possible route a runner may take." The SCHSL Rules Section says only that the state-meet course "will be approximately three miles."
- **One state that sets a number:** Missouri's MSHSAA requires district host courses to be "5000 meters (+/- 30 meters), measured by a wheel on the tangents," a 0.6% tolerance.
- **Starlight 2026:** raw GPS median ≈160 m short (3.1%); GPS ratio against 2025 at the same venue ≈220 m short (4.4%). Central estimate ≈150 m short (3%), plausible 50–220 m (1–4.4%). Raw times ≈350 m short (about 7%). The central estimate is about 5 times the MSHSAA ±30 m tolerance and about 30 times the USATF 0.1% (5 m) factor; the plausible low end (50 m) still exceeds both.

SECTION 12

THE ATHLETE IMPACT: WHY THIS MATTERS

Everything above is about meters. This section is about the young people who ran them. A course labeled 5K that is not a 5K is not just a technical slip. When the distance is off, it can hurt the athletes who race on it, through no fault of their own.

- **To a high school runner, a race called "5K" is official.** The results say 5,000 m, the time goes on MileSplit, on the team board and into the athlete's own sense of who they are as a runner. A watch reading or a footnote does not change that, and it shouldn't have to.
- **An inflated PR gives a sense of accomplishment that is only partly real.** The effort was real and the improvement may well be real. But part of the number belongs to the course, and the athlete has no way of knowing which part.
- **The next honest 5K can feel like going backwards.** When these athletes race a full, measured course in championship season, many will run slower than their Starlight time. Some will conclude they have regressed, doubt their training or lose confidence at exactly the wrong moment, when in fact they are running as well as ever.

38 OF 39

public 2026 Starlight activities

Of the 39 public Strava activities from the 2026 meet, **38 contained PR language or PR / best-effort badges.** The athletes were thrilled, and they had every right to be. They ran hard, raced well and celebrated with their teams.

In their own words

Excerpts from public Strava posts, names omitted. Personal names, school names and any health mentions are removed. The wording is verbatim except that each exact official time is replaced with [time omitted] and emojis are removed. Labels match Figure 4; the watch reading is that runner's Starlight 2026 GPS distance.

"IM ACTUALLY SO HAPPY!!! OFFICIAL TIME [time omitted], HUGE PR FROM [time omitted]"

Runner AJ · watch 3.00 mi

"New pr [time omitted] my old pr was [time omitted]"

Runner AO · watch 3.02 mi

"MASSIVE PR [time omitted]"

Runner E · watch 3.03 mi

"Huge PR... So stoked for the team."

Runner M · watch 3.10 mi

"[time omitted] PR"

Runner I · watch 3.01 mi

"New PR!! Went out hard ... attacked the last bit to get to the PR"

Runner AC · watch 3.00 mi

Some athletes noticed that something was off. Their honesty is to their credit, and it shows the problem plainly: the athletes are left to sort out, on their own, whether a time printed as a 5K should count.

"New PR [time omitted] bc the course was short"

Runner S · watch 3.04 mi

"Course is mad sus"

Runner G · watch 3.02 mi (see also Section 9)

"Sus course though"

Runner D · watch 3.05 mi

"everyone's watches were completely different distance but i felt so amazing and ill still count this as a MINUTE PR!!!!"

Runner AG · watch 2.97 mi

"everyone's watches had completely different distances, apparently it is in fact a 5k"

Runner AI · watch 2.99 mi

"I never hit 3.1 ... so I guess I was just hugging the sides or my watch was wrong"

Runner AH · watch 2.94 mi

The last two quotes matter most. One athlete wrote that it was "apparently... in fact a 5k." Another, whose watch read 2.94 mi, assumed the missing distance was their own fault. Young athletes trust the adults who run their meets. That trust is exactly why the distance has to be right.

Featured case: one runner, five races, one watch (Runner AJ)

The original Strava post (activity S017) is described rather than reproduced, because it shows the athlete's name and photos. At Starlight 2026 the watch recorded **3.00 mi** with 102 ft of climb, and the caption celebrated a large PR (quoted above; exact times omitted). On four other September courses, the same runner's watch read **3.05–3.12 mi**: Eye Opener 3.12, Lakelands 3.08, Hare & Hounds 3.10 and Yellow Jacket 3.05, where the runner had set the previous PR. The improvement was real: per mile recorded, the Starlight pace was quicker than at Yellow Jacket. That is worth celebrating. But the official time dropped by noticeably more than the pace did, and part of that drop is the course, not the runner. The next time this athlete races a full, measured 5K, a slower time than the Starlight mark could feel like a step back, even on a day of genuine progress.

These young people deserve marks they can trust. They train through summer heat, early mornings and hard workouts, and they deserve to know that a 5K PR means 5,000 meters. None of this is their fault, and none of it should be held against them. The fix is not blame. It is standards: measure the course, publish the measurement, and flag what is not verified, so that every South Carolina runner's best time means exactly what they think it means.

SECTION 13

CONCLUSION AND HOW TO TREAT THESE TIMES

Again: this is not on the athletes.

The runners at Starlight 2026 raced hard and honestly on the course in front of them. Responsibility for course accuracy belongs to race directors, coaches and governing bodies, and today South Carolina does not give them a strict measurement standard to follow. Nothing in this report questions any athlete's effort, place or result.

The evidence agrees across independent sources: the host's own layout change, the times of more than 1,000 runners compared with their own marks, lifetime PR rates, trusted SC reference courses, the 2021–2025 editions at the same venue, 130 public watch recordings across four editions, the same runners' watches on other courses, and the course's own elevation profile. Considered fairly, including near-ideal weather, late-season sharpening and possible race-day safety changes, the 2026 Starlight course was most likely about **4,850–4,900 m**, roughly 100–150 m (2–3%) short of 5,000 m (plausible 50–220 m).

Recommended treatment of Starlight 2026 marks

- **Flag the meet as non-standard** (distance unverified, likely short) on results and in team records.
- **Do not count Starlight 2026 times as true 5K PRs or season bests**, or as rankings, virtual-meet or seeding marks.
- **Formal correction: distance only.** If a correction is used for rankings or seeding, use about **3%** (plausible 1–4.4%): divide the Starlight time by $(1 - 0.03)$. This is the correction used in Section 20.
- **Rough effort comparison (not a correction).** For coaches and athletes comparing efforts, Starlight times ran about 5–6% fast relative to the same athletes' marks elsewhere. Only about 3% of that is distance; the rest is ideal weather, the changed layout and flat terrain, which a course correction should not remove. For example, a 16:00 at Starlight is roughly a 16:48–16:58 effort on a typical, true 5K.
- **Places, team scores and awards are unaffected.** Everyone ran the same course.

Status: This report relies on public records. The open questions are: the measured distance of the 2026 layout, how and when it was measured and by whom, the 2026 course map, and any race-day changes.

SECTION 14

RECOMMENDATIONS FOR SC COURSE STANDARDS

Starlight is one case; the issue is statewide. Courses listed as 5K but not measured as 5K are a disservice to athletes, who chase PRs and earn rankings, seeding and recruiting attention from these numbers. They are also a disservice to coaches who plan training around them and to the sport's credibility. These are practical steps coaches can take together. Sections 15–21 then show how the same problem looks across the whole 2026 season and propose a simple rating system.

1. Measure with a calibrated wheel on the shortest legal route

- **NFHS Rule 8-1-1**, which SCHSL adopts: "Measurement shall be along the shortest possible route a runner may take on the prescribed course."
- Calibrate the wheel on a known distance, such as lane 1 of a 400 m track. Walk the tangents, keep the wheel on the ground, and measure twice or with a second person. This follows GATFXCCA (Georgia) and MileSplit best-practice guidance.
- Do not use GPS, phone apps or online maps as the final measure. GATFXCCA, KSHSAA and MileSplit's guide all say this explicitly.
- Re-measure whenever the layout changes. On a loop course, a small error in one loop is multiplied by the number of loops.

2. Publish the map and the measured distance before the meet

- **USATF Rule 251.2:** "The race distance must be declared and the course briefly described at the time invitations are extended."
- Post a map with kilometer and mile marks, how and when it was measured, and by whom. If a course comes up short, publish the true distance, as GATFXCCA recommends.

3. Have results platforms flag unmeasured or short courses

- Ask MileSplit SC and SCRunners for a visible course-status flag, such as "unverified" or "short." There is precedent: MileSplit Florida reclassified known-short courses from 5000 m to 3 miles, and MileSplit Iowa does not submit times from courses of questionable length to its rankings.

4. Keep short-course marks out of rankings, PR lists and seeding

- Season bests, state lists, virtual meets and seeding should use marks from measured courses only.

5. Ask the SCHSL and the SCTCCCA to set a standard

- Adopt a numeric tolerance, such as Missouri's ±30 m, measured by wheel on the tangents and never knowingly short.
- When a meet is sanctioned, require a short measurement statement and course map. Flag unverified courses in results.
- The SCTCCCA could run a short measurement clinic and keep a public registry of measured courses. SC coaches already rate course distance in MileSplit SC's 2025 course-ratings survey of 37 coaches.

SECTION 15
STARLIGHT AGAINST THE REST OF THE STATE

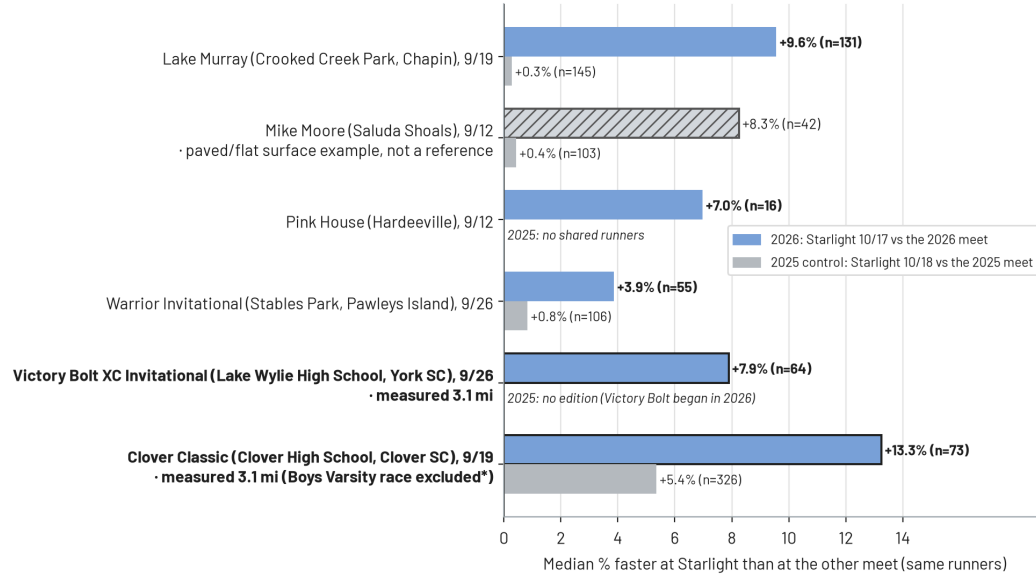
Sections 2–14 looked at Starlight on its own terms. This section and the five that follow widen the lens to the whole 2026 South Carolina season. The point is not one meet or one host. Starlight 2026 is simply the clearest case study of a statewide gap: South Carolina has no shared standard for what a "5K" cross-country course must be, and the rankings have no way to score whether a course was accurate. The athletes in every one of these races ran honest races on the course they were given. Responsibility for course accuracy lies with race directors, coaches and governing bodies.

The first check is the simplest one: the **same runners** at Starlight 2026 and at six other well-attended 2026 SC meets, matched by MileSplit athlete ID. The fifth is the **Victory Bolt XC Invitational (Lake Wylie High School, York SC), 9/26 · measured 3.1 mi**, with its full field of 536 finishers. The sixth is the **Clover Classic (Clover High School, Clover SC), 9/19 · measured 3.1 mi**: its girls' races and boys' non-varsity race (340 finishers); the Boys Varsity race, diverted around a copperhead, is excluded. The 2025 editions, compared with Starlight 2025, are the control; Victory Bolt was first held in 2026. Mike Moore is listed as a paved/flat surface example only (Section 18) and is left out of every pooled figure.

Other 2026 meet	Same runners	Median, Starlight faster	Middle half (IOR)	Faster at Starlight	2025 control (Starlight 2025 vs 2025 meet)	2026 course index	GPS median (mi)
Lake Murray Invitational Crooked Creek Park, Chapin, Sat 9/19 · 763738	131	+9.6%	+6.4 to +11.6	99%	+0.3% (n=145)	-0.3%	3.00 (n=11)
Mike Moore Classic (paved/flat surface example; not a reference) Saluda Shoals Park, Columbia, Sat 9/12 · 729061	42	+8.3%	+5.9 to +10.1	98%	+0.4% (n=103)	-0.4%	3.14 (n=5) low confidence (n<8)
Pink House Invitational Hardeeville, Sat 9/12 · 713232	16	+7.0%	+6.0 to +9.1	100%	no shared runners	+0.5%	3.065 (n=8)
Warrior Invitational Stables Park, Pawleys Island, Sat 9/26 · 770244	55	+3.9%	+2.6 to +5.1	100%	+0.8% (n=106)	-3.9%	3.00-3.01 (n=4) low confidence (n<8)
Victory Bolt XC Invitational · measured 3.1 mi Lake Wylie High School, York SC, Sat 9/26 · 740385	64	+7.9%	+5.7 to +10.2	95%	no 2025 edition	-0.1%	3.15 (n=17)
Clover Classic · measured 3.1 mi* Clover High School, Clover SC, Sat 9/19 · 719603	73	+13.3%	+10.8 to +16.4	100%	+5.4% (n=326)	+4.9%	3.055 (n=18)* tree cover lowers GPS on wooded courses; Starlight is open
Pooled: Lake Murray, Pink House, Warrior	202	+7.2%	+4.7 to +10.6	100%			
Pooled: + Victory Bolt	266	+7.3%	+5.0 to +10.5	98%			
Pooled: + Clover (five XC meets; Mike Moore left out)	339	+8.8%	+5.8 to +12.0	99%			Starlight 2026: index -6.6%, GPS 3.01 mi (n=39)

Positive = faster at Starlight. Medians of each runner's own % gap; pairs over 20% excluded. "Warrior Invitational" here is the Pawleys Island meet at Stables Park (meet 770244), not the Warrior XC Invitational at Wannamaker Park. Pink House 2025 shared no schools with Starlight 2025. Victory Bolt: 65 matched runners, 1 pair over 20% excluded; Starlight faster for 61 of 64. * Clover 2026: girls' races and boys' non-varsity race only (the Boys Varsity race was diverted and is excluded); 79 matched runners, 6 pairs over 20% excluded; Starlight faster for all 73. Clover's distance rests on the course measurement (3.1 mi, measured by the report author; tier B*). Its watch readings (Chargers' watches, Figure 19; median 3.055 mi, n=18) are treated like every other course's. Tree cover can lower watch readings on any wooded course (by 3.5–8.9% in urban and forest areas in Gilgen-Ammann et al., 2020, and by 6–7% on average on a wooded trail in a pilot study of six runners, Tripure et al., 2026), which matters most on Clover and on the heavily wooded York County course (3.07 mi); Starlight's open campus route has little cover. Clover is the hilliest course here (193 ft of climb on the watches), its 2026 pairs come only from the girls' races and the boys' non-varsity race (the fastest-improving groups), and its index ran slower in 2026 than in 2025, so its gap mixes terrain, race mix and distance. Every row uses one method: each athlete's best mark at each meet from MileSplit performance data, the same as the 2025 controls (Clover 2025: +5.35%, n=326). Course index and GPS medians are from Sections 17 and 19 and Figure 18. Raw comparisons, not adjusted for fitness, weather or terrain.

Figure 17. Same runners: Starlight vs six other SC meets, 2026 and 2025



Source: MileSplit performance data, each athlete's best mark at each meet, matched by MileSplit athlete ID (same method for 2026 and the 2025 controls); pairs with $|\text{gap}| \geq 20\%$ excluded. Not adjusted for fitness, weather or terrain. Mike Moore (hatched) is a paved, flat surface example, never a reference, and is left out of every pooled figure. Victory Bolt: 64 shared runners. * Clover 2026: girls' races and boys' non-varsity race (73 shared runners); the Boys Varsity race was diverted around a copperhead and is excluded. Clover is the hilliest course here (193 ft median watch climb), and its 2026 pairs come from faster-improving groups, so its gap mixes terrain, race mix and distance. Lake Murray: mud, climb and September conditions (Section 15).

In 2025 the Lake Murray (+0.3%, n=145), Mike Moore (+0.4%, n=103) and Warrior (+0.8%, n=106) comparisons were within 1%; Pink House 2025 shared no runners with Starlight 2025 (n=0), so it has no 2025 control (Clover, the hilliest course, was +5.4%). In 2026 every group of runners was 3.9–13.3% faster at Starlight, including 7.9% against the measured Victory Bolt course (n=64) and 13.3% against the measured, hilly Clover course (n=73; Boys Varsity race excluded), and 99% of the 339 pooled pairs (Mike Moore left out) were faster there. Mike Moore (hatched) is a paved/flat surface example, not a reference.

Being honest about Lake Murray

The largest gap, 9.6% against Lake Murray, should not be read as the size of Starlight's shortfall. Eleven public GPS recordings from Lake Murray on 9/19 have a **median of 3.00 mi** (range 2.90–3.04), about the same as Starlight's 3.01 mi (Appendix D). Two of them (2.95 and 2.90 mi) have activity IDs that date from one to two weeks after 9/19 and may not be race recordings; without them the median is 3.01 mi (n=9). **Lake Murray may also be short.** Its course index is –0.3%, about 2.5% faster than its 147 ft of climb predicts, a reason to check its distance rather than proof (Section 19). The rest of its gap with Starlight is mostly conditions, not distance: the race was run on a **wet, muddy** course with more climb (median 147 ft against 85 ft at Starlight), four weeks earlier in the season in **warmer September weather**. That is exactly the season-wide point. A mark listed as "5K" mixes distance, terrain, surface and weather, and nothing in the results tells a reader which is which.

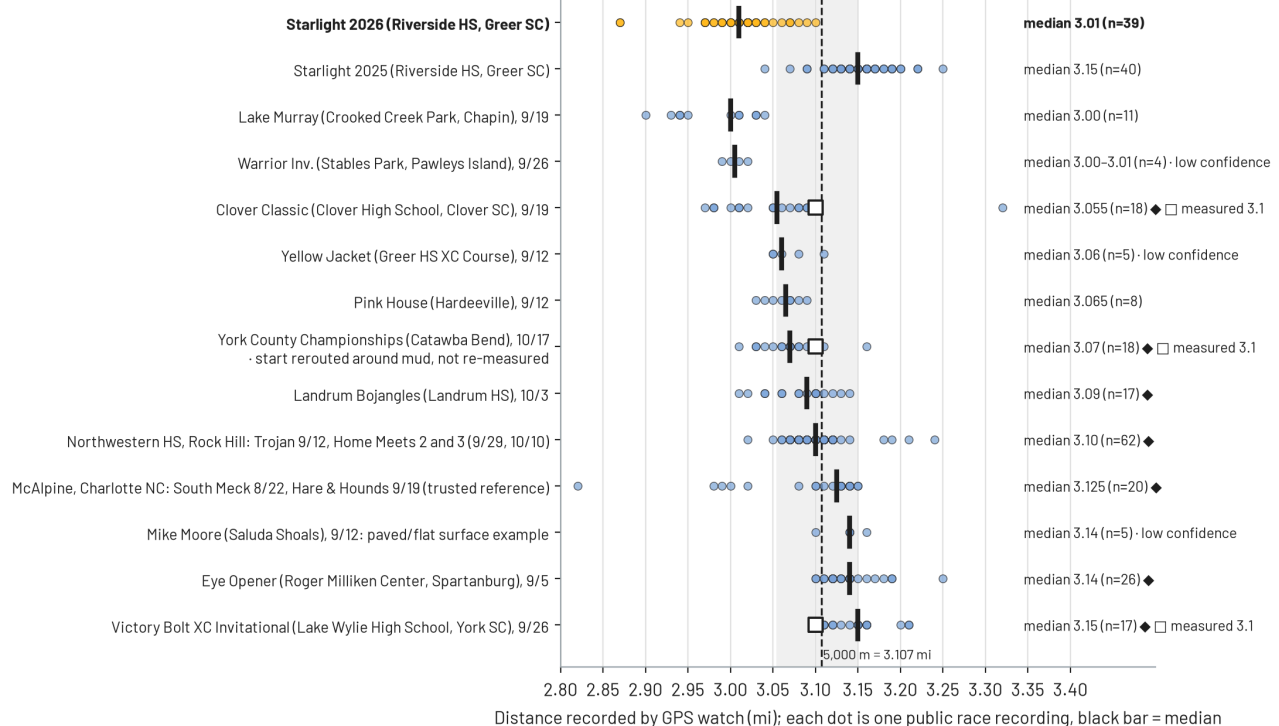
Disclosure. One runner in Section 7 (Runner U) wore the same watch at both meets. It read **2.93 mi at Lake Murray and 3.02 mi at Starlight**, the only same-watch case in this report where another course read shorter than Starlight. That runner's other two courses read 3.06 mi (Yellow Jacket) and 3.12 mi (Eye Opener), so the runner's Starlight reading still sits below their own median (Section 7). It fits both Lake Murray and Starlight being near 3.0 mi.

GPS by course

Every course with public race-day GPS data in this project is listed below. On full SC courses this season, one team's watches read a median 3.10 mi (Section 16), so a median near 3.00 mi points to a course about 3% short, give or take about 1.5% of course-level watch bias. It is an estimate, not a measurement. Full-length courses read medians of 3.055–3.15 mi. Every median is shown with its n; medians from fewer than 8 recordings are low confidence. Venues are pooled: Northwestern HS (the Trojan Invitational and two home meets) and McAlpine (South Meck and Hare & Hounds). Lake Wylie Chargers recordings (Section 16) are folded in at Northwestern HS, Eye Opener (Roger Milliken Center), Landrum, Victory Bolt, the York County Championships (Catawba Bend) and McAlpine. Clover's watch readings are treated like every other course's; its distance rests on the course measurement (3.1 mi, tier B*). A median near 3.00 mi is not unique to Starlight: Lake Murray and Warrior (Pawleys Island) read about the same. What sets Starlight apart is the combination: a same-venue drop from 3.15 mi (2025) to 3.01 mi, a published 3-to-4-loop layout change, and the largest index move in the state (+0.3 → –6.6; Section 17).

Course (2026 unless noted)	Recordings	Median (mi)	Range (mi)	Median as m (raw, no over-read allowance)	Links
Starlight 2026 (Riverside HS, Greer SC)	39	3.01	2.87–3.10	≈4,840	Appendix A
Starlight 2025 (Riverside HS, Greer SC)	40	3.15	3.04–3.25	≈5,070	Appendix A
Lake Murray (Crooked Creek Park, Chapin), 9/19	11	3.00	2.90–3.04	≈4,830	Appendix D
Warrior Inv. (Stables Park, Pawleys Island), 9/26	4	3.00–3.01	2.99–3.02	≈4,840	Appendix D
Yellow Jacket (Greer HS XC Course), 9/12	5	3.06	3.05–3.11	≈4,920	Appendix B
Pink House (Hardeeville), 9/12	8	3.065	3.03–3.09	≈4,930	Appendix D
Northwestern HS, Rock Hill: Trojan 9/12, Home Meets 2 and 3 (9/29, 10/10)	62	3.10	3.02–3.24	≈4,990	Appendices B, E (60 Chargers); one venue, three meets
Landrum Bojangles (Landrum HS), 10/3	17	3.09	3.01–3.14	≈4,970	Appendix E (Chargers)
York County Championships (Catawba Bend), 10/17 - start rerouted around mud, not re-measured	18	3.07	3.01–3.16	≈4,940	Appendix E (Chargers); wheel-measured 3.1 mi (author, Ardis); heavily wooded
McAlpine, Charlotte NC: South Meck 8/22, Hare & Hounds 9/19 (trusted reference)	20	3.125	2.82–3.15	≈5,030	Appendices B, E (18 Chargers); wheel-measured, not certified
Mike Moore (Saluda Shoals), 9/12: paved/flat surface example	5	3.14	3.10–3.16	≈5,050	Appendix D
Eye Opener (Roger Milliken Center, Spartanburg), 9/5	26	3.14	3.10–3.25	≈5,050	Appendices B, E (20 Chargers)
Victory Bolt XC Invitational (Lake Wylie High School, York SC), 9/26	17	3.15	3.10–3.21	≈5,070	Appendix E (Chargers); map 3.12 mi; measured 3.1 mi (by the author)
Clover Classic (Clover High School, Clover SC), 9/19	18	3.055	2.97–3.32	≈4,920	Appendix E (Chargers); measured 3.1 mi (by the author); tree cover

Figure 18. GPS watch distance by course, 2025–2026



Source: public Strava activities (links in Appendices A, B, D and E); device-recorded GPS activities only. Shaded band = 3.055–3.15 mi (–1.7% to +1.4% vs 3.107 mi), the full span of the Lake Wylie Chargers' meet medians on full-length courses (overall 3.10 mi); the Starlight 2026 median (3.01 mi) is below all of them. ♦ = Includes Chargers recordings (Section 16). □ = course measured to 3.1 mi by a coach (Clover, Victory Bolt, York County Championships); the York start was rerouted around mud on race day and not re-measured. Venues are pooled: Northwestern HS (Trojan and two home meets) and McAlpine (South Meck and Hare & Hounds). Clover Boys Varsity race (diverted) excluded. 3 Chargers recordings (Eye Opener, Victory Bolt, Northwestern Home Meet 3) have no recorded device; dropping them changes no median.

Starlight 2026, Lake Murray and Warrior (Pawleys Island) cluster near 3.00 mi. Full-length courses (Starlight 2025, Northwestern HS, Landrum, Catawba Bend, Victory Bolt, McAlpine, Mike Moore, Eye Opener and Clover) read medians of 3.055–3.15 mi, the span of the blue band; Starlight's 3.01 mi is below every one of them. Pink House and Yellow Jacket sit at the low end. Clover (measured 3.1 mi) is drawn in blue like the other measured courses. □ = measured course (Clover, Victory Bolt and York County, whose start was rerouted on race day and not re-measured). Medians from fewer than 8 recordings (Warrior, Yellow Jacket, Mike Moore) are low confidence.

- **Mike Moore (n=5): 3.14 mi** (3.10–3.16), climb about 72–108 ft on the watches. A full distance, consistent with its USATF certificate; it is a paved/flat surface example, not a reference (Section 18).
- **Warrior Invitational, Pawleys Island (n=4): 3.00–3.01 mi** (2.99–3.02), with little climb. This agrees with the course index, which has it running about 3–4% fast (Section 17). Its distance is worth checking.
- **Pink House (n=8): 3.065 mi** (3.03–3.09). Most devices recorded about 0 ft of climb, so it is very flat. Its 2026 times were close to the reference (+0.5%).

SECTION 16

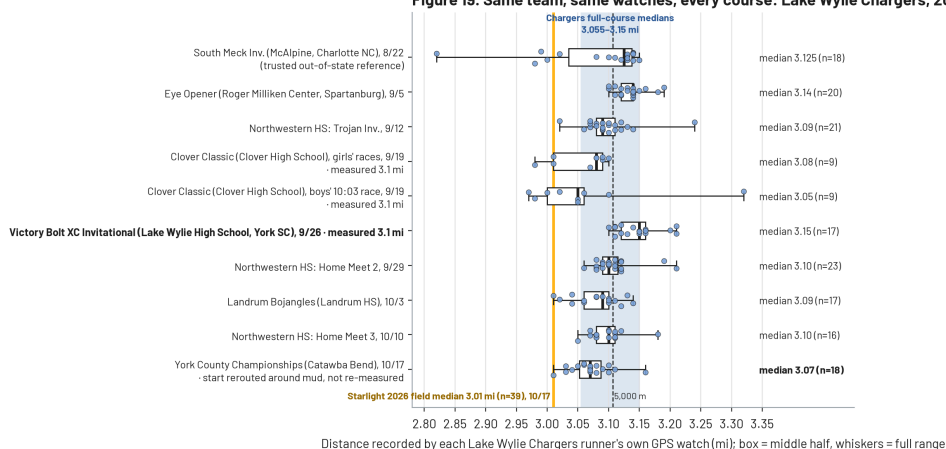
SAME TEAM, SAME WATCHES, EVERY COURSE

The cleanest device control in this report comes from one team. Lake Wylie Chargers runners posted public Strava recordings of their races at nine 2026 meets: **168 GPS recordings from 35 runners**, with names omitted and coded C1, C2... with the same code at every meet (Appendix E, with a link to every activity). The first is the **South Meck Invitational at McAlpine, Charlotte NC (8/22)**, a trusted, wheel-measured championship course (tier B; Section 5) used here as an out-of-state reference. Many runners raced five or more of these meets on the same watch, a mix of Garmin, Apple, Amazfit and other mainstream devices.

The honest-device baseline

The same group of Chargers runners, wearing the same devices, read a median **3.055–3.15 mi** (overall 3.10 mi) at every full SC meet they raced in 2026, from flat Northwestern (about 82 ft of climb on their watches) to the hillier Victory Bolt and Catawba Bend courses, and a median **3.125 mi** (n=18) at South Meck (McAlpine), the trusted out-of-state reference. Of 150 recordings at the 8 full SC meets, Clover included (6 courses; Northwestern HS hosted three of the meets), every one read between 2.97 and 3.32 mi, and only 8 read 3.01 mi or less (4 of them below 3.01; Appendix E); at South Meck, 14 of 18 read above 3.01 mi. On 10/17, watches in the **Starlight field read a median 3.01 mi** (n=39; 20 of 39 at or below 3.01 mi). That same day, the Chargers' watches read a median **3.07 mi** (n=18) at the York County Championships (Catawba Bend), a heavily wooded course wheel-measured at 3.1 mi by the author and Coach Ardis (start rerouted for safety, not re-measured; Section 19), with a median 229.5 ft of climb on their watches, more than twice the 85 ft the athletes' watches recorded at Starlight. Under heavy tree cover, that 3.07 mi median is consistent with a full course.

Figure 19. Same team, same watches, every course: Lake Wylie Chargers, 2026



Source: public Strava race activities of Lake Wylie Chargers runners (names omitted; codes C1, C2...; links in Appendix E); device-recorded GPS activities only. Uncertain, off-route, no-distance, extra-distance and non-race entries excluded. Blue band = range of the Chargers' meet medians on every full SC course (Clover included), plus South Meck at McAlpine (trusted out-of-state reference, wheel-measured). Group-card links: Appendix E. Clover is treated like every other course: its team median (3.055 mi, n=18) is close to York County's 3.07 mi. Tree cover can lower watch readings on any wooded course; Clover or Starlight. It is not used to set any reading aside. The Clover Boys Varsity race was diverted around a copperhead and is excluded (not plotted). 3 recordings have no recorded device; dropping them changes no median.

Each dot is one Chargers runner's own watch on race day. At every full SC meet, and at South Meck on the trusted McAlpine course (8/22, first row), the team's median falls in the blue band (3.055–3.15 mi), above the 5,000 m line or just below it. The Starlight 2026 field median (gold line, 3.01 mi) is lower than all but 8 of the 150 Chargers recordings at full SC meets, Clover included (4 equal it and 4 are below it). Clover rows are treated like every other course. The Clover Boys Varsity race was diverted and is excluded (not plotted); one other Clover recording (2.83 mi) is excluded by coach judgment (Section 22).

Meet (2026)	Date	Chargers GPS recordings	Median (mi)	Range (mi)	Median climb (ft)
South Meck Invitational (McAlpine, Charlotte NC) - trusted out-of-state reference	8/22	18	3.125	2.82–3.15	–
Eye Opener (Roger Milliken Center, Spartanburg)	9/5	20	3.14	3.10–3.19	154
Northwestern HS, Rock Hill: Trojan Invitational	9/12	21	3.09	3.02–3.24	82
Clover Classic (Clover High School), girls' races†	9/19	9	3.08	2.98–3.10	193
Clover Classic (Clover High School), boys' 10:03 race‡	9/19	9	3.05	2.97–3.32	189
Victory Bolt XC Invitational (Lake Wylie High School, York SC) - measured 3.1 mi	9/26	17	3.15	3.10–3.21	115
Northwestern HS, Rock Hill: Home Meet 2	9/29	23	3.10	3.06–3.21	82
Landrum Bojangles (Landrum HS)	10/3	17	3.09	3.01–3.14	180
Northwestern HS, Rock Hill: Home Meet 3	10/10	16	3.10	3.05–3.18	83
York County Championships (Catawba Bend)	10/17	18	3.07	3.01–3.16	230
Starlight 2026 field (Riverside HS), for contrast	10/17	39	3.01	2.87–3.10	85†

GPS rows only. Median climb is shown where at least five recordings report it; barometric readings vary by device. † Starlight climb: median of the 39 athletes' watches (Section 8). ° Fewer than 8 recordings: low confidence. 9 rows were excluded and are listed in grey in Appendix E: 2 recordings that likely include extra distance, 2 recordings that were not the race, 1 Clover recording excluded by coach judgment (2.83 mi on the measured course, far below the other Clover readings; JV Boys 5K, not the diverted race), 1 off-route recording, 1 recording with no distance, 1 recording whose pace shows it was not a race effort, and 1 uncertain second run. Every included recording has a source code; 4 come from team group-activity cards where the activity may be another athlete's, so they are listed as group activity links (their distances are kept). ‡ Clover: treated like every other course; its distance rests on the course measurement (3.1 mi, tier B*), and its median is close to York County's 3.07 mi. Climb on watches is noisy: at Victory Bolt, 11 of the 17 Chargers recordings report climb: median 115 ft; readings split between about 56–74 ft (5 watches) and 213–227 ft (4), with one at 115 ft and one outlier at 466 ft. That is why this report uses the median of all device readings for climb, for every course (Section 8).

What this does and does not show

- **It sets the baseline.** On full SC courses this season, ordinary watches on this team read a median 3.10 mi, essentially the 3.107 mi of a true 5K (Section 6). A field median of 3.01 mi is what this team's watches never produced on a full course.
- **It is not a same-watch test at Starlight.** The Chargers did not race Starlight, so the 39 Starlight recordings come from other athletes' watches. The same-runner, same-watch comparison at Starlight is in Section 7, and it points the same way.
- **A trusted out-of-state reference agrees.** At the South Meck Invitational (McAlpine, Charlotte NC, 8/22), a wheel-measured championship course re-measured and restored to a full 5,000 m in 2015 (Section 5), the same team's watches read a median 3.125 mi (n=18; range 2.82–3.15). 4 readings fell at or below 3.01 mi, the kind of spread single watches show on any course; the median is what counts.
- **Terrain does not explain it.** Catawba Bend and Victory Bolt are hillier than Starlight, and Northwestern is about as flat; all read 3.07 mi or more on these watches.
- **Climb readings.** The Chargers' watches recorded about 82 ft at Northwestern, 154 ft at Eye Opener, 180 ft at Landrum, 193 ft at Clover and 230 ft at Catawba Bend. These medians are the terrain-model inputs for every course (Section 19). Landrum, at 180 ft instead of the earlier 141 ft staff value, now has a residual of –1.8% (it was –0.6%) and moves into "check distance".

Clover Classic, read the same way as every course

Clover's distance rests on the course measurement: 3.1 mi, measured by the report author (tier B*: measured by a coach, no independent public record). The Chargers' watches there read a median 3.055 mi (n=18; girls' races 3.08 mi, boys' 10:03 AM race 3.05 mi), close to York County's 3.07 mi and inside the full-course band. Tree cover can lower watch readings (Gilgen-Ammann et al., 2020; Tripure et al., 2026), most on wooded courses (Clover, Catawba Bend); Starlight's route is open campus. Clover still counts like every course. The Boys Varsity race was diverted around a copperhead and is excluded from every figure, table and comparison. One Clover recording of 2.83 mi is also excluded, by coach judgment: official results place that runner in the JV Boys 5K (the boys' 10:03 AM race, a full-course race), not in the diverted race, and the reading conflicts with the measured course and the other Clover readings; no written screening rule catches it (Section 22). With it, Clover's median is 3.05 mi (n=19) and the 10:03 race 3.035 mi (n=10); without it, 3.055 mi and 3.05 mi.

SECTION 16A

VICTORY BOLT: PUBLIC GPS RECORDINGS

The Victory Bolt XC Invitational (Lake Wylie High School, York SC, 9/26/2026) is one of the courses the report author designed and measured (course credits, Section 22), and it is one of the three anchors of the course speed index. To check it against readings from outside this team, we searched for public GPS recordings of the race by other runners. Runners are identified by source ID only (for example VB-034-14 = search batch 034, row 14). No names or links to athlete profiles appear here; the coaching staff keeps the ID key.

Finding

Seven public GPS recordings of the 2026 Victory Bolt race read **3.06 to 3.16 mi**, with a **mean of 3.117 mi** against 3.107 mi for 5K (+0.010 mi, +0.3%) and a median of 3.14 mi (+1.1%). Four read over 3.107 mi and three read under. **These recordings give no evidence that the Victory Bolt course ran short.** They do not prove it was exactly 5K: seven watch readings are a small sample, and published watch GPS error in wooded or turning terrain is several percent, larger than the spread seen here.

Method and coverage

- Finishers were taken from the official MileSplit results: Victory Bolt XC Invitational 2026 ([MileSplit 740385](#)) and Run In Starlight Invitational 2026 ([MileSplit 717632](#)). Every Victory Bolt division is listed as a "5k Run".
- For each finisher in the searched batches we looked for a public Strava activity on the race date and recorded only the watch distance, moving time and device. Each distance was compared with 5K = 3.107 mi (5,000 m).
- 186 records were checked: 120 for Victory Bolt and 66 for Starlight. Victory Bolt: 7 race recordings found, 21 private, 42 not found, 35 not confident matches and 15 with no race activity. Starlight: 0 race recordings (the 3 profiles found had only non-race activities), so this search adds **no Starlight distance finding**.
- Coverage is partial. The 120 Victory Bolt records are about a quarter of the roughly 435 Victory Bolt-only finishers left to search.

Source ID	Device	Match confidence	Distance (mi)	vs 3.107 mi
VB-034-14	Garmin Forerunner 45	medium	3.14	+1.1%
VB-034-19	Garmin Instinct	high	3.16	+1.7%
VB-034-31	Garmin Forerunner 245	high	3.14	+1.1%
VB-034-33	Garmin Forerunner 265	high	3.14	+1.1%
VB-035-14	Amazfit Active 2 (Round)	medium (unlabelled evening run)	3.06	-1.5%
VB-035-17	Strava app (phone)	high	3.10	-0.2%
VB-035-19	Strava app on Apple Watch Series 8	medium (unlabelled evening run)	3.08	-0.9%
All 7: mean / median (SD 0.037 mi)			3.117 / 3.14	+0.3% / +1.1%

Sensitivity checks (subsets of the same seven recordings, not new evidence): high-confidence matches only, n=4, mean 3.135 mi, median 3.14 mi; without the phone-app recording, n=6, mean 3.120 mi, median 3.14 mi; Garmin watches only, n=4, mean 3.145 mi, median 3.14 mi. No subset has a mean or median below 5K.

Limits

- Small sample.** 7 recordings from 120 checked records, out of about 536 Victory Bolt finishers. Under this report's rule, n < 8 is low confidence.
- Limits of watch GPS.** Tree cover tends to make watches read short (forest and urban under-reads of about 3.5–8.9% in Gilgen-Ammann et al. 2020; 6–7% short under canopy in Tripure et al. 2026), curved paths can read long (about +2.6%, Rawstorn et al. 2014), and position jitter lengthens recorded paths. A watch also measures the path the runner ran, not the course as laid out. One reading cannot tell a course 1–2% off from one that is exact. The tree cover and turn layout of the Victory Bolt course were not assessed.
- Self-selection and matching.** Only public profiles could be found. Three of the seven matches are medium confidence, two of them unlabelled evening runs; watch times were not checked against official finish times. One reading is from a phone app, and device settings are unknown.
- No independent measurement.** Victory Bolt's 3.1 mi was measured by its designer, the report author. No independent wheel or certified measurement is on record, and these recordings do not replace one.

Not supported by this data: any claim that a specific course is short or long, any claim about PRs at Victory Bolt or Starlight, or any per-athlete conclusion. More opt-in GPX files (ideally 15 or more per race, on several devices) and an independent wheel measurement would strengthen the check. Source: public Strava recordings, reviewed 10/19/2026.

SECTION 17

A SEASON-WIDE COURSE SPEED INDEX

The idea in plain language. Thousands of SC runners race several meets each season. When the same athletes run two courses, the difference in their times says how much faster or slower one course runs than the other. Combine every such pair across the season (21,306 results from 41 SC meets in 2026, 28,686 from 45 meets in 2025) and every meet gets one number: how fast it runs compared with a trusted reference course, after allowing for normal in-season improvement. A course index of -3% means the same runners were about 3% faster there than on an honest, Aiken-type 5K in mid-September.

- Trusted anchors.** The reference is set by courses trusted for distance. In 2026: the **Trojan Invitational at Northwestern HS**, a course the Lake Wylie staff trust for distance and where the Chargers' watches read a median 3.10 mi across three meets (it has no independent public measurement record, so it is rated tier B*: measured by the host staff, no independent public record); **Victory Bolt** at Lake Wylie High School, York SC, a measured 3.1 mi; and **Clover Classic** (Clover High School, Clover SC), a measured 3.1 mi with about 193 ft of climb on the watches and one of the hardest courses in the state. (Course credits: Section 22.) To be transparent: for these two anchors, the person vouching for the measurement is the person who designed and measured the course, who is also the author of this report. That is exactly what a public measurement standard would formalize: a named measurer, a method and a date, posted where anyone can check them (Section 21). The measurements are linked in Section 23, and the paired-runner data give a check: dropping any one 2026 anchor moves Starlight's index only between -6.2% and -6.8% (Section 22), and three references that use none of the author's courses give the same answer (below). The same-night Lights Out comparison uses no anchor

course at all, and the York County course was laid out and wheel-measured by the author and Coach Chris Ardis of Northwestern HS (tier B*; start rerouted for safety, not re-measured). In 2025: Trojan, the **Coaches Classic** at The Farm, Newberry, the **SCHSL State Meet** at Aiken (all classes) and Clover. Each anchor is placed at its terrain value on the Lake Wylie course scale (Section 8), so a hilly anchor such as Clover is expected to run slower.

- **Mike Moore is not an anchor.** Its distance is certified, but its paved, flat route is not representative of cross country (Section 18).
- **An extenuating circumstance, handled honestly.** The 2026 Clover Classic **Boys Varsity** race had a last-minute re-route around a copperhead snake. That was a sensible safety call, and the race was reported honestly: MileSplit lists it as a 3-mile (4,828 m) event. It is excluded here; Clover's other 5,000 m races remain valid anchor races. This is how a safety change should be handled (Section 21).
- **Coaches Classic 2026.** The 2026 Coaches Classic at Newberry (10/10) was canceled, so Newberry is a 2025 anchor only.
- **Fitness trend.** Runners get faster through the season. The index allows -2.5% per 30 days, taken from same-venue repeat meets in 2025, and is re-run at 0 and -3.5% (Section 22). The trend cannot be estimated from these data, because every result at a meet shares one date, so it is an assumption; the 2025 repeat meets suggest -2.5 to -4.5% per 30 days, and the base case uses the least aggressive end.
- **Prior work.** Paired-runner course ratings are not new. Bill Meylan's TullyRunners speed ratings compare the same runners across races to rate courses (the "reference runner" method), and Karr, Fryer and Chawla (2025) fit a meet-factor model with week slopes to collegiate club races as a transparent analogue of LACCTIC's field factors. They also find week slopes weakly identified, which is why this report shows the fitness trend as a range. This index applies the same logic to SC high school meets.

2026 anchors

Anchor	% vs		Terrain index	Anchor residual (pts)
	Paired	ref.		
Trojan Invitational (Northwestern HS, Rock Hill) - trusted reference	576	0.0%	Trojan -9 s	+0.78
Victory Bolt XC Invitational (Lake Wylie High School, York SC), 9/26 - measured 3.1 mi	480	-0.1%	VB +5 s	-0.50
Clover Classic (Clover High School; all 5,000 m races, Boys Varsity diverted and excluded) - measured 3.1 mi	269	+4.9%	Clover +60 s	-0.28

2025 anchors

Anchor	% vs		Terrain index
	Paired	ref.	
Trojan Invitational 2025 (Northwestern HS)	663	+0.8%	Trojan -9 s
Coaches Classic 2025 (The Farm, Newberry)	1881	+1.9%	Newberry +34 s
SCHSL State 2025, all classes (Aiken)	1299	+2.1%	Aiken 0
Clover Classic 2025 (Clover High School)	625	+2.5%	Clover +60 s

Anchor residual = observed index minus the anchor's terrain value. The 2026 anchor residuals sum to zero by construction (the reference is their mean), so their agreement is not an independent check; leaving out one anchor at a time moves Starlight between -6.2% and -6.8% . The 2025 anchors spread about $\pm 2\%$: State ran slower, and Clover faster, than their index values.

Key line

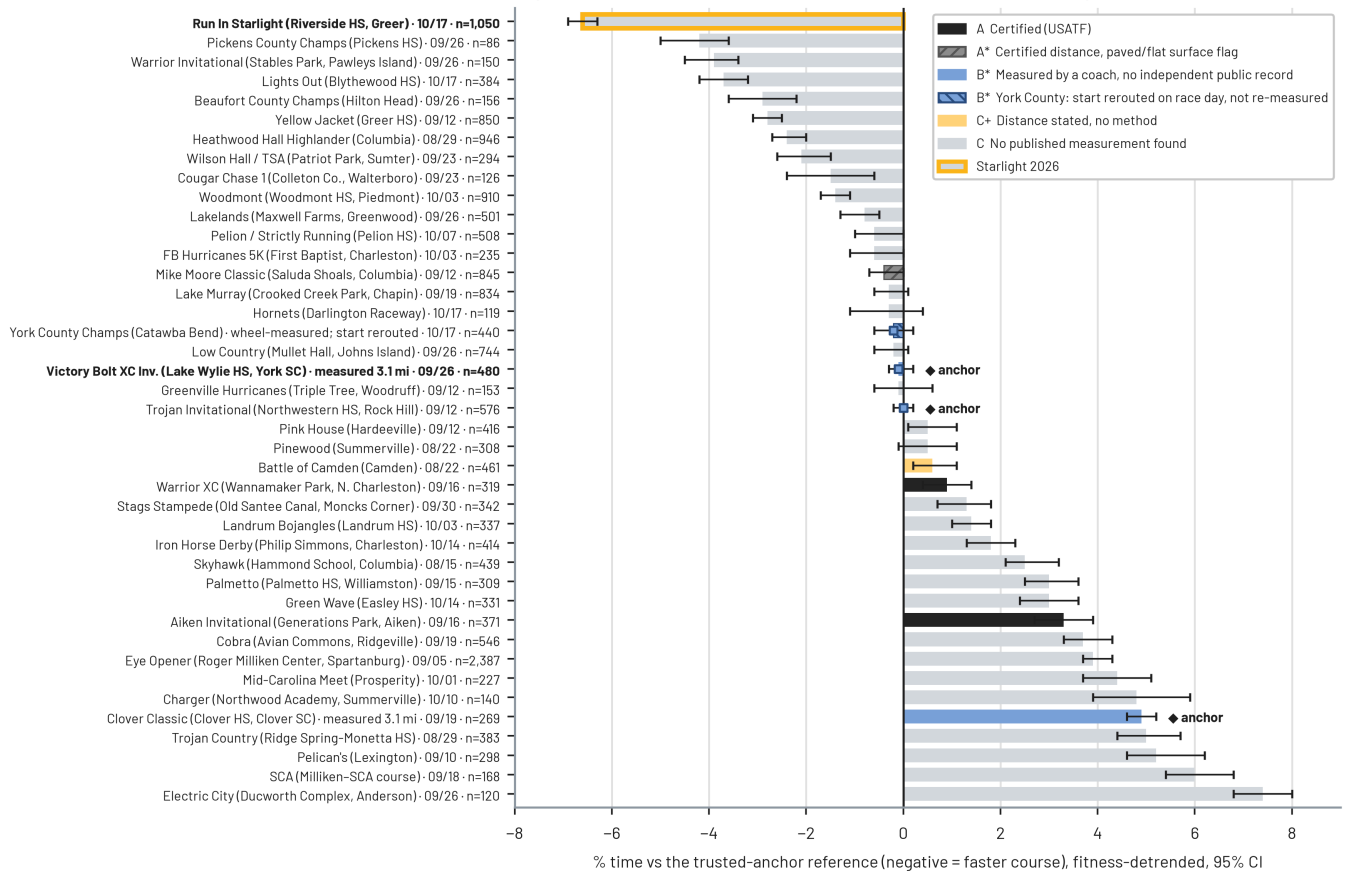
On the same night, Starlight ran about **2.8–2.9 points faster** than Lights Out at Blythewood HS, another night course that its host describes as flat, under every fitness assumption tested. Against the season-wide reference, Starlight 2026 ran **6.6% faster in the base case** ($n=1,050$ paired runners). The honest range is about **5–9%**: 5.7–8.7% across the fitness trends, 4.4% (Boys Elite) to 9.1% (JV Girls) race by race, and a team-clustered 95% CI of 5.9–7.2% at the base trend (the athlete-clustered sampling CI, 6.3–6.9%, is too narrow). In 2025 the same meet was **+0.3%**, essentially at the reference. Its 6.9-point drop is one of the two largest changes in the state (Trojan Country moved +6.8 the other way; the other 29 repeat meets' changes have an SD of about 2.7 points), and Starlight is the largest outlier among 41 SC meets in 2026 at every trend value tested. The York County Championships the same morning ran 6.2–6.4 points slower than Starlight on the raw index, but York is the hilliest course in the set; after the terrain allowance the gap is about 1.9–2.1 points, with wide uncertainty (-6.8 to $+2.8$).

Taking the author's courses out of the reference

Reference used	Starlight 2026	Starlight rank (of 41)	Next fastest
Three anchors: Trojan, Victory Bolt, Clover (base case)	-6.6%	1	Pickens County -4.2%
Trojan only (Northwestern HS; not designed or measured by the report author)	-7.3%	1	Pickens County -5.0%
McAlpine only (South Meck, Hare & Hounds and Wendy's at McAlpine, Charlotte NC; not designed or measured by the report author)	-7.7%	1	Pickens County -5.5%
Median of all 41 meets (no anchors)	-6.6%	1	Pickens County -4.2%

Calculation. All three rows use the same fitted meet effects (log time = athlete effect + meet effect - trend, base trend -2.5% per 30 days); only the reference level changes. **Trojan only:** Starlight ran 6.56% faster than Trojan, and Trojan is placed at its terrain value of -9 s on a 1,150 s race (-0.78%), so $(1 - 0.0656) \times (1 - 0.0078) - 1 = -7.29\%$. Trojan ran 0.8% slower than the three-anchor mean expects, which is why this row is about 0.7 points faster. At -3.5% per 30 days the Trojan-only value is -6.2% . **Median of all meets:** the median 2026 meet index is -0.01% , so Starlight is $(1 - 0.0657) \div (1 - 0.0001) - 1 = -6.56\%$. Each run shifts every meet by the same amount, so no meet's rank changes; what the runs show is that the size of Starlight's outlier does not depend on the author's courses. **McAlpine only:** the McAlpine (NC) meets were added to the pairing (1,149 McAlpine athletes paired; 42 meets) and McAlpine was set as the reference. Starlight is -7.7% against McAlpine and still ranks first, with Pickens County next at -5.5% . Both runs are reproducible from the analysis files, available on request.

Figure 20. 2026 course speed index, 41 SC meets, colored by verification tier



Source: Milesplit results (public performance API), every runner who ran two or more of these meets. Reference = a full-length, Aiken-type 5K at mid-September fitness. Error bars = sampling only; the assumed fitness trend moves every index (Starlight -5.7% to -8.7% across the trends run, none to -3.5% per 30 days). Anchors: Trojan (Northwestern HS; host-measured), Victory Bolt and Clover (measured by the report author), all tier B* (no independent public record), each at its terrain value. Tier C means no published measurement was found, not that a course is short. Mike Moore is not an anchor. Clover 2026 Boys Varsity race diverted and excluded. The canceled 2026 Coaches Classic (10/10) has no results and is not plotted.

Every 2026 SC meet in the data set, fastest at the top. The anchors sit at their terrain values. Starlight is 2.4 points faster than the next meet. Most courses are tier C: no published measurement was found, which is not proof that a course is short. The anchors are tier B* (measured by a coach, no independent public record). Error bars are sampling only. The canceled 2026 Coaches Classic is listed in Appendix C only.

Fastest and slowest 2026 courses

Ten fastest

Meet (venue)	Date	Paired	% vs ref.	95% CI	2025	Tier
Run In Starlight (Riverside HS, Greer)	10/17	1,050	-6.6	-6.9 to -6.3	+0.3	C
Pickens County Champs (Pickens HS)	09/26	86	-4.2	-5.0 to -3.6	-1.0	C
Warrior Invitational (Stables Park, Pawleys Island)	09/26	150	-3.9	-4.5 to -3.4	-1.8	C
Lights Out (Blythewood HS)	10/17	384	-3.7	-4.2 to -3.2	-	C
Beaufort County Champs (Hilton Head)	09/26	156	-2.9	-3.6 to -2.2	-1.8	C
Yellow Jacket (Greer HS)	09/12	850	-2.8	-3.1 to -2.5	+0.7	C
Heathwood Hall Highlander (Columbia)	08/29	946	-2.4	-2.7 to -2.0	-1.3	C
Wilson Hall / TSA (Patriot Park, Sumter)	09/23	294	-2.1	-2.6 to -1.5	-	C
Cougar Chase 1 (Colleton Co., Walterboro)	09/23	126	-1.5	-2.4 to -0.6	-	C
Woodmont (Woodmont HS, Piedmont)	10/03	910	-1.4	-1.7 to -1.1	-3.2	C

Eight slowest

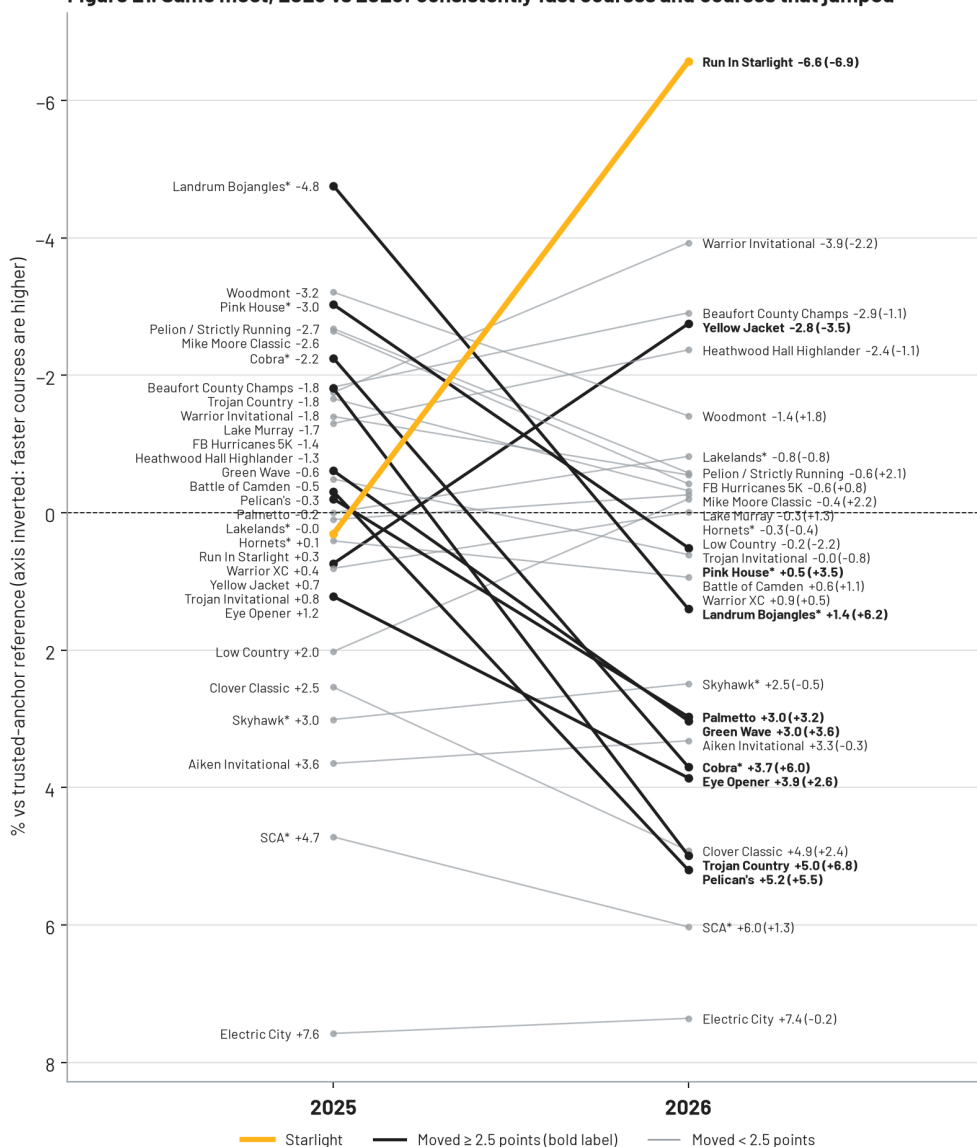
Meet (venue)	Date	Paired	% vs ref.	95% CI	2025	Tier
Electric City (Ducworth Complex, Anderson)	09/26	120	+7.4	+6.8 to +8.0	+7.6	C
SCA (Milliken-SCA course)	09/18	168	+6.0	+5.4 to +6.8	+4.7	C
Pelican's (Lexington)	09/10	298	+5.2	+4.6 to +6.2	-0.3	C
Trojan Country (Ridge Spring-Monetta HS)	08/29	383	+5.0	+4.4 to +5.7	-1.8	C
Clover Classic (Clover High School, Clover SC) - measured 3.1 mi	09/19	269	+4.9	+4.6 to +5.2	+2.5	B*
Charger (Northwood Academy, Summerville)	10/10	140	+4.8	+3.9 to +5.9	-	C
Mid-Carolina Meet (Prosperity)	10/01	227	+4.4	+3.7 to +5.1	-	C
Eye Opener (Roger Milliken Center, Spartanburg)	09/05	2,387	+3.9	+3.7 to +4.3	+1.2	C

% vs reference: negative = faster. 2025 = the same meet's 2025 index. Tier: A certified; B measured with a public record (McAlpine); B* measured by a coach, no independent public record (Clover and Victory Bolt: measured by the report author; Trojan / Northwestern HS: host staff; the Coaches Classic and the State course: coach-trusted; York County Championships at Catawba Bend: wheel-measured by the author and Coach Ardis, start rerouted for safety and not re-measured); C no published measurement found (Section 21). Tier C is not proof that a course is short: Starlight's C means only that no published measurement was found. A slow index does not mean a course is long. It can mean hills, sand, mud or heat; Clover is slow because it is one of the hardest courses in the state (193 ft of climb on a measured 3.1 mi), and it is an anchor at its terrain value. The full table, with sensitivity runs and links, is in Appendix C.

- Starlight jumped the most toward fast:** +0.3 → -6.6, one of the two largest moves in the state (Trojan Country moved +6.8 toward slow), on a layout that GPS shows to be about 0.14 mi shorter than in 2025 (Section 6). Its GPS median alone is not unique (Lake Murray and Warrior also read about 3.00 mi); the combination of the GPS drop, the layout change and this index move is.
- Others jumped faster too:** Yellow Jacket +0.7 → -2.8, Warrior (Pawleys Island) -1.8 → -3.9 and Pickens County -1.0 → -4.2 (small sample).
- Some courses are fast both years:** flat or coastal courses such as Warrior (Pawleys Island), Beaufort County at Hilton Head, Heathwood Hall and Woodmont. Flat and fast is legitimate when the distance is documented; none of these publishes a measurement.
- Some got slower:** Landrum (host: "Our new course"), Cobra, Pelican's, Trojan Country and Pink House (new course map) were 3-7 points slower, consistent with new layouts and early-season heat.

- **Single years are noisy.** Across the 29 other meets with a 2025 value (30 repeat meets with Starlight; 15 of the 29 moved more than 2 points), the 2025 and 2026 values correlate at only $r = 0.54$, and the changes have an SD of about 2.7 points. Early-season meets carry about $\pm 2\%$ of weather and heat noise, so one year's value should be read as a range.

Figure 21. Same meet, 2025 vs 2026: consistently fast courses and courses that jumped



Source: course speed index, 29 meets with at least 100 paired runners in both years. Same meet both years; * = venue or layout change (7 meets). Right labels: 2026 value (change). The 2025 and 2026 indexes are anchored separately. Year-to-year changes at the other 28 meets have an SD of 2.66 points; 2.59 for the 20 with no recorded change of any kind (Clover, whose Boys Varsity race alone was diverted, is left out of that subset). The York County Championships are left out (2025 at Northwestern HS, 2026 at Catawba Bend; different courses).

Same meet both years (at least 100 paired runners in each year); * = venue or layout change (7 meets). Gold: Starlight, from +0.3 in 2025 to -6.6 in 2026. Bold lines moved 2.5 points or more. The changes have an SD of 2.66 points across all 28 other meets shown and 2.59 across the 20 with no venue or layout change, so the layout changes do not drive the spread.

SECTION 18

SURFACE AND TERRAIN MATTER TOO

Distance is only one part of what makes a cross-country time comparable. The **Mike Moore Classic at Saluda Shoals Park** shows why.

- **Its distance is certified.** The course holds USATF certificate **SC16008KWL** (Saluda Shoals Park 5K, measured 2016-08-17, valid to 2026-12-31), and the meet page says it is "USATF certified for distance as a 5K." Five public 2026 watch recordings agree: median **3.14 mi** (3.10-3.16), just where a full 5K usually reads (Figure 18).
- **Its surface is not typical cross country.** The certificate itself keeps runners on the paved Greenway Trail and shows only about 15 m of total relief. This report therefore does not treat Mike Moore as a representative cross-country reference, and it is not an anchor in the course index.

- **Surface moves times.** In 2025 Mike Moore ran **-2.6%** against the reference, among the fastest courses in the state that year, on a certified distance. In 2026 it ran -0.4%, about what a flat course should run (residual -0.7%, Section 19). The certified route did not change, so the 2.2-point swing most likely reflects weather and season timing, not distance.

Two other certified courses make the same point from the other side. The **Warrior XC Invitational at Wannamaker County Park** (USATF certified 2017; trail and asphalt) ran +0.9%, and the **Aiken Invitational at Generations Park** (USATF certified) ran +3.3%. Together with Mike Moore (certified for distance only, on a mostly paved route), these certified courses span about four points of course speed, so certification of distance alone does not make times comparable. **Pink House** (GPS 3.065 mi, almost no recorded climb) is very flat, yet it ran +0.5% in 2026 after -3.0% in 2025.

What this means for standards

An accurate distance is necessary, but it is not enough to make times comparable. A paved, flat 5K and a muddy, hilly 5K can both be exactly 5,000 m. That is why the proposal in Section 21 pairs a distance tier with a short **surface and terrain tag** (for example "paved/flat" or "hilly"). The tag is for information only and does not count against a course. It tells rankers, coaches and athletes what kind of 5K a mark came from.

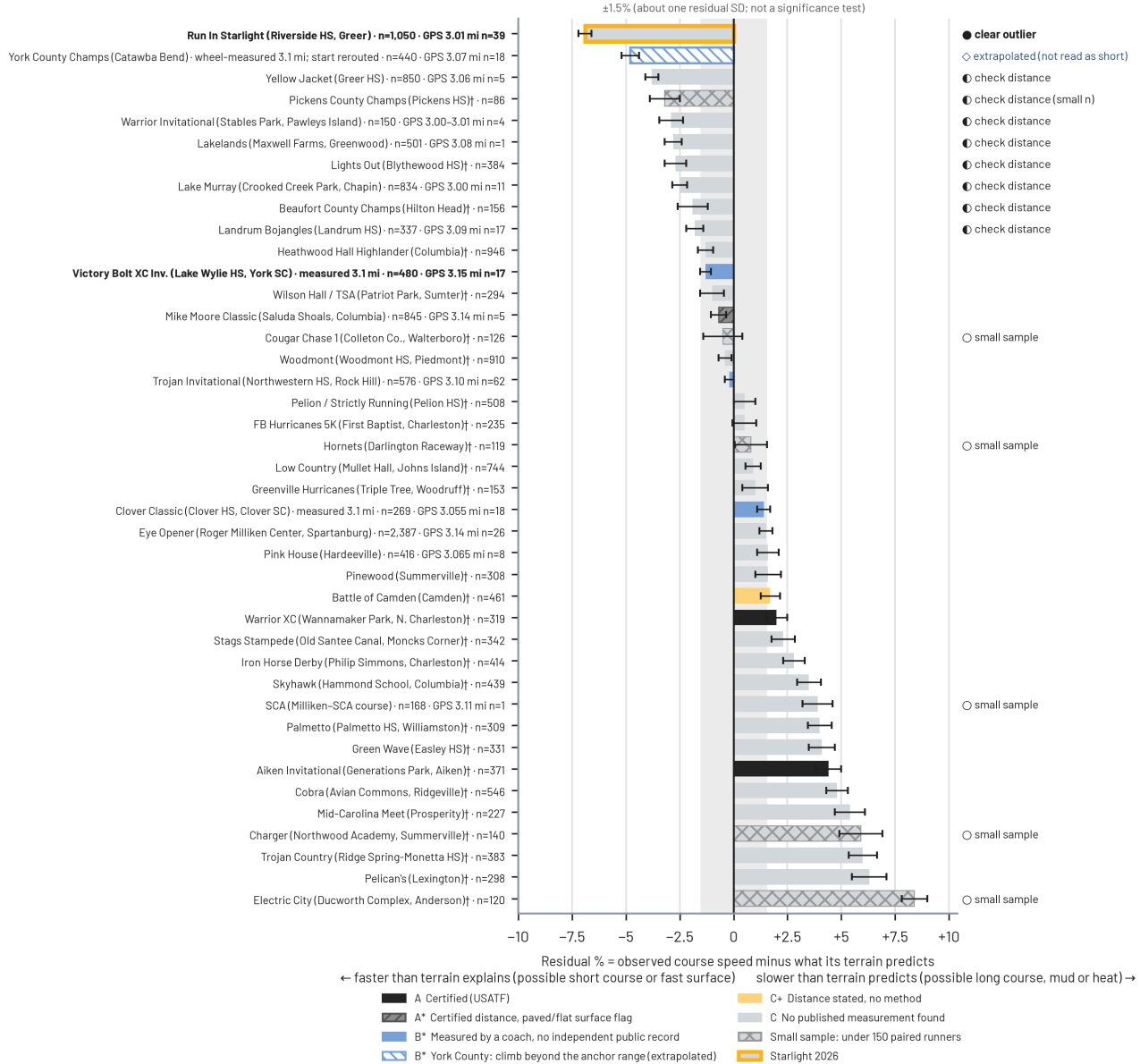
SECTION 19

COURSE ACCURACY RANKING

A fast course index can come from flat terrain, a fast surface, good weather or a short course. To separate terrain from distance, each meet's observed speed is compared with what its **terrain predicts**. The line is set from the Lake Wylie staff terrain-scale values of the five anchors with a known climb, each placed at the median of its device-recorded climb readings, the same inputs as Figure 16 (Aiken 39 ft, Trojan / Northwestern 82 ft, Victory Bolt 115 ft, Clover 193 ft, Newberry 205 ft): about **+3.0% per 100 ft of climb**. It is approximate. With five points the slope is not statistically significant (95% CI -0.3 to +6.2% per 100 ft; $p = 0.06$), and a 95% prediction interval is about ± 5 points wide. Every course now uses the same climb rule. That moves Landrum (180 ft, instead of the 141 ft staff value) to -1.8%, into "check distance", and Eye Opener (154 ft) to +1.5%, inside the band. The **residual** is the observed index minus the prediction. It mixes distance with surface, turns, weather, season timing, field mix and the climb input, so a negative residual means unexplained speed, not proof of a short course. Starlight is the exception: its residual stays between -5.9% and -7.7% under every variant tested (leave one anchor out, a fit to the anchors' observed indexes, Victory Bolt at 72, 85 or 93.5 ft, Starlight at the reference watch's 98.5 ft).

- **Strongly negative residual:** the course runs faster than its hills can explain: check the distance and the surface.
- **Near zero** (inside the grey $\pm 1.5\%$ band): consistent with an honest 5K for its terrain.
- **Positive residual: slower** than terrain predicts. That can mean a long course, mud, sand, heat or under-stated hills. A positive residual is not proof of accuracy.
- Where the climb is unknown (†), the meet is compared with a flat-course floor (39 ft), so only a fast residual counts as evidence.

Figure 22. 2026 course accuracy ranking: speed relative to terrain



Terrain line: Lake Wylie staff terrain-scale values for five anchors, each at the median of its device-recorded climb readings (Aiken 39 ft, Trojan 82, Victory Bolt 115, Clover 193, Newberry 205; same inputs as Figure 16): about +3.0% per 100 ft (95% CI -0.3 to +6.2% per 100 ft). With n=5 the slope is not statistically significant and the 95% prediction interval is about ±5 points. Only Starlight stays clearly outside it under every variant (-5.9 to -7.7). York County (wheel-measured, 229.5 ft) sits beyond the anchors' climb range, so its -4.8% (-3.3 to -6.0 across variants) is an extrapolation that shows the line's limits on very hilly courses, not a finding that the course was short. Other fast residuals mean "check distance", not "short".

† Climb unknown: compared with a flat-course floor (39 ft). Error bars: sampling only. GPS = median of public watch recordings (n shown; medians with n<8 are low confidence).

Most negative (fastest relative to terrain) at the top. Starlight, at -6.9%, is the clearest outlier in the state and the only finding. Other fast residuals mean "check distance", not "short". York County Championships (Catawba Bend), tier B*, is shown at its computed residual on the same terrain line as every other course (-4.8% at 229.5 ft, extrapolated beyond the anchors' range), drawn with its own hatching: start rerouted around mud (safety call), not re-measured; measured by the author and Coach Ardis; wooded. One hatching rule for the rest: rows with fewer than 150 paired runners are cross-hatched as small samples.

Reading the ranking with care

- **Starlight (-6.9%, clear outlier).** About 6.9% faster than a course with its 85 ft of climb should run, on 1,050 paired runners and 39 GPS recordings. It is the clearest outlier in the state and the only finding.
- **The York County Championships (Catawba Bend, 10/17), tier B*.** The heavily wooded course was laid out and wheel-measured at 3.1 mi, over several passes, by the author and Coach Chris Ardis of Northwestern HS; there is no independent public record of the measurement. Because of heavy rain the night before, part of the start was rerouted on race day around a muddy area to prevent injury, a safety call, and the course was not re-measured after the reroute. The Chargers' watches read a median 3.07 mi (n=18) and a median climb of 229.5 ft (range 215–294 ft, n=18); a reference GPS watch recorded 3.1 mi and about 253 ft. On the same terrain line as every other course, York's predicted index at 229.5 ft is +4.6% and its observed index -0.2%, so its residual is **-4.8%**. That climb is 24.5 ft beyond the 205 ft top of the anchor range, so the value is an extrapolation, and it moves with the inputs: -3.3% without the Clover anchor, -3.4% with a fit to the anchors' observed indexes, -5.5% at the 253 ft reference-watch reading and -6.0% without the Newberry anchor. It lies inside the prediction interval (about ±6 points at that climb). Figure 22 shows it hatched, with the reroute noted. It is not a finding that the course was short. Because York ran fast for its terrain, the raw same-day gap with Starlight (6.2–6.4 points) overstates the difference; the terrain-adjusted gap is about 1.9–2.1 points. The cleaner same-day comparison is Lights Out at Blythewood HS, a flat night race on the same night (-3.7% on the index, 2.8–2.9 points slower than Starlight; tier C, unverified; its host describes it in writing as "flat" ("The course is flat and promises to be fast") with "Less than 700 meters of the race" on a track surface, a host description rather than a measurement; Section 10). The other 10/17 meets were Hornets at Darlington Raceway (-0.3%, small sample) and the Cooler Pit Classic at Hardeeville (MileSplit 713235), for which no results were found.
- **Pickens County (-3.1%, check distance, small sample, n=86)** and the other meets with fewer than 150 paired runners (Cougar Chase, Hornets, Charger, Electric City), all hatched in Figure 22, carry wide uncertainty and unknown terrain. They are worth a measurement check, not a conclusion. The same goes for Lakelands and SCA, whose climb comes from a single GPS file.
- **Check distance.** Yellow Jacket (-3.8%), Warrior, Pawleys Island (-2.9%; GPS 3.00–3.01 mi, n=4, low confidence), Lake Murray (-2.5%, despite the mud), Beaufort County (-1.9%) and, with the watch-median climb rule, Landrum (-1.8%) run faster than their terrain predicts but sit well inside the prediction interval. They are courses to measure, not findings; Lake Murray's 3.00 mi GPS median (Section 15) makes it the first to check.
- **Clover (+1.4%),** one of the hardest courses in the state, runs slightly slower than even its 193 ft of climb predicts, inside the band. Its 2026 Boys Varsity race was diverted and is excluded.
- **Two "Warrior" and two "Trojan" meets.** Warrior Invitational (Stables Park, Pawleys Island) runs fast; Warrior XC Invitational (Wannamaker Park, North Charleston, USATF certified) does not. Trojan Invitational (Northwestern HS, Rock Hill) is an anchor and trusted reference; Trojan Country Invitational (Ridge Spring-Monetta HS) is a different August meet that ran slow in early-season heat.

SECTION 20

HOW COURSE SPEED DISTORTS THE RANKINGS

Season-best lists, rankings and seeding treat every "5K" mark as equal. When a few courses run several percent fast, their marks crowd the top of every list. This section counts how much, using season bests within the 41 SC meets in this data set. The "fast unverified" group is the 8 tier-C courses with a course index of $\geq 2.0\%$ or faster: Starlight, Pickens County, Warrior (Pawleys Island), Lights Out, Beaufort County, Yellow Jacket, Heathwood Hall and Wilson Hall / Thomas Sumter Academy.

20–24%

of all 2026 results came from the 8 fast unverified courses

76% / 80%

of the all-class boys' / girls' top-25 season bests came from them

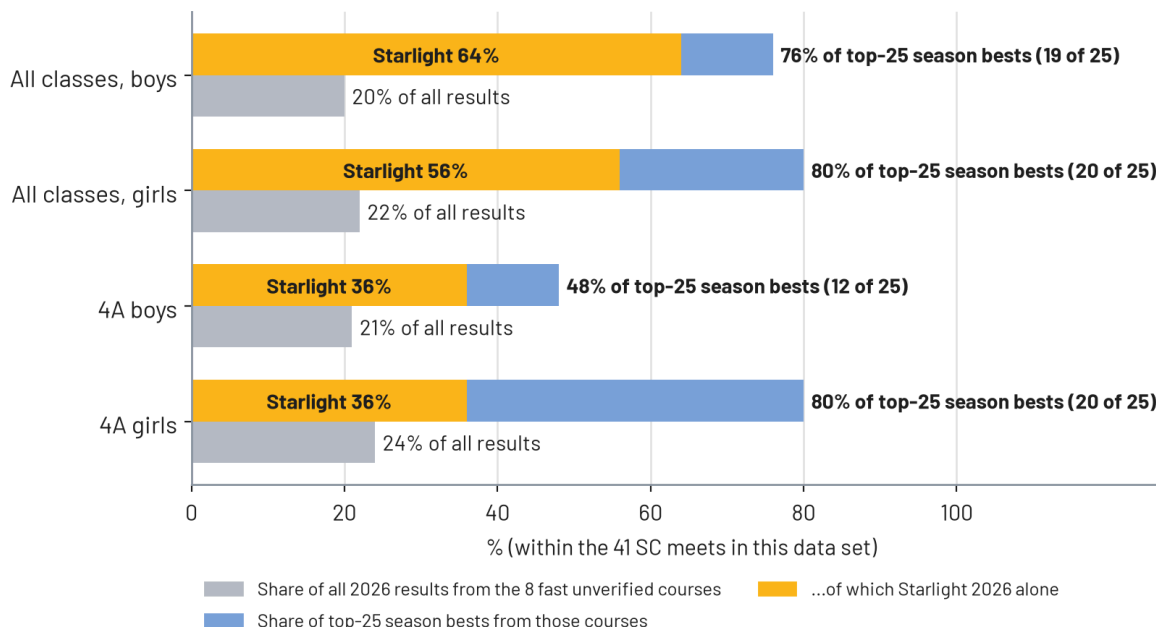
64% / 56%

of the all-class boys' / girls' top 25 came from Starlight 2026 alone (5.4% of results)

7 / 5

boys / girls leave the all-class top 25 when Starlight is corrected for distance only (3%); range 2–13 / 1–5

Figure 23. Eight fast unverified courses dominate the top-25 season bests



Fast unverified = tier C with a course index of $\geq 2.0\%$ or faster: Starlight, Pickens County, Warrior (Pawleys Island), Lights Out, Beaufort County, Yellow Jacket, Heathwood Hall, Wilson Hall/TSA. Out-of-state meets are not in the data set, so counts are indicative, not official rankings.

Starlight alone supplies most of the all-class top 25. In 4A, the 8 courses supply 48% of the boys' and 80% of the girls' top 25.

List	Share of all results from the 8 courses	Season bests from the 8 courses	From Starlight 2026 alone	Drop out, Starlight corrected for distance only: 3% central (1–4, 4%)	Upper bound: all 6.9% of Starlight's unexplained speed treated as distance
All classes, boys, top 25	20%	19 (76%)	64%	7 (2–13)	13
All classes, girls, top 25	22%	20 (80%)	56%	5 (1–5)	10
All classes, boys, top 100	20%	74 (74%)	55%	17 (6–30)	32
All classes, girls, top 100	22%	70 (70%)	41%	10 (3–17)	21
4A, boys, top 25	21%	12 (48%)	36%	2 (0–2)	3
4A, girls, top 25	24%	20 (80%)	36%	3 (1–5)	6

Distance-only adjustment: only Starlight 2026 marks are corrected, and only for the estimated distance shortfall: 3% at the central 4,850 m, with 1% (4,950 m) and 4.4% (4,780 m) as the plausible range. The rest of Starlight's unexplained speed (weather, sharpening, layout) is not removed, and the other fast courses are "check distance" only and are not corrected. The last column is an upper bound that treats all 6.9% of Starlight's unexplained speed as distance. Counts are within this data set only.

Is this just strong runners choosing big meets? Not by itself. A top-100 list is built from season bests, so a high share of bests set at Starlight is partly guaranteed by the selection. The cleaner test is unselected: **95.7%** of all Starlight 2026 runners beat their season best there, against **41.1%** at the same meet in 2025 (Section 3).

Worked example: 4A boys top 25 (names omitted)

Raw season bests within this data set, then the distance-adjusted best and rank. Only Starlight 2026 marks are corrected ($+ (1 - 3\%)$). A runner's adjusted best is their fastest mark after correction, which may come from a different meet; that meet is shown. For privacy, marks are rounded to the nearest 5 s; ranks and moves were computed from the exact marks in the public MileSplit results, so every row can be reproduced from those results, but near-ties cannot be resolved from this table alone. Runners carry neutral numbers only (from a separately kept list with names omitted), and the numbers are specific to each example. Rows marked "out" leave the top 25 after adjustment. Move = places gained (+) or lost (–).

Runner	Raw rank	Season best (nearest 5 s)	Meet	Tier	Distance correction	Adjusted best (nearest 5 s)	Adjusted best comes from	Adjusted rank	Move
Runner 1	1	≈14:55	Run In Starlight	C	+3% time	≈15:20	same mark + (1 – 3%)	1	0
Runner 2	2	≈15:40	Run In Starlight	C	+3% time	≈16:05	same mark + (1 – 3%)	4	–2
Runner 3	3	≈15:40	Run In Starlight	C	+3% time	≈16:10	same mark + (1 – 3%)	6	–3
Runner 4	4	≈15:45	Run In Starlight	C	+3% time	≈16:15	same mark + (1 – 3%)	9	–5
Runner 5	5	≈15:50	Run In Starlight	C	+3% time	≈16:20	same mark + (1 – 3%)	11	–6
Runner 6	6	≈15:50	Run In Starlight	C	+3% time	≈16:20	same mark + (1 – 3%)	12	–6
Runner 7	7	≈15:50	Beaufort County Champs	C	0	≈15:50	same mark	2	+5
Runner 8	8	≈16:00	Run In Starlight	C	+3% time	≈16:30	same mark + (1 – 3%)	16	–8
Runner 9	9	≈16:05	York County Championships (Catawba Bend)	B*	0	≈16:05	same mark	3	+6
Runner 10	10	≈16:10	York County Championships (Catawba Bend)	B*	0	≈16:10	same mark	5	+5
Runner 11	11	≈16:10	York County Championships (Catawba Bend)	B*	0	≈16:10	same mark	7	+4
Runner 12	12	≈16:10	York County Championships (Catawba Bend)	B*	0	≈16:10	same mark	8	+4
Runner 13	13	≈16:15	York County Championships (Catawba Bend)	B*	0	≈16:15	same mark	10	+3
Runner 14	14	≈16:15	Run In Starlight	C	+3% time	≈16:50	same mark + (1 – 3%)	27(out)	–13
Runner 15	15	≈16:20	Eye Opener	C	0	≈16:20	same mark	13	+2
Runner 16	16	≈16:25	Run In Starlight	C	+3% time	≈16:55	same mark + (1 – 3%)	31(out)	–15
Runner 17	17	≈16:25	Pink House	C	0	≈16:25	same mark	14	+3
Runner 18	18	≈16:25	Lights Out	C	0	≈16:25	same mark	15	+3
Runner 19	19	≈16:30	Woodmont	C	0	≈16:30	same mark	17	+2
Runner 20	20	≈16:30	Mike Moore Classic	A*	0	≈16:30	same mark	18	+2
Runner 21	21	≈16:35	Woodmont	C	0	≈16:35	same mark	19	+2
Runner 22	22	≈16:35	Lights Out	C	0	≈16:35	same mark	20	+2
Runner 23	23	≈16:35	Eye Opener	C	0	≈16:35	same mark	21	+2
Runner 24	24	≈16:40	Pink House	C	0	≈16:40	same mark	22	+2
Runner 25	25	≈16:40	Woodmont	C	0	≈16:40	same mark	23	+2

Two of the raw top 25 leave the list, and runners whose bests came at the York County Championships (Catawba Bend; 10/17, a morning race the same day as Starlight; at the reference) move up, to as high as 3rd. **No Lake Wylie athletes are in this list, before or after the correction**, and none of the runners who move up is from Lake Wylie; the top Lake Wylie boy (best mark at the York County Championships) moves from 33rd to 28th at 3%, still outside the top 25. **None of this reflects on any athlete.** Every one of these runners raced honestly; the adjustment only shows how much the order depends on which courses a runner happened to race.

Second example: all-class boys top 25 (names omitted)

Same method and rounding as above, for the all-class boys list. No runner in this list has a season best from the York County Championships, and no Lake Wylie athletes appear in it, before or after the correction.

Runner	Raw rank	Season best (nearest 5 s)	Meet	Tier	Distance correction	Adjusted best (nearest 5 s)	Adjusted best comes from	Adjusted rank	Move
Runner 1	1	≈14:45	Run In Starlight	C	+3% time	≈15:15	same mark + (1 – 3%)	4	–3
Runner 2	2	≈14:55	Run In Starlight	C	+3% time	≈15:20	same mark + (1 – 3%)	7	–5
Runner 3	3	≈15:00	Eye Opener	C	0	≈15:00	same mark	1	+2
Runner 4	4	≈15:05	Lake Murray	C	0	≈15:05	same mark	2	+2
Runner 5	5	≈15:05	Eye Opener	C	0	≈15:05	same mark	3	+2
Runner 6	6	≈15:05	Run In Starlight	C	+3% time	≈15:35	same mark + (1 – 3%)	12	–6
Runner 7	7	≈15:10	Run In Starlight	C	+3% time	≈15:35	same mark + (1 – 3%)	13	–6
Runner 8	8	≈15:10	Run In Starlight	C	+3% time	≈15:35	same mark + (1 – 3%)	16	–8
Runner 9	9	≈15:10	Run In Starlight	C	+3% time	≈15:40	same mark + (1 – 3%)	19	–10
Runner 10	10	≈15:10	Run In Starlight	C	+3% time	≈15:40	same mark + (1 – 3%)	20	–10
Runner 11	11	≈15:15	Run In Starlight	C	+3% time	≈15:40	same mark + (1 – 3%)	23	–12
Runner 12	12	≈15:15	Run In Starlight	C	+3% time	≈15:40	same mark + (1 – 3%)	25	–13
Runner 13	13	≈15:15	Run In Starlight	C	+3% time	≈15:40	same mark + (1 – 3%)	27(out)	–14
Runner 14	14	≈15:15	Run In Starlight	C	+3% time	≈15:40	same mark + (1 – 3%)	28(out)	–14
Runner 15	15	≈15:15	Run In Starlight	C	+3% time	≈15:45	same mark + (1 – 3%)	31(out)	–16
Runner 16	16	≈15:15	Warrior Invitational	C	0	≈15:15	same mark	5	+11
Runner 17	17	≈15:20	Run In Starlight	C	+3% time	≈15:45	same mark + (1 – 3%)	35(out)	–18
Runner 18	18	≈15:20	Heathwood Hall Highlander	C	0	≈15:20	same mark	6	+12
Runner 19	19	≈15:20	Run In Starlight	C	+3% time	≈15:50	same mark + (1 – 3%)	38(out)	–19
Runner 20	20	≈15:30	Eye Opener	C	0	≈15:30	same mark	8	+12
Runner 21	21	≈15:30	Eye Opener	C	0	≈15:30	same mark	9	+12
Runner 22	22	≈15:30	Run In Starlight	C	+3% time	≈16:00	same mark + (1 – 3%)	47(out)	–25
Runner 23	23	≈15:35	Pink House	C	0	≈15:35	same mark	10	+13
Runner 24	24	≈15:35	Heathwood Hall Highlander	C	0	≈15:35	same mark	11	+13
Runner 25	25	≈15:35	Run In Starlight	C	+3% time	≈16:05	same mark + (1 – 3%)	53(out)	–28

Seven of the raw top 25 leave the list when only Starlight 2026 is corrected for distance (3%). No runner in the adjusted all-class top 25 has a best from the Clover Classic, Victory Bolt or the York County Championships.

SECTION 21

A PROPOSAL: COURSE ACCURACY RATINGS FOR SC

Section 14 set out practical steps for measuring and publishing courses. This section turns them into a simple rating that results sites and rankings could adopt. The goal is constructive: rankings and seeding should count a 5K mark as an honest 5K only when it was run on one. Some courses really are fast because they are flat, and that is legitimate when it is documented.

TIER	WHAT IT MEANS	RANKING TREATMENT
A: Certified	Current USATF certificate (or equivalent) for the exact race-day route, posted on the meet page, plus a surface/terrain tag	Counts at face value. A tag such as "paved/flat" (for example, Mike Moore) is shown next to the mark for information.
B: Measured and documented	Calibrated wheel on the tangents, measurer named, date and map posted; re-measured after any layout change	Counts at face value. If the course runs more than 2% faster than terrain predicts in two editions, it moves to C until re-measured.
B*: Measured, no public record	Measured by a coach (in this report: the author, host staff or another coach), with no independent public record yet	Treated as B in this report; becomes B once the measurer, method, date and map are posted.
C: Unverified	No published measurement found (not proof that a course is short)	Marks show a "C" flag. If the course runs more than 1.5% faster than terrain explains, adjust with the course index or leave the mark out of seeding until it is measured.
X: Irregular race	A documented short or re-routed race, for example a last-minute safety re-route	Listed at its actual distance, not as a 5K. No penalty to anyone.

The model to follow: Clover Classic 2026

When a copperhead forced a last-minute re-route of the Clover Boys Varsity race, the host made the safe call and reported the race honestly as 3 miles. It stayed out of 5K lists, and nobody's 5K season best was distorted. That handling should be the norm, and it should never be treated as a penalty.

Suggested practices

1. **Publish the course measurement method and map** on the meet page before the meet: who measured, when and how.
2. **Wheel-measure or certify.** Use a calibrated wheel on the shortest legal route (NFHS Rule 8-1-1), or USATF certification. Do not use GPS or online maps as the final measure.
3. **Re-measure after any layout change.** On loop courses, small errors multiply.
4. **Flag C and X marks in rankings, or adjust them with a course index.** SCRunners and MileSplit SC could add a course-tier field to each meet, and the SCTCCA could publish paired-runner course indexes each October using this method or a better one.
5. **Report safety changes honestly,** as Clover did: give the actual distance and keep the race out of 5K lists.
6. **Prompt a re-measure when a course moves more than 2 points between years.** Under this rule, Starlight's +0.3 → -6.6 move would have triggered a re-measure check. It is a screening rule, not a verdict: 15 of the 29 other repeat meets this season moved more than 2 points, mostly from weather and season timing, so a flag means "check", not "short".

None of this requires new money or new rules from scratch. It recommends that SCHSL and SCTCCA require published measurements for results sites to show. Hosts can move up a tier at any time by publishing their measurement, and this report will be updated when they do. Two of this report's anchors, Clover and Victory Bolt, already work this way informally: each has a named designer and measurer who stands behind the number (course credits: Section 22). A public standard would simply put that name, method and date on each meet page, for every course, so that nobody's word has to be taken on trust.

SECTION 22

METHODOLOGY AND LIMITATIONS

- **Re-verification.** All result figures were recomputed from MileSplit data in this project. The analysis was re-run from scratch and reproduced the per-race table exactly; the 2025 Woodmont columns were recomputed with one matching rule for every year, which moved the pooled 2025 value from -2.4% (n=398) to -2.5% (n=401). Year-over-year Woodmont comparisons were re-run from MileSplit meet performance data. To date every earlier mark, dates for 778 additional meets were retrieved from MileSplit's public meet data.
- **Comparison rules.** Only each athlete's own cross-country 5,000 m marks were used. Medians are reported. Gaps over 20% were excluded as likely data errors. The Community 5K and the duplicated 2025 "JV Boys Combined" listing were excluded.
- **Weather.** Adjustments use the temperature + dew point guide and airport observations, with assumed race windows for the morning meets. Weather was not adjusted for every season-best meet, because the conditions at each runner's best race are unknown.
- **Fitness and group bias.** Girls, JV and younger runners improve fastest during the season and show the largest gaps. Boys varsity is the cleanest comparison.
- **Reference courses.** Prior-season comparisons include a year of growth, which is why the 2025 control matters. The 2024 and 2025 state meets were at different venues. The 2026 Trojan sample is small (n=22). The Northwestern HS and McAlpine venues are pooled across their meets.
- **GPS.** 130 race recordings (2021: 17, 2022: 34, 2025: 40, 2026: 39) from one public Strava segment leaderboard (an earlier count of 554 screened efforts has no surviving list and cannot be reproduced). The 2026 recordings were screened one by one; the 2021, 2022 and 2025 recordings less closely (date and distance only). Six late-ID 2022 recordings may not be race recordings (2022 median 3.09 mi with them, 3.10 mi without). This is a self-selected sample on different devices, used only as corroboration; values are as listed on public Strava activities. Warmups, cooldowns and watches clearly left running well past the finish were excluded by the data collector. 2026 open-race, Community 5K and uncertain readings are flagged. Devices differ by year and the layout has changed over time.
- **Same-runner comparison (Section 7).** Seven 2026 Starlight runners with public profiles posted 18 other September 2026 race recordings, matched to their Starlight recording by Strava activity. Each runner's Starlight distance is compared with the median of their own other courses. Distances are as listed on the public activities.

- **Reference-course GPS coverage.** Public race-day recordings were found for Lake Murray (n=11, from one public segment leaderboard; two late-ID recordings may postdate the race, and the median is 3.01 mi without them), Mike Moore (n=5), Pink House (n=8) and Warrior, Pawleys Island (n=4). Only device-recorded GPS activities are used; hand-entered (manual) Strava entries are not included. Medium-confidence matches (by date, place and time rather than title) are marked in Appendix D. Segment leaderboards were not bulk-scraped, out of respect for athlete privacy and Strava's terms. On full SC courses this season one team's watches read a median 3.10 mi, so a GPS median near 3.00 mi points to a course about 3% short ($\pm 1.5\%$ course-level bias).
- **Lake Wylie Chargers recordings (Section 16).** Public race activities of the team's own runners at nine 2026 meets (South Meck 8/22 through the York County Championships 10/17), collected from normal public activity pages in two passes and de-duplicated by activity ID and by runner and meet. Names were replaced with codes C1, C2... kept consistent across meets; the name key is held privately by the coach and is not part of this report. Uncertain, off-route, no-distance, extra-distance and non-race rows (9) and the Clover Boys Varsity race (diverted; 7 recordings) are excluded from every figure, table and comparison. Two Clover group-card recordings with no race noted were matched to the boys' 10:03 AM race through the MileSplit results; any Clover row whose race cannot be identified is left out of the Clover statistics. The Chargers did not race Starlight, so their readings are a device baseline, not a same-watch test at Starlight.
- **GPS screening rule.** One written rule, applied identically at every meet, Starlight included, and independent of how many recordings a meet has. (a) **Same-watch check:** a watch is one runner on one device; its expected reading of a full 5K is $3.107 \text{ mi} \times$ the median of its own readings at measured reference courses (McAlpine, Clover full-course races, Victory Bolt), at other meets. A recording is flagged if it differs from that expected value by more than 5%. At least two reference readings that agree within 5% of each other are needed; recordings without such a history are not screened by this rule. (b) **Plausibility floor:** a recording under 90% of 3.107 mi (2.796 mi) on a measured course is flagged. The floor is **not** applied to unmeasured courses such as Starlight, where the true distance is the open question. (c) No median-based outlier screening is done at any meet; every meet median is shown with its n, and medians from fewer than 8 recordings are marked low confidence. Result: 25 of the 169 Chargers recordings (168 used, plus 1 excluded by coach judgment) had a usable same-watch history; none was flagged by (a) or (b), so every meet's median is the same with and without the rule. At Starlight, 0 of the 39 recordings could be screened (no Starlight runner has two same-watch reference readings), so the Starlight GPS median (3.01 mi) and the Starlight course index (-6.6% , a time-based value that does not use GPS) are identical both ways. Two Chargers watches have reference readings that disagree by more than 5% and are not screened.
- **Excluded by coach judgment.** One Clover Classic recording (2.83 mi; Appendix E) is not caught by either rule: its watch has only one other reference reading (3.02 mi at South Meck, -6.3% from it), and 2.83 mi is 91.1% of 3.107 mi, above the 90% floor. Official results place the runner in the JV Boys 5K (the boys' 10:03 AM race, a full-course race), not in the diverted Boys Varsity race, as earlier versions stated. It is excluded by coach judgment because it conflicts with the measured course and the other Clover readings. Clover's median is 3.05 mi with it (n=19) and 3.055 mi without it (n=18); for the 10:03 race, 3.035 mi and 3.05 mi. The effect is small, and no Starlight value depends on it.
- **Unknown devices.** Three Chargers recordings list no device (Eye Opener 3.10 mi, Victory Bolt 3.10 mi, Northwestern Home Meet 3.18 mi). They are kept; removing them changes no meet median.
- **Tiers.** B* = measured by a coach, with no independent public record: Clover and Victory Bolt (measured by the report author), Trojan / Northwestern HS (host staff), the Coaches Classic and the State course (coach-trusted), and the York County Championships at Catawba Bend (wheel-measured by the author and Coach Ardis; start rerouted for safety, not re-measured). McAlpine is tier B (wheel-measured, with a public record of its re-measurement). Tier C means no published measurement was found; it is not proof that a course is short.
- **Course credits.** The Clover Classic course was designed, excavated and measured by Coach Christopher Young, its architect; the Victory Bolt course was designed and measured by Coach Young and excavated by HDS Equipment. Both are full 3.1 mi courses and serve as anchors in Sections 5, 15 and 17.
- **Elevation (Section 8).** The Starlight 2026, Aiken State course, Northwestern, Victory Bolt, Clover and Newberry / The Farm profiles (Figures 13–14) are from a single reference GPS watch, the report author's own; its Starlight distance and climb were read from screenshots of three activities. The climb inputs for Figure 16 and the terrain model use one rule for every course: the median of the device-recorded readings (Starlight: the athletes' watches, median 85 ft, n=39). Barometric climb readings vary by device and can spike; no reading is dropped, and the median limits their effect. Loop positions were read off the profile images and are approximate.
- **Season-wide course speed index (Sections 15–20).** Public MileSplit results and the public MileSplit performances API; no logins. HS-level 5000 m marks only (races at high-school meets), each athlete's best mark per meet, 13:00–45:00. The 2026 Starlight results include 263 middle-school finishers (grades 6–8) who raced in the same races; without them Starlight is -6.3% ; 41 SC meets / 21,306 results / 7,222 athletes in 2026 and 45 meets / 28,686 results in 2025; meets with fewer than 15 paired runners dropped. Model: $\log(\text{time}) = \text{athlete effect} + \text{meet effect} - \text{season trend}$, fit by robust least squares (Huber weights; rows with residuals over 10% dropped as bad days or jogs, about 2% of rows). Confidence intervals come from a 300-rep athlete-cluster bootstrap and **reflect sampling only**, not anchor or trend error; a team-clustered bootstrap (120 reps) gives a wider 95% CI for Starlight, -7.2% to -5.9% . Race by race, Starlight runs from -4.4% (Boys Elite) to -9.1% (JV Girls). Across the fitness trends run (none to -3.5% per 30 days), Starlight moves between -5.7% and -8.7% , so the honest range is about -5% to -9% .
- **Trend assumption sensitivity.** The -2.5% per 30 days trend comes from same-venue repeat meets in 2025 (-2.5% to -4.5% ; two venues ran the other way). The trend is not identifiable from the data (every result at a meet shares one date). With no trend Starlight is -8.7% ; at -3.5% per 30 days it is -5.7% ; extrapolated to -4.5% it would be about -4.8% . At every value run it remains the largest outlier, and the same-night comparison with Lights Out (2.8–2.9 points) does not depend on the trend; the York County gap is 6.2–6.4 points raw and about 1.9–2.1 points after the terrain allowance. Early-season and heat-affected meets (August and early September) carry about $\pm 2\%$ of weather and heat noise; same-day comparisons (Starlight, the York County Championships (Catawba Bend), Hornets and Lights Out on 10/17; the Cooler Pit Classic, also on 10/17, has no results) are the strongest evidence.
- **Anchors.** The 2026 anchors (Trojan, Victory Bolt, Clover's 5,000 m races) have residuals that sum to zero by construction; leaving one out moves Starlight between -6.2% and -6.8% ; the 2025 anchors (Trojan, Coaches Classic, State at Aiken, Clover) spread about $\pm 2\%$. With the reference set by Trojan alone, by McAlpine alone or by the median of all 41 meets, Starlight is -7.3% , -7.7% and -6.6% , still the largest outlier (Section 17). The Lake Wylie terrain scale is in seconds, partly from raw differences against Aiken, converted at 1,150 s ($\approx 19:10$). The Clover 2026 Boys Varsity race was diverted and is excluded. The 2026 Coaches Classic (10/10) was canceled.
- **Accuracy ranking.** Terrain line from the Lake Wylie staff terrain-scale values of five anchors, each at the median of its device climb readings (Clover 193 ft, n=15). It is approximate: slope $+3.0\%$ per 100 ft, 95% CI -0.3 to $+6.2\%$ (n=5, $p = 0.06$), and the 95% prediction interval is about ± 5 points. GPS climb is noisy (Yellow Jacket readings range from 59 to 297 ft), which is why medians are used. The York County Championships (Catawba Bend) are shown at their computed residual on the same line (-4.8% at 229.5 ft); that climb is beyond the anchors' 39–205 ft, so the value is an extrapolation (range -6.0 to -3.3% across variants). Confidence: high where at least 300 runners are paired and at least five climb readings exist; rows with fewer than 150 paired runners are hatched as small samples.
- **Venues.** One meet-ID-to-venue lookup is used throughout. Northwestern HS (the Trojan Invitational, the Northwestern home meets and the 2025 York County Championships) and McAlpine (the Larry McAfee Cross Country Course at McAlpine Park: South Meck, Providence, Wendy's, Hare & Hounds and Foot Locker/Brooks South) are each pooled as one venue where courses are compared. WakeMed Soccer Park, Cary NC (the Great American XC Festival, MileSplit 698296 and 745534, and the adidas XC Challenge, 649488 and 729224) is pooled as one venue; the venue was confirmed by the Lake Wylie coaching staff. The York County Championships have moved: the 2024 edition (MileSplit 636840, 10/19/2024) was run at Clover High School, Clover SC, on the Clover Classic course; the 2025 edition was at Northwestern HS, Rock Hill, and is pooled with that venue; the 2026 edition was at Catawba Bend Preserve, Rock Hill SC, a different course from 2025, so it has no

2025 baseline and is never compared with the 2025 edition. The wooded Catawba Bend course was wheel-measured by the author and Coach Ardis (Northwestern HS); a minor race-day reroute of part of the start around mud, after heavy overnight rain, was not re-measured (Section 19). Yellow Jacket (Greer HS XC Course) is a different venue from Starlight (Riverside HS). Eye Opener (Roger Milliken Center, Spartanburg) is dated 9/5, the day its high-school 5K races ran.

- **Rankings counts are indicative.** Season bests use only the 41 SC meets in the data set. Out-of-state meets (Wendy's, Hare & Hounds, Richmond Hill and others) are missing, so the counts in Section 20 are not official rankings. The 4A team list is the one on the 10/3 4A board. Verification tiers come from public meet-page text; "no statement found" does not mean a course was never measured.
- **Earlier editions.** All 12 Starlight editions (2015–2026) were held at Riverside HS, Greer SC. Course details varied over the years: the host described a 2.5-loop course in 2016, 3 loops in each edition from 2019 to 2025 and 4 loops in 2026; the 2015, 2017 and 2018 pages give no loop count. No GPS recordings were found for 2015–2019, so those editions are not analyzed. The 2019 edition was moved to a morning schedule and the 2020 edition used a split-day COVID format, so only 2021–2025 count as earlier night editions. MileSplit's venue records split the editions between its "Riverside HS" venue (45942) and an older "Riverside" record (14552) with an erroneous Spindale, NC address that is really Riverside HS; its meet records cover all editions.
- **Scope.** Athlete information is limited to public results and public Strava posts. Individual athletes are not named: runners carry neutral labels (the Section 20 worked examples use "Runner 1–25" from a separately kept list with names omitted, and round marks to the nearest 5 s), and public results are linked. GPS recordings are cited by source code (S001, S002 ...), not by link. Quoted captions have personal names, school names, exact official times and any health mentions removed, and a post image showing an athlete's name and photos was described rather than reproduced. School names appear only in team-level figures. No health or personal information is included. Activity links and individual watch times are withheld from this edition because public activities show athletes' names and watch times can be matched to results. They are kept in a private source key held by the author and available to the SCTCCCA rankings committee or SCHSL staff on request, so every reading can still be checked.

SECTION 23 SOURCES

- MileSplit SC, Run In Starlight Invitational 2026, results: <https://sc.milesplit.com/meets/717632-run-in-starlight-invitational-2026/results>
- MileSplit SC, Starlight Invitational Run 2025, results: <https://sc.milesplit.com/meets/680896-starlight-invitational-run-2025/results>
- Earlier editions at Riverside HS (MileSplit meet information): 2016 · 2019 · 2020 · 2021 · 2022 · 2023 · 2024
- Meet history and meet bests (Section 3): MileSplit SC, Riverside Starlight Run all-time boys CC rankings, Oct 14, 2026 (727186) and the companion girls list (MileSplit SC Starlight series page, series/2644); 2024 results (619413); 2020 meet information (388277); 2025 meet information and tentative race schedule (680896). Eye Opener marks: MileSplit SC, Ranking South Carolina Boys CC at Eye Opener, Sep 2, 2023 (338101); Christ School, Eye Opener report, Sep 4, 2022 (christsschool.org).
- MileSplit SC course videos: 823301 · 823304 (faster version) · 823469 (Riverside tempo run on the course)
- 2026 host meet document and 2025 MileSplit meet-information page (course descriptions), as archived in this project.
- Strava segment: Riverside High School Track, [strava.com/segments/33085048](https://www.strava.com/segments/33085048) (leaderboard used to find earlier-edition recordings)
- Strava public activities, all 130 race recordings 2021–2026: listed by source code in Appendix A (no names).
- Strava public activities, same runners on other September 2026 courses (18 recordings): listed by source code in Section 7 and Appendix B (no names).
- Strava elevation profiles (reference GPS watch): Starlight 2026 (three recordings), Aiken State course (2026), Northwestern / Trojan course, Clover Classic course, Clover High School ([strava.app/link/Xs2efbixl7b](https://www.strava.app/link/Xs2efbixl7b)) and Newberry / The Farm (9/30/2026), Figures 13–14.
- WakeMed Soccer Park, Cary NC: MileSplit meet results for the Great American XC Festival (698296, 745534) and the adidas XC Challenge (649488, 729224); venue confirmed by the Lake Wylie coaching staff. No public measurement record found.
- Strava public activities, other schools' runners at McAlpine and Starlight 2026 (Section 7): coded in the Section 7 table (device-recorded GPS only; no names).
- Lights Out Invitational, Blythewood HS, 10/17/2026 (night race; Section 10): 764730; host text: "Less than 700 meters of the race is on a track surface. The course is flat and promises to be fast"
- Pre-2021 loop counts (Section 2): 2016 "2.5 loop course": <https://sc.milesplit.com/meets/250553-starlight-reservation-run-2016/info>; 2019 "3 loop course" and the morning schedule: <https://sc.milesplit.com/meets/355129-starlight-run-at-the-reservation-part-of-the-scrunners-xc-seri-2019/info>; 2020 "3 loop course": <https://sc.milesplit.com/meets/388277-starlight-run-2020/info>
- Starlight 2025 host race-day document ("~2000 meters of the race is on the track"; "Weather Caution Schedule"): <https://docs.google.com/document/d/1WCG30K9E1HSWuXZZ03g2cQzdzByzCYbDFeC7GzW8-mw>
- Girls under 19:00 (Section 3): full official results (above) and MileSplit SC elite performances, 2026: sc.milesplit.com/meets/717632-run-in-starlight-invitational-2026/elites
- Timing: "Timing/Results Split Second Timing SC", MileSplit meet page: sc.milesplit.com/meets/717632-run-in-starlight-invitational-2026/info
- MileSplit venue and meet records: "Riverside HS" venue 45942 (sc.milesplit.com/venues/45942/riverside-hs); "Riverside" venue record 14552, erroneous Spindale address ([nc.milesplit.com/venues/14552/riverside](https://sc.milesplit.com/venues/14552/riverside)); meet records, all editions ([milesplit.com/rankings/leaders/high-school-boys/cross-country?year=all&meet=45070](https://sc.milesplit.com/rankings/leaders/high-school-boys/cross-country?year=all&meet=45070))
- Greenville County GIS, 2026 Color Aerial Photography at 0.5 ft (ORTHO2026; imagery acquired February–March): gcgis.org/AccessDistribution.html; gcgis.org/arcgisim2/rest/services/imagery/ORTHO2026/ImageServer
- Season-wide data (Sections 15–21): public MileSplit SC meet pages and results for 41 SC meets in 2026 and 45 in 2025, via the public MileSplit performances API (/api/v1/meets/<id>/performances). Every 2026 meet page is linked by meet ID in Appendix C.
- Same-runner comparisons (Section 15): MileSplit SC, Lake Murray Invitational 2026 (763738; 2025: 691860), Mike Moore Classic 2026 (729061; 2025: 686078), Pink House Invitational 2026 (713232; 2025: 692535), Warrior Invitational, Pawleys Island 2026 (770244; 2025: 690928).
- Verification evidence (Sections 17–19, 21): USATF certificate SC16008KWL, Saluda Shoals Park 5K: [certificate \(PDF\)](#); Mike Moore Classic meet page (729061); Aiken Invitational, Generations Park (761528); Warrior XC Invitational, Wannamaker (769711); Battle of Camden (765090); Trojan Invitational (709066); Victory Bolt (740385; measured 3.1 mi, course credits in Section 22; official course map (Figure 15)); Clover Classic (719603); Coaches Classic (692104; LACCTIC listing believed to be The Farm, page content not confirmed: lacctic.com/races/9169); SCHSL State course: MileSplit course map article: schsl.org (PDF). Host course descriptions quoted in Sections 15–19 are from each meet's MileSplit information page (Appendix C).
- Strava public activities at Lake Murray, Mike Moore, Pink House and Warrior (Pawleys Island): listed by source code in Appendix D (no names). Lake Murray recordings were found through the public segment 9871112 ("CC Hill #2") leaderboard.
- McAlpine (Larry McAfee Cross Country Course at McAlpine Park): NCPrepTrack, "McAlpine Course Named for Larry McAfee" (Feb 20, 2019): ncpreptrack.com/McAlpineCourseNamed_McAfee.html; NCPrepTrack, South Regional history (50–60 m added in September 2015 for a full 5,000 m): ncpreptrack.com/foothist.html; Jeff George, "Meet the New Course (Same as the Old Course) – McAlpine Gets an Adjustment," MileSplit NC, Oct 29, 2015: sc.milesplit.com/articles/167373; Foot Locker South course map (archived Aug 9, 2025): web.archive.org/web/20250809031158/https://footlockercc.com/south/coursemap.shtml
- Victory Bolt public GPS recordings (Section 16A): public Strava recordings reviewed 10/19/2026; official results [milesplit.com/meets/740385/results](https://sc.milesplit.com/meets/740385/results) (Victory Bolt) and [milesplit.com/meets/717632/results](https://sc.milesplit.com/meets/717632/results) (Starlight, checked for overlap); recordings identified by source ID only (no profile links)
- Strava trace of the Victory Bolt course (Section 8): recording S016
- Strava public race activities of Lake Wylie Chargers runners at South Meck (McAlpine), Eye Opener (Roger Milliken Center), Northwestern HS (Trojan Invitational and Home Meets 2 and 3), Clover Classic, Victory Bolt, Landrum and the York County Championships (Catawba Bend): listed by source code in Appendix E (codes C1, C2...; names omitted; no times).
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- USATF Competition Rules (2024), Rules 240, 250–251: [2024 USATF Competition Rules \(PDF\)](#); USATF, Rules and Regulations Relevant to the RRTC: usatf.org
- USATF RRTC Course Measurement and Certification Procedures Manual (short course prevention factor; shortest possible route): [rrtc.net \(2026 manual\)](https://rrtc.net/2026%20manual)
- MSHSAA (Missouri) 2026 Cross Country Manual, District Host Course Guidelines: [mshsaa.org \(PDF\)](https://mshsaa.org)
- SCHSL 2026–27 Rules Section, Cross Country: [schsl.org \(PDF\)](https://schsl.org)
- GATFXCCA Cross Country Course Measurement Guidelines: [PDF](#) · KSHSAA, Cross Country Course Measured by Shortest Route: [PDF](#)
- MileSplit FL: Best Practices for Cross Country Course Measurement ([52762](#)); Cross Country Course Measurement: A Practical Consideration ([187587](#)). MileSplit, XC Rankings By Times ([52455](#)). MileSplit SC, SC cross country course ratings ([774687](#)).

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APPENDIX A

ALL GPS RECORDINGS USED

Every public Strava race recording used in Section 6 and Figures 4 and 11, from the Riverside High School Track segment leaderboard (strava.com/segments/33085048). Distance is as listed on the activity. Type applies to 2026 only: blank = school race, Open = open race, Comm. = Community 5K, Unc. = uncertain. Codes resolve to public activities in the private source key. No names are given.

Year	Mi	Type	Code	Year	Mi	Type	Code	Year	Mi	Type	Code	Year	Mi	Type	Code
2021	3.15		S018	2022	3.09		S051	2025	3.16		S084	2026	3.04		S112
2021	3.15		S019	2022	3.09		S052	2025	3.16		S085	2026	3.03		S004
2021	3.14		S020	2022	3.08		S053	2025	3.16		S086	2026	3.03		S005
2021	3.14		S021	2022	3.08		S054	2025	3.16		S087	2026	3.03	Comm.	S113
2021	3.14		S022	2022	3.08		S055	2025	3.15		S088	2026	3.02		S006
2021	3.13		S023	2022	3.08		S056	2025	3.15		S089	2026	3.02		S007
2021	3.11		S024	2022	3.08		S057	2025	3.15		S090	2026	3.02	Unc.	S015
2021	3.11		S025	2022	3.08		S058	2025	3.14		S091	2026	3.02		S114
2021	3.11		S026	2022	3.08		S059	2025	3.14		S092	2026	3.02		S115
2021	3.11		S027	2022	3.07		S060	2025	3.14		S093	2026	3.02	Comm.	S116
2021	3.08		S028	2022	3.07		S061	2025	3.14		S094	2026	3.02		S117
2021	3.08		S029	2022	3.06		S062	2025	3.14		S095	2026	3.01		S008
2021	3.08		S030	2022	3.06		S063	2025	3.13		S096	2026	3.01	Unc.	S013
2021	3.07		S031	2022	3.06		S064	2025	3.13		S097	2026	3.01		S118
2021	3.05		S032	2022	3.06		S065	2025	3.13		S098	2026	3.01		S119
2021	3.05		S033	2022	3.03		S066	2025	3.13		S099	2026	3.00		S010
2021	3.05		S034	2022	3.03		S067	2025	3.12		S100	2026	3.00		S120
2022	3.19		S035	2022	2.96		S068	2025	3.12		S101	2026	3.00		S121
2022	3.19		S036	2025	3.25		S069	2025	3.12		S102	2026	3.00		S017
2022	3.18		S037	2025	3.22		S070	2025	3.11		S103	2026	2.99		S009
2022	3.18		S038	2025	3.22		S071	2025	3.11		S104	2026	2.99		S122
2022	3.17		S039	2025	3.20		S072	2025	3.09		S105	2026	2.99		S123
2022	3.15		S040	2025	3.20		S073	2025	3.09		S106	2026	2.98		S011
2022	3.14		S041	2025	3.19		S074	2025	3.07		S107	2026	2.98		S124
2022	3.14		S042	2025	3.19		S075	2025	3.04		S108	2026	2.97	Open	S125
2022	3.13		S043	2025	3.19		S076	2026	3.10	Unc.	S014	2026	2.97		S126
2022	3.12		S044	2025	3.18		S077	2026	3.09		S109	2026	2.97		S127
2022	3.12		S045	2025	3.18		S078	2026	3.08		S001	2026	2.95		S128
2022	3.12		S046	2025	3.17		S079	2026	3.07		S002	2026	2.94		S129
2022	3.10		S047	2025	3.17		S080	2026	3.07		S012	2026	2.87	Open	S130
2022	3.10		S048	2025	3.17		S081	2026	3.06	Comm.	S110	2026	2.87		S131
2022	3.10		S049	2025	3.16		S082	2026	3.05		S003				
2022	3.10		S050	2025	3.16		S083	2026	3.04		S111				

APPENDIX B

SAME-RUNNER RECORDINGS ON OTHER COURSES

Every recording used in Section 7 and Figure 12. Each runner's Starlight 2026 recording is listed first (bold). Distance and climb are as listed on the public activity; watch times are in the source key. Labels match Figure 4. No names are given.

Runner	Course	Date	Mi	Watch time	Climb (ft)	Source code
Runner AJ	Starlight 2026 (Greer)	2026-10-17	3.00	–		102 S017
	Eye Opener (Roger Milliken Center, Spartanburg)	2026-09-05	3.12	key	153	S132
	Yellow Jacket (Greer HS XC Course)	2026-09-12	3.05	key	280	S133
	Hare & Hounds (McAlpine, Charlotte NC)	2026-09-19	3.10	key	53	S134
	Lakelands Invitational (Greenwood)	2026-09-26	3.08	key	141	S135
Runner B	Starlight 2026 (Greer)	2026-10-17	3.07	key		82 S002
	Eye Opener (Roger Milliken Center, Spartanburg)	2026-09-05	3.25	key	151	S136
	Trojan Invitational (Northwestern HS, Rock Hill)§	2026-09-12	3.11	key	79	S137
	Hare & Hounds (McAlpine, Charlotte NC)	2026-09-19	3.15	key	52	S138
Runner H	Starlight 2026 (Greer)	2026-10-17	3.02	key		109 S007
	Eye Opener (Roger Milliken Center, Spartanburg)	2026-09-05	3.19	key	166	S139
	Yellow Jacket (Greer HS XC Course)	2026-09-12	3.08	key	297	S140
	SCA Invitational (Milliken-SCA course, Spartanburg)	2026-09-18	3.11	key	145	S141
Runner J	Starlight 2026 (Greer)	2026-10-17	2.99	–		98 S009
	Eye Opener (Roger Milliken Center, Spartanburg)	2026-09-05	3.13	key	152	S142
	Trojan Invitational (Northwestern HS, Rock Hill)	2026-09-12	3.11	key	71	S143
Runner M	Starlight 2026 (Greer)	2026-10-17	3.10	key		43 S014
	Eye Opener (Roger Milliken Center, Spartanburg)	2026-09-05	3.17	key	151	S144
	Yellow Jacket (Greer HS XC Course)	2026-09-12	3.11	key	62	S145
Runner U	Starlight 2026 (Greer)	2026-10-17	3.02	–		112 S115
	Eye Opener (Roger Milliken Center, Spartanburg)	2026-09-05	3.12	key	220	S146
	Yellow Jacket (Greer HS XC Course)	2026-09-12	3.06	key	108	S147
	Lake Murray (Crooked Creek Park, Chapin)‡	2026-09-19	2.93	key	125	S148
Runner W	Starlight 2026 (Greer)	2026-10-17	3.00	key		66 S010
	Yellow Jacket (Greer HS XC Course)	2026-09-12	3.05	key	59	S149

Runner M's Clover race was the Boys Varsity race, which was diverted around a copperhead and is excluded (not listed). ‡ Single reading on that course. § Inferred from date and location. Yellow Jacket climb readings of 280 and 297 ft are likely barometric noise. Starlight watch time is shown where it was reviewed in Section 6.

APPENDIX C

FULL 2026 COURSE SPEED INDEX

All 41 SC meets in the 2026 data set, fastest first. % vs ref. = course index (negative = faster), base case -2.5% per 30 days; "No trend" and "Trend -3.5" are the sensitivity runs. 2025 = the same meet's 2025 index; Change = 2026 minus 2025. Terrain residual and confidence are from Section 19 (negative = faster than terrain explains). ♦ = 2026 anchor. Tier: A certified, A* certified distance with a surface flag, B measured with a public record, B* measured by a coach with no independent public record (Clover and Victory Bolt: measured by the report author; Trojan: host staff; York County Championships at Catawba Bend: the author and Coach Chris Ardis), C+ distance stated without method, C no published measurement found (not proof of a short course).

"Reading" = clear outlier (Starlight only), check distance, or small sample. Each meet ID links to its public MileSplit information page. ‡ York County Championships (Catawba Bend), tier B*: wheel-measured at 3.1 mi by the author and Coach Ardis (Northwestern HS); heavily wooded; the start was rerouted around mud on race day (a safety call) and not re-measured. Its terrain residual is computed on the same line as every other course and is an extrapolation beyond the anchors' climb range (Section 19); its 2025 value is left blank because the 2025 meet was at Northwestern HS.

Meet (venue)	Date	Paired	% vs ref.	95% CI	No trend	Trend -3.5	2025	Change	Tier	Terrain residual	Reading	MileSplit
Run in Starlight (Riverside HS, Greer)	10/17	1,050	-6.6	-6.9 to -6.3	-8.7	-5.7	+0.3	-6.9	C	-6.9	clear outlier	717632
Pickens County Champs (Pickens HS)	09/26	86	-4.2	-5.0 to -3.6	-4.8	-4.0	-1.0	-3.2	C	-3.2	check distance	769484
Warrior Invitational (Stables Park, Pawleys Island)	09/26	150	-3.9	-4.5 to -3.4	-4.5	-3.7	-1.8	-2.2	C	-2.9	check distance	770244
Lights Out (Blythewood HS)	10/17	384	-3.7	-4.2 to -3.2	-5.9	-2.8	-	-	C	-2.7	check distance	764730
Beaufort County Champs (Hilton Head)	09/26	156	-2.9	-3.6 to -2.2	-3.5	-2.7	-1.8	-1.1	C	-1.9	check distance	767061
Yellow Jacket (Greer HS)	09/12	850	-2.8	-3.1 to -2.5	-2.2	-3.0	+0.7	-3.5	C	-3.8	check distance	749885
Heathwood Hall Highlander (Columbia)	08/29	946	-2.4	-2.7 to -2.0	-0.6	-3.1	-1.3	-1.1	C	-1.3		770457
Wilson Hall / TSA (Patriot Park, Sumter)	09/23	294	-2.1	-2.6 to -1.5	-2.4	-1.9	-	-	C	-1.0		751652
Cougar Chase 1 (Colleton Co., Walterboro)	09/23	126	-1.5	-2.4 to -0.6	-1.8	-1.4	-	-	C	-0.5	small sample	760209
Woodmont (Woodmont HS, Piedmont)	10/03	910	-1.4	-1.7 to -1.1	-2.6	-1.0	-3.2	+1.8	C	-0.4		761226
Lakelands (Maxwell Farms, Greenwood)	09/26	501	-0.8	-1.3 to -0.5	-1.4	-0.6	0.0	-0.8	C	-2.8	check distance	744710
Pelion / Strictly Running (Pelion HS)	10/07	508	-0.6	-1.0 to 0.0	-2.1	0.0	-2.7	+2.1	C	+0.5		765510
FB Hurricanes 5K (First Baptist, Charleston)	10/03	235	-0.6	-1.1 to 0.0	-1.7	-0.1	-1.4	+0.9	C	+0.5		762171
Mike Moore Classic (Saluda Shoals, Columbia)	09/12	845	-0.4	-0.7 to 0.0	+0.2	-0.7	-2.6	+2.2	A*	-0.7		729061
Lake Murray (Crooked Creek Park, Chapin)	09/19	834	-0.3	-0.6 to +0.1	-0.3	-0.3	-1.7	+1.3	C	-2.5	check distance	763738
Hornets (Darlington Raceway)	10/17	119	-0.3	-1.1 to +0.4	-2.6	+0.7	+0.1	-0.4	C	+0.8	small sample	720821
York County Championships (Catawba Bend) - wheel-measured 3.1 mi; start rerouted, not re-measured	10/17	440	-0.2	-0.6 to +0.2	-2.5	+0.7	-	-	B*	-4.8‡	extrapolated	740610
Low Country (Mullet Hall, Johns Island)	09/26	744	-0.2	-0.6 to +0.1	-0.8	0.0	+2.0	-2.2	C	+0.9		727584
Victory Bolt XC Invitational (Lake Wylie High School, York SC) - measured 3.1 mi ♦	09/26	480	-0.1	-0.3 to +0.2	-0.6	+0.2	-	-	B*	-1.3		740385
Greenville Hurricanes (Triple Tree, Woodruff)	09/12	153	-0.1	-0.6 to +0.6	+0.5	-0.3	-	-	C	+1.0		768905
Trojan Invitational (Northwestern HS, Rock Hill) ♦	09/12	576	0.0	-0.2 to +0.2	+0.6	-0.2	+0.8	-0.8	B*	-0.2		709066
Pink House (Hardeeville)	09/12	416	+0.5	+0.1 to +1.1	+1.1	+0.3	-3.0	+3.5	C	+1.6		713232
Pinewood (Summerville)	08/22	308	+0.5	-0.1 to +1.1	+2.9	-0.4	-	-	C	+1.6		766643
Battle of Camden (Camden)	08/22	461	+0.6	+0.2 to +1.1	+3.0	-0.3	-0.5	+1.1	C+	+1.7		765090
Warrior XC (Wannamaker Park, N. Charleston)	09/16	319	+0.9	+0.4 to +1.4	+1.2	+0.8	+0.4	+0.5	A	+2.0		769711
Stags Stampede (Old Santee Canal, Moncks Corner)	09/30	342	+1.3	+0.7 to +1.8	+0.3	+1.6	-	-	C	+2.3		753776
Landrum Bojangles (Landrum HS)	10/03	337	+1.4	+1.0 to +1.8	+0.2	+1.9	-4.8	+6.2	C	-1.8	check distance	763765
Iron Horse Derby (Philip Simmons, Charleston)	10/14	414	+1.8	+1.3 to +2.3	-0.3	+2.6	-	-	C	+2.8		765701
Skyhawk (Hammond School, Columbia)	08/15	439	+2.5	+2.1 to +3.2	+5.5	+1.3	+3.0	-0.5	C	+3.5		757333
Palmetto (Palmetto HS, Williamston)	09/15	309	+3.0	+2.5 to +3.6	+3.3	+2.8	-0.2	+3.2	C	+4.0		763822
Green Wave (Easley HS)	10/14	331	+3.0	+2.4 to +3.6	+0.9	+3.9	-0.6	+3.6	C	+4.1		765576
Aiken Invitational (Generations Park, Aiken)	09/16	371	+3.3	+2.7 to +3.9	+3.6	+3.2	+3.7	-0.3	A	+4.4		761528
Cobra (Avian Commons, Ridgeville)	09/19	546	+3.7	+3.3 to +4.3	+3.7	+3.7	-2.3	+6.0	C	+4.8		763763
Eye Opener (Roger Milliken Center, Spartanburg)	09/05	2,387	+3.9	+3.7 to +4.3	+5.2	+3.3	+1.2	+2.6	C	+1.5		715422
Mid-Carolina Meet (Prosperity)	10/01	227	+4.4	+3.7 to +5.1	+3.4	+4.8	-	-	C	+5.4		764232
Charger (Northwood Academy, Summerville)	10/10	140	+4.8	+3.9 to +5.9	+3.0	+5.5	-	-	C	+5.9	small sample	763542
Clover Classic (Clover High School, Clover SC) - measured 3.1 mi ♦	09/19	269	+4.9	+4.6 to +5.2	+4.9	+4.9	+2.5	+2.4	B*	+1.4		719603
Trojan Country (Ridge Spring-Monetta HS)	08/29	383	+5.0	+4.4 to +5.7	+6.8	+4.3	-1.8	+6.8	C	+6.0		733251
Pelican's (Lexington)	09/10	298	+5.2	+4.6 to +6.2	+6.0	+4.9	-0.3	+5.5	C	+6.3		749254
SCA (Milliken-SCA course)	09/18	168	+6.0	+5.4 to +6.8	+6.1	+6.0	+4.7	+1.3	C	+3.9	small sample	770301
Electric City (Ducworth Complex, Anderson)	09/26	120	+7.4	+6.8 to +8.0	+6.7	+7.6	+7.6	-0.2	C	+8.4	small sample	763716
Coaches Classic (The Farm, Newberry)	10/10	0	2026 meet canceled; used as a 2025 anchor only			+1.9	-	-	B*			764369

APPENDIX D

GPS RECORDINGS AT LAKE MURRAY, MIKE MOORE, PINK HOUSE AND WARRIOR

Public Strava race-day recordings used in Section 15 and Figure 18. Distance and climb are as listed on the activity. No names or times are given. Lake Murray: 11 recordings, median 3.00 mi (range 2.90–3.04), median climb 147 ft, from the public segment 9871112 ("CC Hill #2") leaderboard; the 9/19 race was muddy and wet. Mike Moore, Pink House and Warrior recordings were matched by title, date, place and time. Device-recorded GPS activities only. Codes resolve to public activities in the private source key.

Course	Date (2026)	Mi	Climb (ft)	Source code	Note
Lake Murray (Chapin)	09/19	2.93	125	S148	same watch as Runner U (Section 15)
Lake Murray (Chapin)	09/19	2.94	141	S150	
Lake Murray (Chapin)	09/19	3.03	161	S151	
Lake Murray (Chapin)	09/19	2.95	121	S152	
Lake Murray (Chapin)	09/19	3.00	144	S153	
Lake Murray (Chapin)	09/19	3.01	177	S154	
Lake Murray (Chapin)	09/19	2.94	147	S155	
Lake Murray (Chapin)	09/19	3.03	413	S156	climb reading likely barometric outlier; muddy race
Lake Murray (Chapin)	09/19	3.01	156	S157	
Lake Murray (Chapin)	09/19	3.04	164	S158	
Lake Murray (Chapin)	09/19	2.90	134	S159	
Mike Moore (Saluda Shoals)	09/12	3.14	72	S160	
Mike Moore (Saluda Shoals)	09/12	3.10	75	S161	
Mike Moore (Saluda Shoals)	09/12	3.14	82	S162	matched by date, place and time (medium confidence)
Mike Moore (Saluda Shoals)	09/12	3.16	82	S163	matched by date, place and time (medium confidence)
Mike Moore (Saluda Shoals)	09/12	3.14	108	S164	matched by date, place and time (medium confidence)
Warrior Inv. (Pawleys Island)	09/26	3.00	62	S165	
Warrior Inv. (Pawleys Island)	09/26	3.01	0	S166	device reports 0 ft
Warrior Inv. (Pawleys Island)	09/26	3.02	46	S167	
Warrior Inv. (Pawleys Island)	09/26	2.99	7	S168	matched by date, place and time (medium confidence)
Pink House (Hardeeville)	09/12	3.06	0	S169	device reports 0 ft
Pink House (Hardeeville)	09/12	3.07	0	S170	device reports 0 ft
Pink House (Hardeeville)	09/12	3.05	3	S171	
Pink House (Hardeeville)	09/12	3.03	98	S172	
Pink House (Hardeeville)	09/12	3.09	0	S173	device reports 0 ft
Pink House (Hardeeville)	09/12	3.07	10	S174	
Pink House (Hardeeville)	09/12	3.08	0	S175	device reports 0 ft
Pink House (Hardeeville)	09/12	3.04	16	S176	

APPENDIX E LAKE WYLIE CHARGERS RACE RECORDINGS, 2026

Public Strava race activities of Lake Wylie Chargers runners, used in Sections 15–16 and Figures 18–19. Names are omitted; runners are coded C1, C2... with the same code at every meet, and no times are given. Distance and climb are as listed on the activity; "-" = not reported. Device-recorded GPS activities only. Grey rows are excluded: an uncertain second run, an off-route recording, no distance, extra distance, non-race recordings, one Clover recording excluded by coach judgment (2.83 mi, JV Boys 5K; Section 22), and the Clover Boys Varsity race, which was diverted around a copperhead (its distances are not shown). One Victory Bolt recording has no activity ID and no code. Codes resolve to public activities in the private source key.

Runner	Meet	Date	Race	Mi	Climb (ft)	Device	Status	Source code
C1	South Meck Invitational (McAlpine, Charlotte NC)	08/22		3.13	-	Forerunner	GPS	S177
C12	South Meck Invitational (McAlpine, Charlotte NC)	08/22		3.14	-	FR265	GPS	S178
C17	South Meck Invitational (McAlpine, Charlotte NC)	08/22		3.13	-	Forerunner	GPS	S179
C2	South Meck Invitational (McAlpine, Charlotte NC)	08/22		3.14	-	FR55	GPS	S180
C19	South Meck Invitational (McAlpine, Charlotte NC)	08/22		3.00	-	Amazfit Active 2	GPS	S181
C9	South Meck Invitational (McAlpine, Charlotte NC)	08/22		3.14	-	Apple Watch SE3	GPS	S182 (group activity link)
C3	South Meck Invitational (McAlpine, Charlotte NC)	08/22		2.98	-	Amazfit Active 3	GPS	S183
C13	South Meck Invitational (McAlpine, Charlotte NC)	08/22		2.82	-	fenix 5	GPS	S184
C11	South Meck Invitational (McAlpine, Charlotte NC)	08/22		3.02	-	Samsung Health	GPS	S185
C21	South Meck Invitational (McAlpine, Charlotte NC)	08/22		3.11	-	FR55	GPS	S186
C10	South Meck Invitational (McAlpine, Charlotte NC)	08/22		3.12	-	Apple Watch SE	GPS	S187
C5	South Meck Invitational (McAlpine, Charlotte NC)	08/22		3.13	-	Strava App (Apple Watch SE)	GPS	S188
C7	South Meck Invitational (McAlpine, Charlotte NC)	08/22		3.49	-	vivoactive 6	Extra distance (excluded)	S189
C14	South Meck Invitational (McAlpine, Charlotte NC)	08/22		3.15	-	Venu 2	GPS	S190
C23	South Meck Invitational (McAlpine, Charlotte NC)	08/22		3.13	-	FR165	GPS	S191
C34	South Meck Invitational (McAlpine, Charlotte NC)	08/22		3.10	-	Apple Watch SE3	GPS	S192
C35	South Meck Invitational (McAlpine, Charlotte NC)	08/22		3.08	-	Venu Sq 2	GPS	S193
C36	South Meck Invitational (McAlpine, Charlotte NC)	08/22		2.99	-	FR55	GPS	S194 (group activity link)
C37	South Meck Invitational (McAlpine, Charlotte NC)	08/22		3.14	-	Amazfit	GPS	S195 (group activity link)
C32	Eye Opener (Roger Milliken Center, Spartanburg)	09/05		3.15	-	Venu 3	GPS	S196
C38	Eye Opener (Roger Milliken Center, Spartanburg)	09/05		3.19	-	Strava App (Apple)	GPS	S197
C36	Eye Opener (Roger Milliken Center, Spartanburg)	09/05		3.12	-	FR55	GPS	S198
C35	Eye Opener (Roger Milliken Center, Spartanburg)	09/05		3.12	-	Venu Sq 2	GPS	S199
C1	Eye Opener (Roger Milliken Center, Spartanburg)	09/05		3.14	154	FR265	GPS	S200
C2	Eye Opener (Roger Milliken Center, Spartanburg)	09/05		3.13	154	FR55	GPS	S201
C3	Eye Opener (Roger Milliken Center, Spartanburg)	09/05		3.14	141	Amazfit Active 3 Premium	GPS	S202
C4	Eye Opener (Roger Milliken Center, Spartanburg)	09/05		3.14	154	Apple Watch S5	GPS	S203
C5	Eye Opener (Roger Milliken Center, Spartanburg)	09/05		3.10	154	Apple Watch SE	GPS	S204
C6	Eye Opener (Roger Milliken Center, Spartanburg)	09/05		3.14	155	Amazfit Bip 6	GPS	S205
C7	Eye Opener (Roger Milliken Center, Spartanburg)	09/05		3.12	154	vivoactive 6	GPS	S206
C8	Eye Opener (Roger Milliken Center, Spartanburg)	09/05		3.11	154	vivoactive 6	GPS	S207
C9	Eye Opener (Roger Milliken Center, Spartanburg)	09/05		3.14	155	Apple Watch	GPS	S208
C10	Eye Opener (Roger Milliken Center, Spartanburg)	09/05		3.14	154	Apple Watch S3	GPS	S209
C11	Eye Opener (Roger Milliken Center, Spartanburg)	09/05		3.18	154	Samsung Health	GPS	S210
C12	Eye Opener (Roger Milliken Center, Spartanburg)	09/05		3.14	151	FR265	GPS	S211
C13	Eye Opener (Roger Milliken Center, Spartanburg)	09/05		3.11	141	fenix 5	GPS	S212
C14	Eye Opener (Roger Milliken Center, Spartanburg)	09/05		3.16	141	Venu 2	GPS	S213
C15	Eye Opener (Roger Milliken Center, Spartanburg)	09/05		3.13	154	FR165	GPS	S214
C16	Eye Opener (Roger Milliken Center, Spartanburg)	09/05		3.10	-	-	GPS	S215
C32	Trojan Invitational (NW HS)	09/12		3.10	-	Venu 3	GPS	S216
C37	Trojan Invitational (NW HS)	09/12		3.24	-	Amazfit	GPS	S217
C6	Trojan Invitational (NW HS)	09/12		3.08	80	Amazfit Bip 6	GPS	S218
C17	Trojan Invitational (NW HS)	09/12		3.09	85	FR265	GPS	S219
C18	Trojan Invitational (NW HS)	09/12		3.14	81	Amazfit Bip 6	GPS	S220
C19	Trojan Invitational (NW HS)	09/12		3.12	217	Amazfit Active 2	GPS	S221
C1	Trojan Invitational (NW HS)	09/12		3.10	79	FR265	GPS	S222
C20	Trojan Invitational (NW HS)	09/12		3.10	82	FR165	GPS	S223
C2	Trojan Invitational (NW HS)	09/12		3.09	78	FR55	GPS	S224
C13	Trojan Invitational (NW HS)	09/12		3.07	72	fenix 5	GPS	S225
C5	Trojan Invitational (NW HS)	09/12		3.06	91	Apple Watch SE	GPS	S226
C7	Trojan Invitational (NW HS)	09/12		3.09	83	vivoactive 6	GPS	S227
C14	Trojan Invitational (NW HS)	09/12		3.12	82	Venu 2	GPS	S228
C15	Trojan Invitational (NW HS)	09/12		3.09	85	FR165	GPS	S229

Runner	Meet	Date	Race	Mi	Climb (ft)	Device	Status	Source code
C11	Trojan Invitational (NW HS)	09/12		3.13	83	Samsung Health	GPS	S230
C9	Trojan Invitational (NW HS)	09/12		3.08	84	Apple Watch SE3	GPS	S231
C4	Trojan Invitational (NW HS)	09/12		3.02	93	Apple Watch S5	GPS	S232
C3	Trojan Invitational (NW HS)	09/12		3.07	62	Amazfit Active 3 Premium	GPS	S233
C12	Trojan Invitational (NW HS)	09/12		3.11	82	FR265	GPS	S234
C10	Trojan Invitational (NW HS)	09/12		3.07	78	Apple Watch S3	GPS	S235
C21	Trojan Invitational (NW HS)	09/12		3.11	61	FR55	GPS	S236
C17	Clover Classic (Clover High School, Clover SC)	09/19	Girls races	3.09	200	FR265	GPS	S237
C6	Clover Classic (Clover High School, Clover SC)	09/19	Girls races	3.01	193	Amazfit Bip 6	GPS	S238
C22	Clover Classic (Clover High School, Clover SC)	09/19	Girls races	3.10	193	FR55	GPS	S239
C18	Clover Classic (Clover High School, Clover SC)	09/19	Girls races	2.98	181	Amazfit Bip 6	GPS	S240
C19	Clover Classic (Clover High School, Clover SC)	09/19	Boys Varsity (diverted)	-	-	Amazfit Active 2	Boys Varsity, diverted (excluded)	S241
C1	Clover Classic (Clover High School, Clover SC)	09/19	Boys Varsity (diverted)	-	-	FR265	Boys Varsity, diverted (excluded)	S242
C20	Clover Classic (Clover High School, Clover SC)	09/19	Boys Varsity (diverted)	-	-	FR165	Boys Varsity, diverted (excluded)	S243
C2	Clover Classic (Clover High School, Clover SC)	09/19	Boys Varsity (diverted)	-	-	FR55	Boys Varsity, diverted (excluded)	S244
C12	Clover Classic (Clover High School, Clover SC)	09/19	Boys Varsity (diverted)	-	-	FR265	Boys Varsity, diverted (excluded)	S245
C13	Clover Classic (Clover High School, Clover SC)	09/19	Boys Varsity (diverted)	-	-	fenix 5	Boys Varsity, diverted (excluded)	S246
C16	Clover Classic (Clover High School, Clover SC)	09/19	Boys Varsity (diverted)	-	-	FR55	Boys Varsity, diverted (excluded)	S247
C5	Clover Classic (Clover High School, Clover SC)	09/19	Girls races	3.01	193	Apple Watch SE	GPS	S248
C7	Clover Classic (Clover High School, Clover SC)	09/19	Girls races	3.09	183	vivoactive 6	GPS	S249
C14	Clover Classic (Clover High School, Clover SC)	09/19	Girls races	3.07	259	Venu 2	GPS	S250
C23	Clover Classic (Clover High School, Clover SC)	09/19	Girls races	3.08	197	FR165	GPS	S251
C15	Clover Classic (Clover High School, Clover SC)	09/19	Girls races	3.08	203	FR165	GPS	S252
C9	Clover Classic (Clover High School, Clover SC)	09/19	Boys race, 10:03	3.10	200	Apple Watch SE3	GPS	S253
C11	Clover Classic (Clover High School, Clover SC)	09/19	Boys race, 10:03	2.83	209	Samsung Health	Excluded by coach judgment (see Methods)	S254
C39	Clover Classic (Clover High School, Clover SC)	09/19	Boys race, 10:03	3.32	-	Strava App (Apple Watch S11)	GPS	S255
C40	Clover Classic (Clover High School, Clover SC)	09/19	Boys race, 10:03	3.06	-	FR265	GPS	S256
C35	Clover Classic (Clover High School, Clover SC)	09/19	Boys race, 10:03	3.05	-	Venu Sq 2	GPS	S257
C3	Clover Classic (Clover High School, Clover SC)	09/19	Boys race, 10:03	2.98	184	Amazfit Active 3 Premium	GPS	S258
C10	Clover Classic (Clover High School, Clover SC)	09/19	Boys race, 10:03	3.02	190	Apple Watch S3	GPS	S259
C21	Clover Classic (Clover High School, Clover SC)	09/19	Boys race, 10:03	3.05	173	FR55	GPS	S260
C4	Clover Classic (Clover High School, Clover SC)	09/19	Boys race, 10:03	2.97	188	Apple Watch S5	GPS	S261
C24	Clover Classic (Clover High School, Clover SC)	09/19	Boys race, 10:03	3.00	325	FR70	GPS	S262
C1	Victory Bolt XC Invitational (Lake Wylie High School, York SC)	09/26		3.16	72	FR265	GPS	S016
C25	Victory Bolt XC Invitational (Lake Wylie High School, York SC)	09/26		3.21	217	FR55	GPS	S263
C2	Victory Bolt XC Invitational (Lake Wylie High School, York SC)	09/26		3.14	226	FR55	GPS	S264
C17	Victory Bolt XC Invitational (Lake Wylie High School, York SC)	09/26		3.13	115	FR265	GPS	S265
C9	Victory Bolt XC Invitational (Lake Wylie High School, York SC)	09/26		3.12	74	Apple Watch SE3	GPS	S266
C19	Victory Bolt XC Invitational (Lake Wylie High School, York SC)	09/26		3.11	466	Amazfit Active 2	GPS	S267
C10	Victory Bolt XC Invitational (Lake Wylie High School, York SC)	09/26		3.11	213	Apple Watch S3	GPS	S268
C11	Victory Bolt XC Invitational (Lake Wylie High School, York SC)	09/26		3.11	227	Amazfit Bip Max	GPS	S269
C26	Victory Bolt XC Invitational (Lake Wylie High School, York SC)	09/26		3.10	-	-	GPS	S270
C12	Victory Bolt XC Invitational (Lake Wylie High School, York SC)	09/26		3.15	72	FR265	GPS	S271
C14	Victory Bolt XC Invitational (Lake Wylie High School, York SC)	09/26		3.16	56	Venu 2	GPS	S272
C20	Victory Bolt XC Invitational (Lake Wylie High School, York SC)	09/26		3.15	69	FR165	GPS	S273
C15	Victory Bolt XC Invitational (Lake Wylie High School, York SC)	09/26		2.92	-	FR165	Off-route (excluded)	S274
C6	Victory Bolt XC Invitational (Lake Wylie High School, York SC)	09/26		-	-	Amazfit Bip 6	No distance (excluded)	S275
C31	Victory Bolt XC Invitational (Lake Wylie High School, York SC)	09/26		3.21	-	vivosmart	GPS	S276
C39	Victory Bolt XC Invitational (Lake Wylie High School, York SC)	09/26		3.15	-	Strava App (Apple Watch S11)	GPS	S277
C40	Victory Bolt XC Invitational (Lake Wylie High School, York SC)	09/26		3.16	-	FR265	GPS	S278 (group activity link)
C35	Victory Bolt XC Invitational (Lake Wylie High School, York SC)	09/26		3.20	-	Venu Sq 2	GPS	S279
C36	Victory Bolt XC Invitational (Lake Wylie High School, York SC)	09/26		3.12	-	FR55	GPS	S280
C37	Victory Bolt XC Invitational (Lake Wylie High School, York SC)	09/26		3.54	-	Amazfit	Extra distance (excluded)	S281
C35	Northwestern Home Meet 2 (NW HS)	09/29		3.11	-	Venu Sq 2	GPS	S282
C39	Northwestern Home Meet 2 (NW HS)	09/29		3.19	-	Strava App (Apple Watch S11)	GPS	S283
C36	Northwestern Home Meet 2 (NW HS)	09/29		3.09	-	FR55	GPS	S284
C40	Northwestern Home Meet 2 (NW HS)	09/29		3.11	-	FR265	GPS	S285
C37	Northwestern Home Meet 2 (NW HS)	09/29		3.50	-	Amazfit	Not the race (excluded)	S286
C5	Northwestern Home Meet 2 (NW HS)	09/29		3.06	81	Apple Watch SE	GPS	S287
C17	Northwestern Home Meet 2 (NW HS)	09/29		3.12	89	FR265	GPS	S288
C7	Northwestern Home Meet 2 (NW HS)	09/29		3.12	83	vivoactive 6	GPS	S289

Runner	Meet	Date	Race	Climb		Device	Status	Source code
				Mi	(ft)			
C14	Northwestern Home Meet 2 (NW HS)	09/29		3.12	82	Venu 2	GPS	S290
C23	Northwestern Home Meet 2 (NW HS)	09/29		3.10	89	FR165	GPS	S291
C15	Northwestern Home Meet 2 (NW HS)	09/29		3.11	82	FR165	GPS	S292
C6	Northwestern Home Meet 2 (NW HS)	09/29		3.09	80	Amazfit Bip 6	GPS	S293
C22	Northwestern Home Meet 2 (NW HS)	09/29		3.08	65	FR55	GPS	S294
C8	Northwestern Home Meet 2 (NW HS)	09/29		3.21	82	vivoactive 6	GPS	S295
C4	Northwestern Home Meet 2 (NW HS)	09/29		3.08	89	Apple Watch S5	GPS	S296
C20	Northwestern Home Meet 2 (NW HS)	09/29		3.10	95	FR165	GPS	S297
C2	Northwestern Home Meet 2 (NW HS)	09/29		3.10	82	FR55	GPS	S298
C19	Northwestern Home Meet 2 (NW HS)	09/29		3.08	207	Amazfit Active 2	GPS	S299
C12	Northwestern Home Meet 2 (NW HS)	09/29		3.10	82	FR265	GPS	S300
C11	Northwestern Home Meet 2 (NW HS)	09/29		3.09	81	Amazfit Bip Max	GPS	S301
C10	Northwestern Home Meet 2 (NW HS)	09/29		3.11	82	Apple Watch S3	GPS	S302
C21	Northwestern Home Meet 2 (NW HS)	09/29		3.12	66	FR55	GPS	S303
C13	Northwestern Home Meet 2 (NW HS)	09/29		3.08	72	fenix 5	GPS	S304
C16	Northwestern Home Meet 2 (NW HS)	09/29		3.10	65	FR55	GPS	S305
C35	Landrum Bojangles (Landrum HS)	10/03		3.10	-	Venu Sq 2	GPS	S306
C39	Landrum Bojangles (Landrum HS)	10/03		3.27	-	Strava App (Apple Watch S11)	Not a race effort (excluded)	S307
C17	Landrum Bojangles (Landrum HS)	10/03		3.13	141	FR265	GPS	S308
C22	Landrum Bojangles (Landrum HS)	10/03		3.08	181	FR55	GPS	S309
C18	Landrum Bojangles (Landrum HS)	10/03		3.04	191	Amazfit Bip 6	GPS	S310
C4	Landrum Bojangles (Landrum HS)	10/03		3.06	188	Apple Watch S5	GPS	S311
C19	Landrum Bojangles (Landrum HS)	10/03		3.01	203	Amazfit Active 2	GPS	S312
C1	Landrum Bojangles (Landrum HS)	10/03		3.12	167	FR265	GPS	S313
C20	Landrum Bojangles (Landrum HS)	10/03		3.09	141	FR165	GPS	S314
C2	Landrum Bojangles (Landrum HS)	10/03		3.08	187	FR55	GPS	S315
C11	Landrum Bojangles (Landrum HS)	10/03		3.06	186	Amazfit Bip Max	GPS	S316
C25	Landrum Bojangles (Landrum HS)	10/03		3.10	180	FR55	GPS	S317
C16	Landrum Bojangles (Landrum HS)	10/03		3.10	180	FR55	GPS	S318
C14	Landrum Bojangles (Landrum HS)	10/03		3.14	125	Venu 2	GPS	S319
C23	Landrum Bojangles (Landrum HS)	10/03		3.11	144	FR165	GPS	S320
C12	Landrum Bojangles (Landrum HS)	10/03		3.10	138	FR265	GPS	S321
C10	Landrum Bojangles (Landrum HS)	10/03		3.02	189	Apple Watch S3	GPS	S322
C13	Landrum Bojangles (Landrum HS)	10/03		3.04	128	fenix 5	GPS	S323
C39	Northwestern Home Meet 3 (NW HS)	10/10		3.70	-	Strava App (Apple Watch S11)	Not the race (excluded)	S324
C17	Northwestern Home Meet 3 (NW HS)	10/10		3.11	112	FR265	GPS	S325
C7	Northwestern Home Meet 3 (NW HS)	10/10		3.10	83	vivoactive 6	GPS	S326
C15	Northwestern Home Meet 3 (NW HS)	10/10		3.11	102	FR165	GPS	S327
C22	Northwestern Home Meet 3 (NW HS)	10/10		3.11	64	FR55	GPS	S328
C8	Northwestern Home Meet 3 (NW HS)	10/10		3.08	81	vivoactive 6	GPS	S329
C9	Northwestern Home Meet 3 (NW HS)	10/10		3.07	91	Apple Watch SE3	GPS	S330
C19	Northwestern Home Meet 3 (NW HS)	10/10		3.05	200	Amazfit Active 2	GPS	S331
C1	Northwestern Home Meet 3 (NW HS)	10/10		3.12	102	FR265	GPS	S332
C20	Northwestern Home Meet 3 (NW HS)	10/10		3.10	79	FR165	GPS	S333
C2	Northwestern Home Meet 3 (NW HS)	10/10		3.08	79	FR55	GPS	S334
C26	Northwestern Home Meet 3 (NW HS)	10/10		3.11	70	FR55	GPS	S335
C12	Northwestern Home Meet 3 (NW HS)	10/10		3.10	92	FR265	GPS	S336
C11	Northwestern Home Meet 3 (NW HS)	10/10		3.08	81	Amazfit Bip Max	GPS	S337
C13	Northwestern Home Meet 3 (NW HS)	10/10		3.07	69	fenix 5	GPS	S338
C4	Northwestern Home Meet 3 (NW HS)	10/10		3.08	87	Apple Watch S5	GPS	S339
C16	Northwestern Home Meet 3 (NW HS)	10/10		3.18	-	-	GPS	S340
C1	York County Championships (Catawba Bend)	10/17		3.07	249	FR265	GPS	S341
C20	York County Championships (Catawba Bend)	10/17		3.06	220	FR165	GPS	S342
C2	York County Championships (Catawba Bend)	10/17		3.05	222	FR55	GPS	S343
C17	York County Championships (Catawba Bend)	10/17		3.08	253	FR265	GPS	S344
C19	York County Championships (Catawba Bend)	10/17		3.03	276	Amazfit Active 2	GPS	S345
C9	York County Championships (Catawba Bend)	10/17		3.10	247	Apple Watch SE3	GPS	S346
C3	York County Championships (Catawba Bend)	10/17		3.01	236	Amazfit Active 3 Premium	GPS	S347
C26	York County Championships (Catawba Bend)	10/17		3.08	215	FR55	GPS	S348
C12	York County Championships (Catawba Bend)	10/17		3.07	223	FR265	GPS	S349
C11	York County Championships (Catawba Bend)	10/17		3.04	218	Amazfit Bip Max	GPS	S350

Runner	Meet	Date	Race	Climb		Device	Status	Source code
				Mi	(ft)			
C10	York County Championships (Catawba Bend)	10/17		3.07	222	Apple Watch S3	GPS	S351
C21	York County Championships (Catawba Bend)	10/17		3.16	223	FR55	GPS	S352
C2	York County Championships (Catawba Bend)	10/17		3.04	214	FR55	Uncertain (excluded)	S353
C5	York County Championships (Catawba Bend)	10/17		3.10	294	Apple Watch SE	GPS	S354
C7	York County Championships (Catawba Bend)	10/17		3.07	220	vivoactive 6	GPS	S355
C14	York County Championships (Catawba Bend)	10/17		3.11	243	Venu 2	GPS	S356
C23	York County Championships (Catawba Bend)	10/17		3.09	236	FR165	GPS	S357
C15	York County Championships (Catawba Bend)	10/17		3.06	243	FR165	GPS	S358
C6	York County Championships (Catawba Bend)	10/17		3.03	216	Amazfit Bip 6	GPS	S359

APPENDIX F REVISION HISTORY (V14 TO FINAL V1.1)

Final v1.0 (v19) added Appendix J, which links this report to the companion State Qualifier Seeding report, and Appendix K, which tests the Starlight finding against five established courses. It replaces printed activity links with source codes and changes no result value. Like v18, it reconciles two drafts that were developed in parallel from the same October 18 base: v14 and a separate v15–v17 line. Where they disagreed, each item below was settled against the public source or recomputed from this report's own appendix data. Where the v17 line was better supported, it was kept; v14 material that v17 had dropped but that still holds was restored (Abstract page and Appendices G–I). No result value changed unless listed here. Earlier drafts are superseded and should not be circulated.

Topic	v14	v17	v18 / v19 / Final v1.0–v1.1	Basis
Catawba Bend (York County Champs)	"Consistent with full distance", not wheel-measured; tier C; staff map trace ≈4,995 m	Wheel-measured 3.1 mi by Coach Chris Ardis (Northwestern HS); start rerouted around mud on race day, not re-measured; tier B*	Corrected: the course was laid out and wheel-measured on several passes by the author and Coach Ardis, so it is disclosed as an author-involved course. It is heavily wooded, which lowers watch readings (median 3.07 mi). Start reroute for athlete safety disclosed. Terrain residual (–4.8%) shown as an extrapolation (Figure 22)	Coach statement (author and Coach Ardis); Section 19
Course-length estimate	≈4,850 m (4,780–4,950 m), 1–4.5% short	Most likely 4,850–4,900 m (2–3% short); plausible 4,780–4,950 m (1–4.4%)	v17 kept. Figure 5 now draws the most-likely band and the ≈4,850 m central line it describes	Section 11 table
Same-day comparisons	York County 6.2–6.4 points	Lights Out 2.8–2.9 points; York 1.9–2.1 points after terrain	v17 kept. Section 10 wording corrected: the terrain line adds 1.4 points between the two flat night courses only because Lights Out's climb is unknown and set to the 39 ft floor (raw 2.9, terrain 4.2)	Appendix C
Climb inputs	Mixed: reference watch, staff values	One rule: median of device readings	v17 kept (Starlight 85 ft, n=39; Clover 193; York 229.5). Figure 9 and 17 captions changed from "about 200 ft" to 193 ft to match	Figure 16
Tree cover	Clover wooded	Tree cover said to apply to "Starlight's wooded sections"	Corrected: Clover and Catawba Bend are the heavily wooded courses; Starlight is an open, highly visible campus route, so tree cover cannot explain its 3.01 mi	Coach knowledge of both courses
Layout by year	3 loops 2019–2025, then 4	2024 "same route text as 2025"	Corrected: the layout differed in 2024, 2025 and 2026. The MileSplit route text was reused unchanged from 2021 to 2025; the host's 2025 race-day document describes a different 2025 layout (football-field start, ~800 m track, 3 large loops, final track lap). New note in Section 2	Host documents; coach knowledge
Track share	2026 ≈2,100 m vs 2025 ≈1,800 m; track helps times	Similar both years (2025 host document ≈2,000 m); not used as an explanation	v17 kept	2025 host race-day document
Team GPS baseline	3.07–3.15 mi, 132 recordings, Clover excluded	3.055–3.15 mi, 150 recordings, Clover included	v17 kept and recomputed from Appendix E: 150 SC recordings, median 3.10 mi; 8 at or below 3.01 mi (4 equal, 4 below). Clover 3.055 mi (n=18); 3.05 mi (n=19) with the reading excluded by coach judgment. The band is 3.05–3.15 mi either way	Appendix E
Woodmont 2025 control	–2.4% (n=398)	–2.5% (n=401), one matching rule for every year	v17 kept	Section 3
Earlier editions	2015–2019 "Reservation" editions at a different site	Every edition at Riverside HS; MileSplit's Spindale, NC address is a listing error	v17 kept. The 2016 meet page reads "run on the Riverside High Schools campus... a 2.5 loop course that is fully lit" (MileSplit 250553)	MileSplit 250553
Tiers	A / B / C / X	Adds B* (measured by a coach, no independent public record)	v17 kept. York County shown as B* in the Section 20 tables (was B); Coaches Classic B* in Appendix C (was B); stray "york" label removed from Appendix C	Section 21
Index range	–4.8 to –8.7% across trends	5.7–8.7% in Section 17; "about –4.8% and –8.7%" in Section 22	Tested range is 5.7–8.7% (trends of none, –2.5 and –3.5% per 30 days; Appendix C columns). –4.8% is only an extrapolation to –4.5% and is labelled that way in Section 22, Figure 20 and Appendix G	Appendix C
Figures 5, 8, 11, 20, 22, 23	–	Overlapping labels or legends; Figure 22 placed York as the second-fastest course without marking the extrapolation	Redrawn from the report's own tables with the same values; Figure 22 marks York as extrapolated and adds a small-sample hatch	Appendices A, C
Restored from v14	"What this report does not claim"; robustness checks; source audit; GPS screen	Dropped	Restored and updated: Abstract page; Appendices G, H and I (GPS-screen error rates recomputed from Appendix E)	Appendices A, C, E
Privacy and status (v19)	Activity links printed	Activity links and watch times printed; "draft for host review"	Recordings cited by source code; watch times withheld; links kept in a private source key. Status reworded as a public-record review. Appendix K (established reference courses) added	Appendices J, K
Housekeeping	–	Internal script, file and review names in the text; "four of 4"; clipped cells in the Section 15 GPS table; PDF title "(v14)"	Removed or fixed; Appendix F replaced by this history	–

Open items before public release

- **Sources.** This is a public-record review: it relies on published results, the host's own meet documents and public GPS recordings.
- **Source key.** Individual GPS recordings are cited by source code (S001, S002 ...). The codes, the original activity links and the withheld watch times are kept in a private source key held by the author and available to the SCTCCA rankings committee or SCHSL staff on request.
- **Coach-stated measurements.** Catawba Bend (the author and Coach Ardis), Trojan / Northwestern HS (host staff), Clover and Victory Bolt (the author) rest on coach statements. A one-paragraph written note for each (date, wheel or tape, route, measurer) would let them move from B* to B.
- **Victory Bolt map.** The official map gives "5,000 m" and "3.12 mi"; 5,000 m is 3.107 mi. The map should read 3.11 mi (Figure 15).
- **Coach-judgment exclusion.** One Clover reading (2.83 mi) is excluded by the author, who also measured that course. Every affected figure is given both ways in Section 16; no conclusion depends on it.

APPENDIX G ROBUSTNESS CHECKS

These checks test whether the main findings depend on choices a reader could question: the anchors, the author's own courses, night racing, weather, and GPS behaviour on track and under trees. Every value comes from tables in this report or from the sources in Appendix H.

G1. Does the course index depend on the anchors?

The anchors set the zero point of the index; the gaps between meets come from runners who raced both. Moving the zero point to references that involve no Lake Wylie course leaves Starlight the clear outlier.

Reference used for the zero point	Starlight 2026	Note
Base case: Trojan, Victory Bolt and Clover anchors	-6.6%	Section 17; sampling 95% CI -6.9 to -6.3%
Trojan (Northwestern HS) alone	-7.3%	Section 17
McAlpine (wheel-measured, Charlotte) alone	-7.7%	Section 17
Median of all 41 SC meets	-6.6%	The median meet sits at 0.0% (Appendix C)
Mean of the three USATF-certified SC courses (Mike Moore, Warrior XC, Aiken Invitational)	-7.9%	Certified courses average +1.3% (-0.4, +0.9, +3.3; Appendix C)
Fitness trend, none to -3.5% per 30 days (the trends run)	-8.7 to -5.7%	Extrapolated to -4.5% per 30 days: about -4.8%. The trend cannot be fixed from one season's data

Starlight is also the fastest meet by a wide margin: the next-fastest, Pickens County (n=86, a small sample), is -4.2%. Its 2025-to-2026 move (-6.9 points) is one of the two largest among the 30 repeat meets; the other, Trojan Country (+6.8), moved toward slow.

G2. Evidence that uses no course the author designed or measured

- The host's description changed from 3 loops (2019–2025) to 4 loops (2026), with no published measurement (Section 2).
- Same runner, same watch: 7 of 7 runners read shorter at Starlight than on their own other courses (median gap 0.08 mi); all 4 other-school runners read shorter than at McAlpine (Section 7).
- Same venue: GPS medians 3.11, 3.09 and 3.15 mi in 2021, 2022 and 2025, against 3.01 mi in 2026 (Section 6).
- Lights Out, the same-night comparison, is a course the author had no part in (Section 10).
- Same field: 95.7% season bests and 84.2% lifetime PRs in 2026, against 41.1% and 29.9% in 2025; 6.4% faster than at Woodmont two weeks earlier, against 2.5% slower in 2025 (Sections 3–4).
- Trusted courses run by others: 7.3% faster than the same runners at the 2025 State Meet and 9.5% faster than at the 2025 Coaches Classic (Section 5).

G3. Same-day controls and weather, 10/17/2026

Meet	Race window	Station	Temp (°F)	Dew point (°F)	Temp + dew	Index
Run In Starlight (Greer)	5:15–9:30 PM	KGSP	60 → 48	36–38	86–98	-6.6%
Lights Out (Blythewood), night race the host describes as flat	7:00–9:30 PM	KCAE	61 → 57	45–47	104–106	-3.7%
York County Championships (Catawba Bend, heavily wooded)	morning	KUZA	55–61	44–52	101–107	-0.2%

Hourly ASOS observations (Iowa Environmental Mesonet): KGSP 5:53–9:53 PM; KCAE 6:56–9:56 PM; KUZA 6:54 AM–12:54 PM. The Chargers' recordings place the York race in the morning: 20 of the 28 team recordings show morning start times (team data), and all 7 that are publicly viewable today began between 8:59 and 11:00 AM. On the temperature + dew point guide in Section 10, all three fall in the none to ≈0–1% range, so weather does not separate them. Night racing does not explain Starlight: Lights Out shows a night race can run fast, but Starlight ran 2.9 points faster still, and Starlight's own 2025 night edition at the same venue indexed +0.3%.

G4. GPS on track and under trees

In a controlled test of eight sport watches (one runner, April–July 2019), distance error averaged 3.2–6.1% by watch; watches over-read slightly on the track (0.9–4.1%) and under-read in urban and forest areas (Gilgen-Ammann et al., 2020). A 2026 trail study found two current watches read 6–7% below measured distance on average, more under heavy tree cover (Tripure et al., 2026). Starlight is an open campus with about 2.1 km of track, where watches tend to read at or above true distance, so a 3.01 mi median is informative. The two heavily wooded measured courses read lowest, as expected: Clover 3.055 mi and Catawba Bend (York County) 3.07 mi, both wheel-measured at 3.1 mi. Low ground and valleys can weaken reception further. The route maps of public recordings show this directly: the Catawba Bend route (S341) and the Clover route (S237) run almost entirely through woodland, while the Starlight route (S001) stays on the track, the fields and the campus road. The host describes the 2026 course as “fully lit and able to be seen from either set of bleachers.” Starlight, an open and highly visible campus route, read lower than both (3.01 mi), so tree cover cannot explain its reading; ordinary GPS error, which applies to every course here, is the only margin left.

G5. What would settle the question

1. A neutral wheel measurement of the 2026 layout (calibrated wheel, shortest legal route, two passes).
2. Written measurement notes for Catawba Bend (the author and Coach Ardis, including whether the safety reroute was re-measured) and Northwestern HS (host staff): date, wheel, route. Either would move that course from B* to B.
3. An independent route trace of the 2026 layout on Greenville County's 2026 aerial imagery, using the MileSplit SC course videos (823301, 823304) and the Riverside tempo-run video (823469).
4. Raw GPX files from a few Starlight athletes, shared with coach and parent consent, to check loop-by-loop length and the track portion.
5. Any intermediate splits from Split Second Timing SC.
6. The 2026 State Meet: the same athletes on a known course in similar weather, as an out-of-sample check.

APPENDIX H SOURCE VERIFICATION AUDIT, OCTOBER 19, 2026

On October 19, 2026, the public sources behind the report's factual statements were re-opened and checked. "Confirmed" means the source says what the report says. Statements that rest on a coach's word, on data collected earlier, or on judgment are listed separately so readers can see what is verified and what is not.

Statement in the report	Source checked	Result
2016 edition at Riverside HS, 2.5-loop lit course	sc.milesplit.com/meets/250553 (info)	Confirmed: "run on the Riverside High Schools campus... a 2.5 loop course that is fully lit"
Older MileSplit venue record carries a Spindale, NC address	Same page header ("hosted by Riverside in Spindale NC")	Confirmed as a listing error; the course text places the meet at Riverside HS
2026 meet: Greer SC; Split Second Timing SC	sc.milesplit.com/meets/717632 (info)	Confirmed: "Riverside HS, Greer, SC · Hosted by Riverside · Timing/Results Split Second Timing". The host's 2026 race-day document: "a 4 loop course that is fully lit and able to be seen from either set of bleachers"
Lights Out: two loops, under 700 m on track, host calls it flat; 7:00 PM start	sc.milesplit.com/meets/764730 (info)	Confirmed: "Less than 700 meters of the race is on a track surface. The course is flat and promises to be fast"
Missouri: 5,000 m ± 30 m, wheel on the tangents	MSHSAA XC district hosting standards (mshsaa.org)	Confirmed
Watch accuracy figures	Gilgen-Ammann et al., JMIR mHealth uHealth 2020 (PMC7381051)	Confirmed: 3.2–6.1% by watch; track over-read 0.9–4.1%; one runner, 2019
Trail watches read 6–7% short under tree cover	Tripure et al., Int J Exerc Sci 2026, vol 19 iss 7	Confirmed (study located)
Riegel exponents 1.077 (men) and 1.083 (women)	Riegel, Am Sci 1981 (PMID 7235349), Table 1	Confirmed: 1.07732 and 1.08283
Paired-runner course ratings (TullyRunners)	tullyrunners.com "Speed Ratings by Reference"	Confirmed
Karr et al. (2025), meet-factor model, week slopes weakly identified	arXiv 2509.10600 (current version)	Confirmed: "Racing to the Starting Line: Measuring Opportunity and Improvement in Cross Country"; "crossed meet effects can erase the week slope"
Layout differed by year	Host race-day documents (2025 and 2026); MileSplit 2021–2025 pages	Confirmed: 2025 and 2026 documents describe different layouts; MileSplit route text is identical 2021–2025
Curvilinear running reads long on 5 Hz GPS	Rawstorn et al., PLoS One 2014	Confirmed; a team-sport unit, not a wrist watch, as the text says

Not independently verified (stated or collected, not re-checked today)

Item	Basis	How to close it
Catawba Bend wheel-measured at 3.1 mi	Laid out and wheel-measured, several passes, by the author and Coach Chris Ardis (Northwestern HS)	Written note: date, wheel, route; whether the safety reroute was re-measured
Trojan / Northwestern HS full 5K	Host staff statement; team watches 3.09–3.10 mi	Written measurement note from the host
Clover Classic and Victory Bolt at 3.1 mi	Measured by the author (disclosed)	Independent wheel measurement; post on meet pages
Result statistics (season bests, PRs, index)	Computed from MileSplit public results in this project and re-run for this report	Analysis files available on request
Strava distances and climb	Public activities at the time of collection; IDs in Appendices A, B, D, E	Activities can be edited or made private later
Weather allowances	Coaching rule of thumb (temperature + dew point); no published error	Treated as estimates throughout
2026 layout length	No public measurement exists	Host measurement (Appendix G5)

APPENDIX I A GPS SCREEN FOR RANKING ELIGIBILITY (PROPOSAL)

Watches cannot measure a course, but they can screen one. This appendix proposes a rule for SCTCCCA and results platforms: use race-day watch readings to decide when a course's 5K marks should carry a flag, or be held out of rankings and seeding lists, until the host documents the distance. A documented measurement always overrides GPS. This is a proposal for discussion, not a finding about any course.

I1. Why rankings need a distance screen

- World Athletics requires that a course "shall not be less than the official distance"; USATF certification adds a 0.1% short-course prevention factor; Missouri's district standards set ± 30 m measured by wheel on the tangents (Section 11).
- Measurement guides agree that GPS is for screening, not measuring: trees, turns and devices all move the reading (Appendix G4).

I2. How much do watches vary on full courses? (recomputed from Appendix E)

Data	Result
150 Chargers recordings at 8 full SC meets	Pooled median 3.10 mi; about two-thirds of readings sit within ± 0.03 mi of their own meet median
9 open full-course data sets (6 Chargers meets, plus Starlight 2021, 2022, 2025)	Meet medians average 3.113 mi, SD 0.026 mi; lowest 3.09 mi, highest 3.15 mi
2 heavily wooded measured courses: Clover Classic and Catawba Bend (both wheel-measured 3.1 mi)	3.055 mi (n=18) and 3.07 mi (n=18), about 0.05 mi below the open-course average: the tree-cover effect on known courses
Starlight 2026 (open campus, about 2.1 km on the track)	3.01 mi (n=39); 1 of 39 at 3.10 mi or more

I3. The proposed screen

Course type	Clear	Review	Presumed short
Open (under half the route beneath tree canopy)	median ≥ 3.07 mi	3.04–3.069 mi: marks count, tagged "distance under review"; host asked for a measurement	below 3.04 mi: held out of 5K rankings and seeding lists, shown as "distance unverified", until the host documents $\geq 5,000$ m
Wooded (half or more under canopy)	median ≥ 3.02 mi	2.99–3.019 mi	below 2.99 mi; GPS alone never clears a wooded course with no measurement on file

- **Data needed:** at least 8 race-day recordings from at least 2 teams; use the median. With fewer than 8, the result is "insufficient data".
- **Measurement overrides GPS.** A documented wheel, tape or USATF measurement of the race-day layout (date, method, measurer, shortest legal route) clears a course either way. Any layout change voids an earlier measurement.
- **Times can move a course one step.** If the same runners ran at least 5% faster than at their other meets (at least 30 shared runners) and the previous edition showed no such gap, a "review" course becomes "presumed short".

I4. How often would a full course be flagged by mistake?

Simulated full-length open courses were drawn from the I2 spread (meet medians around 3.113 mi, SD 0.026) plus the real watch-to-watch spread in Appendix E. With 10 recordings, a full open course reads a median below 3.07 mi about 7% of the time, below 3.04 mi about 0.6% of the time, and below 3.01 mi about 2 in 10,000. That is why 3.07 mi only starts a review, and why even "presumed short" ends the moment a host posts a measurement. A 3.04 mi median, scaled by the team's 3.10 mi full-course reading, points to about 4,900 m: roughly 100 m (2%) short, more than three times Missouri's ± 30 m. The wooded lines sit 0.05 mi lower, matching the Clover and Catawba Bend offset. Rates use the final Appendix E data, with Catawba Bend classed as wooded; they are close to v14's 7%, 0.7% and 3 in 10,000.

Applied to Starlight 2026

Open course, 39 recordings, median 3.01 mi: below the 3.04 mi line, and the same runners ran 6.2% faster than their season bests with no such gap in 2025. Under this proposal its marks would show as "distance unverified".

APPENDIX J WHY COURSE ACCURACY DECIDES STATE BERTHS

This report shows that one course's marks can be distorted. The companion report, *Fixing the Odd/Even Problem in SC Cross Country State Qualifiers* (Final v1.1, October 21, 2026, same author), shows where those marks end up: the SCTCCCA rankings that set each state qualifier's Odd and Even races. Its findings are summarized here and stay attributed to it. Team scores there are computed from MileSplit finisher lists; for 2021, 2023 and 2025 they match the official timer exactly.

J1. How the rankings are used in 2026

The 2026 qualifiers are at The Farm, Newberry, on November 6–7. Each class/gender runs two races, Odd and Even, assigned by the final SCTCCCA rankings released Sunday, November 1. Unranked schools are split evenly. The top 8 teams and top 20 individuals in each race advance (SCHSL 2026 qualifier schedule). The rankings are built by a committee that "researches meets, virtual meets and more on MileSplit SC" ([MileSplit SC](#)). No course field exists in that process (Section 20).

J2. What the seeding report found, 2021–2025

Finding (recomputed from MileSplit data, Oct 19, 2026)	Value
Teams in the merged top 16 that did not advance ("squeezed out")	26, in 25 of 50 race pairs at 18 of 23 meets
Squeezed-out teams whose own race held 9 or 10 of the merged top 16	23 of 26
Squeezed-out teams ranked 17th or worse (just outside the berths)	18 of 26 (all 26 ranked); median rank 18
Eliminated teams with a faster top-5 total than an advancing team	28
Computed team places and scores checked against the official timer (2021, 2023, 2025)	825 of 825 team rows match; the top 8 is identical in all 60 races
Race-swap test: each of the 26 squeezed-out teams moved into the other race	All 26 would have qualified, placing 6th to 8th; the last-in team drops out in 25 of 26 (seeding report, Section 1.1)

J3. Why course accuracy decides berths

Across 46 race pairs, the merged 16th and 17th teams were separated by a median of **9.3 seconds per runner**. A course 3% short, this report's estimate for Starlight 2026, takes about 38 s off a 21:18 runner. That is more than the 16th/17th gap in 43 of 46 pairs. A 1% error (about 50 m) is more than the gap in 28 of 46. In 2021–2025 the final rankings tracked the merged results well overall (Spearman $\rho = 0.94$), but about 2 teams per race pair (93 in 48 pairs) finished on the other side of the 16th line from their ranking.

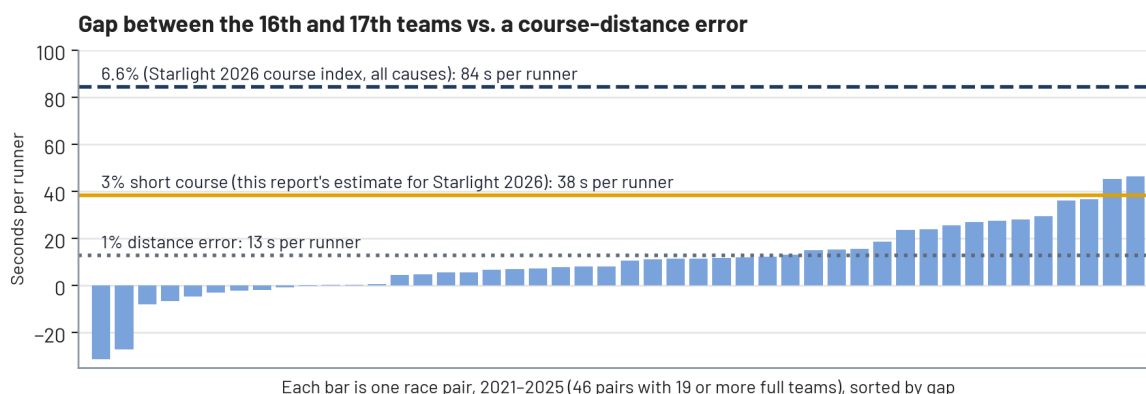


Figure J1. Per-runner gap (top-5 total $\div$ 5) between the merged 16th and 17th teams in each 2021–2025 race pair with 19 or more full teams. Bars below zero mean the 16th team on points had a slower top-5 total. Lines use the median 16th-place runner time, 21:18. Source: the seeding report, Section 6.4, computed from MileSplit finisher lists (2021, 2023 and 2025 match the official timer; 2022/2024 check, Oct 21, 2026: 33 of 40 races found, all 448 places match).

One request, two reports

Courses need a measured, published distance (Section 21 tiers). That lets the rankings committee adjust or hold out marks from unverified courses before the November list. The seeding report then asks for 7 automatic berths per race plus 2 at-large berths from a merged re-score, so that one mis-seeded team cannot cost a berth. For 2026, both reports make the same interim ask: treat Starlight 2026 marks as non-standard in the November 1 inputs.

In this report's ranking check (Section 20), that one correction moves 7 boys and 5 girls out of the all-class top 25.

APPENDIX K ESTABLISHED REFERENCE COURSES

Five courses are widely used and trusted in the region: The Farm in Newberry, McAlpine Creek Park in Charlotte, the Roger Milliken Center in Spartanburg, WakeMed Soccer Park in Cary and the Trojan Invitational course at Northwestern HS in Rock Hill. This appendix asks whether the Starlight finding depends on which of them is used as the yardstick. It does not. "Established" is not the same as "measured", so the tier column shows only what is on public record (Section 21).

Course	Why it is established	Measurement on record	Starlight 2026 against this course
Trojan Invitational, Northwestern HS, Rock Hill	Long-running invitational; the reference course of this report's 2026 speed index	Measured by host staff, no public record (B*)	Index -6.6% (Trojan = 0). Same runners: +9.2% faster at Starlight (n = 22), against +3.1% for the 2025 Starlight field
McAlpine Creek Park, Charlotte NC	Designed, built and maintained by Larry McAfee since 1978; more than 200 major meets, including NCHSAA state championships for all four classes (NCPrepTrack)	Wheel-measured, re-measured 2015 (B)	Index re-referenced to McAlpine: -7.7%. Same runners: +8.2% (n = 153), against +1.5% in 2025
The Farm, Newberry	SCHSL state championships in 2023 and 2024 (MileSplit venue history); state qualifier site, including 2026	Coach-trusted, no public record (B*)	No 2026 race (Coaches Classic canceled). Same runners against the prior-season Coaches Classic: +9.5% (n = 389), against +5.9% for the 2025 field; both include a year of growth
Roger Milliken Center, Spartanburg	Host of the 2025 NCAA Division III Championships and the 2026 NCAA Division I Southeast Regional (NCAA.com)	No published measurement found for the high school 5K (C)	Eye Opener (9/5) index +3.9%, so Starlight ran about 10% faster. Early-season heat and fitness are part of that gap, and Eye Opener watches read long (3.12-3.25 mi, Section 16)
WakeMed Soccer Park, Cary NC	Nike Cross Regionals Southeast, Great American XC Festival and adidas XC Challenge; 5K record 14:23.26 at the 2024 NXR Southeast (venue record)	No published measurement found (C)	Same runners: +9.0% (n = 18, one meet), against +1.4% in 2025 (n = 149)

Result

Starlight 2026 ran faster than every one of the five established courses: by 6.6% to about 10% on the speed index, and by 8.2% to 9.5% for the same runners. Where a 2025 comparison exists, the 2026 gap was 3.6 to 7.6 points larger than the gap for the 2025 Starlight field on the same course. That year-to-year jump is the change this report links to the 2026 layout. The values come from Sections 15 and 16 and Appendix C; none was recomputed for this appendix.

Recommendation

These five courses are natural anchors for statewide course factors. Each would move to tier A or B by posting its measurement: measurer, method, date and map (Section 21). Because the same runners race them every year, a measured version of these courses would let the rankings committee check any new or changed course against a known yardstick within one season.