

FORENSIC ANALYSIS REPORT — 4TH JUDICIAL DISTRICT COURT (MCRO)

MCRO | ESolutions Digital Signature — Statistical Breakdown (v2)

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Case Reference	State of Minnesota v. Guertin 27-CR-23-1886
Report Date	March 2026
Version	v2 — Guertin Outlier Focus
Data Source	Minnesota Court Records Online (MCRO) — Public Records
Corpus Size	4,251 PDFs 5,425 signature records 245 cases
Database	PostgreSQL (Supabase) — custom forensic schema

IMPORTANT DISCLAIMER

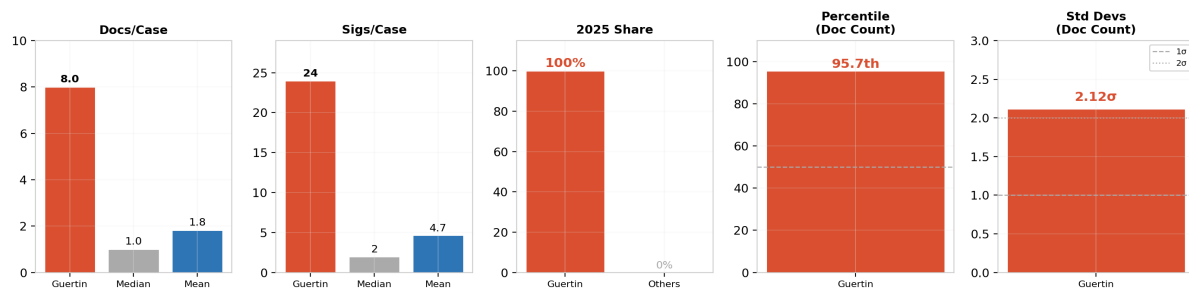
This report presents objective statistical findings reproducible from the source database. It does not assert conclusions about fraud, fabrication, or criminal intent. All figures are derived from SELECT-only SQL queries against the live MCRO forensic database. Each statistic is independently verifiable. This version (v2) reformats the ESolutions analysis from v1 with additional per-case normalization and concentration metrics to highlight distributional outliers. No data has changed; only the analytical perspective is new.

EXECUTIVE SUMMARY

- Case 27-CR-23-1886 (Guertin) is the #1 ranked case in the entire MCRO corpus for ESolutions-signed documents: 8 documents carrying 24 ESolutions signature records — from a single case.
- Guertin’s 8 ESolutions-signed documents per case is 8.0× the corpus median (1.0) and 4.4× the corpus mean (1.83). No other cluster achieves this level. He is the only cluster with a docs-per-case value of 8.0 — the corpus maximum.
- Guertin’s 24 ESolutions signature records per case is 12.0× the corpus median (2.0) and 5.2× the corpus mean (4.66). Among all 47 clusters, only Muad Abdulkadir (28.0 sigs/case across 2 cases) exceeds this figure.
- Guertin is the sole defendant with an ESolutions-signed document filed in 2025. The lone 2025 ESolutions document is the April 3, 2025 Order Finding Guertin Competent — also identified as the first MSIP-labeled filing in the entire corpus (Initial Report, Finding 4).
- Among 31 single-case clusters carrying ESolutions signatures, Guertin holds 13.8% of all documents — the highest share of any single-case defendant. His doc count is 1.6× the next nearest single-case cluster (Richardson/Riley/Higgins at 5 each).
- Guertin’s doc count places him at the 95.7th percentile of all clusters and 2.12 standard deviations above the mean — a statistical outlier by any conventional threshold.

KEY METRICS — GUERTIN (27-CR-23-1886)

8 ESolutions-signed documents from 1 case (corpus max docs-per-case)
24 ESolutions signature records from 1 case (2nd highest sigs-per-case)
8.0× the median | 4.4× the mean | 95.7th percentile | +2.12σ
100% of all 2025 ESolutions-signed documents belong to Guertin
The April 3, 2025 competency order is both the sole 2025 ESolutions doc AND the first MSIP-labeled document in the corpus

Guertin Case 27-CR-23-1886: Statistical Outlier Profile**Corpus Overview**

Metric	Value	Notes
Total signature records (all signers)	5,425	Full corpus
Total PDF documents	4,251	Full corpus
ESolutions signature records	355	6.5% of all sigs
Distinct documents with ESolutions sig	134	3.2% of all docs
Distinct cases with ESolutions sig	76	—
Distinct defendant clusters	47	—
Filing date range (ESol docs)	2017-09-13 to 2025-04-03	7.5 years
Guertin docs (27-CR-23-1886)	8 of 134	6.0% of all ESol docs
Guertin sig records	24 of 355	6.8% of all ESol sigs
Guertin total corpus docs	201	8 of 201 = 4.0% carry ESol sig

METHODS

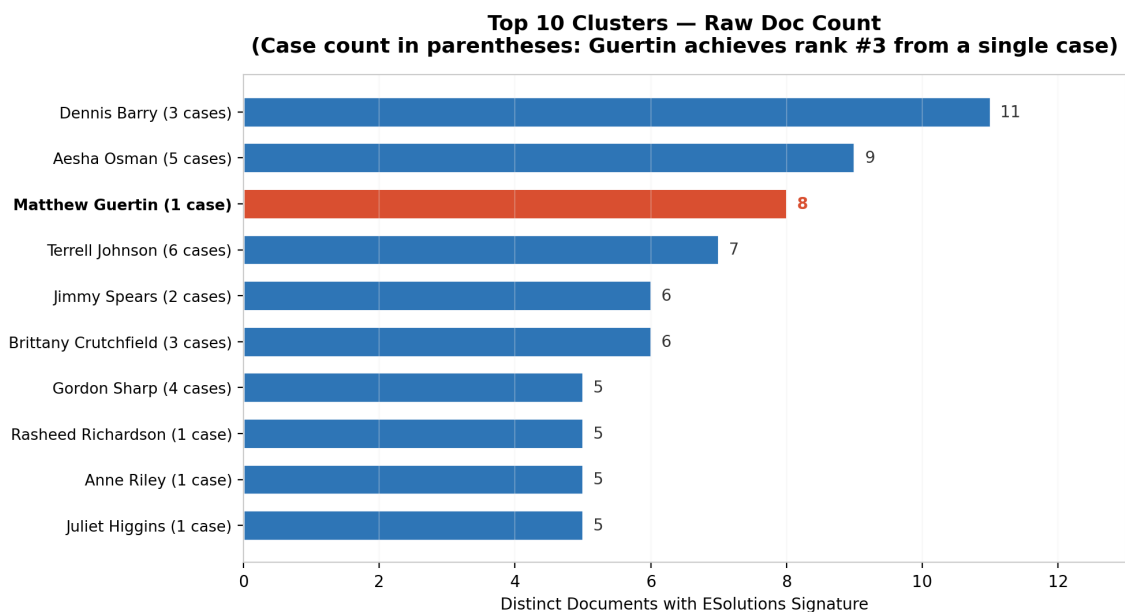
This report uses the same dataset and filter as v1: children_signatures_full_report filtered to signer_name ILIKE '%ESolutions%', joined to children for cluster, case, filing type, and filing date context. v2 adds per-case normalization (docs-per-case, sigs-per-case), distributional statistics (mean, median, standard deviation, percentile rank), and single-case cohort isolation to identify concentration outliers. All SQL queries are in the Appendix (A1–A10).

Tables referenced: children_signatures_full_report, children. Statistical methods: COUNT DISTINCT, AVG, PERCENTILE_CONT, STDDEV_POP, ratio calculations.

FINDINGS

Finding 1: Cluster Ranking — Raw Doc Count vs. Case-Normalized Concentration

In the v1 report, clusters were ranked by raw document count. Dennis Barry (11 docs) and Aesha Osman (9 docs) led the table. However, those figures aggregate across multiple cases: Barry's 11 documents come from 3 cases; Osman's 9 come from 5 cases. When normalized to documents per case, the ranking inverts.



Case-Normalized Ranking — Top 10 Clusters

Cluster	Docs	Cases	Sigs	Docs/Case	Sigs/Case	D/C Rk	S/C Rk	Δ
MATTHEW GUERTIN	8	1	24	8.00	24.00	#1	#2	●
RASHEED RICHARDSON	5	1	13	5.00	13.00	#2	#4	
ANNE RILEY	5	1	10	5.00	10.00	#2	#6	
JULIET HIGGINS	5	1	9	5.00	9.00	#2	#7	
AARON CHERRY	4	1	16	4.00	16.00	#5	#3	
DENNIS BARRY	11	3	27	3.67	9.00	#6	#7	

LAWRENCE DURHEIM	3	1	5	3.00	5.00	#7	#10	
JARELLE VAUGHN	2	1	10	2.00	10.00	#8	#6	
EYUAEL KEBEDE	4	2	12	2.00	6.00	#8	#9	
AESHA OSMAN	9	5	25	1.80	5.00	#9	#10	

When normalized by case count, Guertin moves from #3 (raw) to #1 (docs per case) and #2 (sigs per case). **Dennis Barry drops from #1 to #6; Aesha Osman drops from #2 to #9.** Barry's 11 documents are spread across 3 cases (3.67 docs/case). Osman's 9 documents are spread across 5 cases (1.80 docs/case). Guertin's 8 documents all come from a single case.

CONCENTRATION MULTIPLIERS

Guertin vs. Dennis Barry (raw #1): $8.00 / 3.67 = 2.18\times$ more ESol docs per case

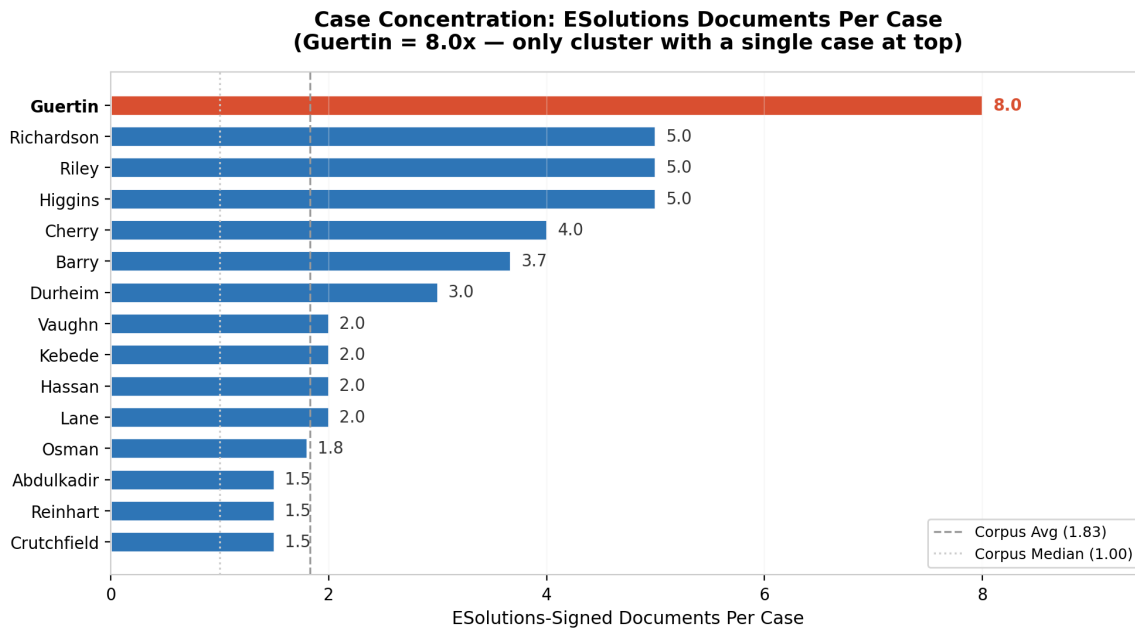
Guertin vs. Aesha Osman (raw #2): $8.00 / 1.80 = 4.44\times$ more ESol docs per case

Guertin vs. corpus median: $8.00 / 1.00 = 8.0\times$

Guertin vs. corpus mean: $8.00 / 1.83 = 4.37\times$

Finding 2: Per-Case Document Concentration — Distributional View

The following chart ranks the top 15 clusters by ESolutions documents per case, with corpus average and median reference lines. Guertin stands alone at the top.



Guertin's 8.0 documents per case is the corpus maximum. The next nearest are Richardson, Riley, and Higgins at 5.0 each — themselves outliers. Only one cluster in the entire corpus achieves the 8.0 level: Guertin.

Distributional Statistics — Docs Per Case (All 47 Clusters)

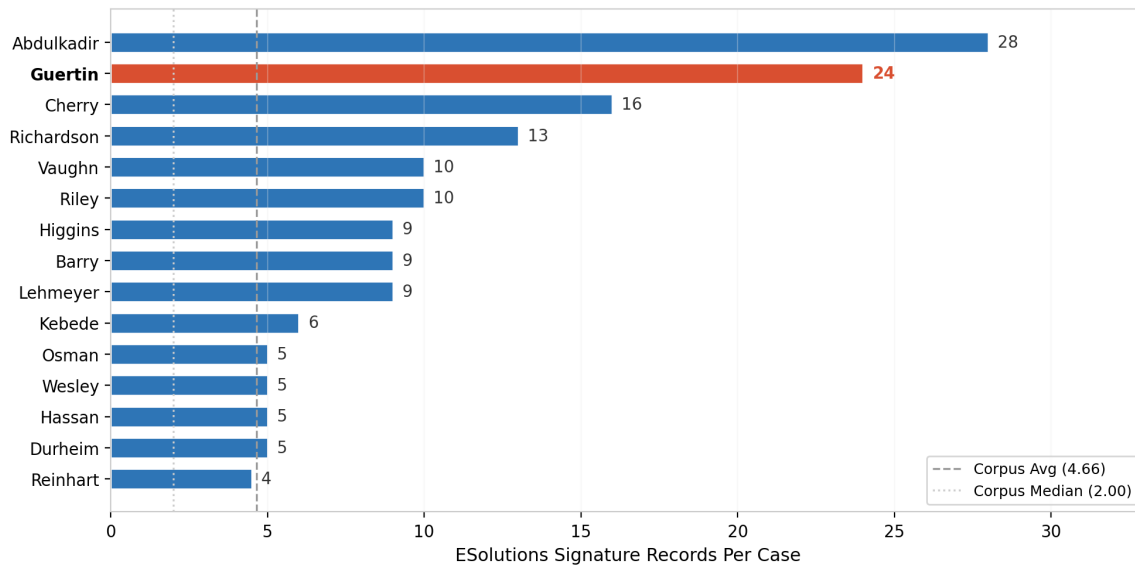
Mean	Median	Std Dev	Guertin	Percentile	σ Above Mean
1.83	1.00	2.41	8.00	95.7th	+2.12 σ

At 2.12 standard deviations above the mean, Guertin exceeds the conventional 2σ threshold commonly used to identify statistical outliers. Of 47 clusters with ESolutions signatures, only Guertin reaches this level for docs-per-case.

Finding 3: Signature Records Per Case — Intensity Ranking

The sigs-per-case metric measures total ESolutions signature indices per case. This captures multi-page signing patterns where a single document may carry multiple ESolutions signature fields.

Signature Intensity: ESolutions Sig Records Per Case
(Guertin = 24.0 — 12× the corpus median of 2.0)

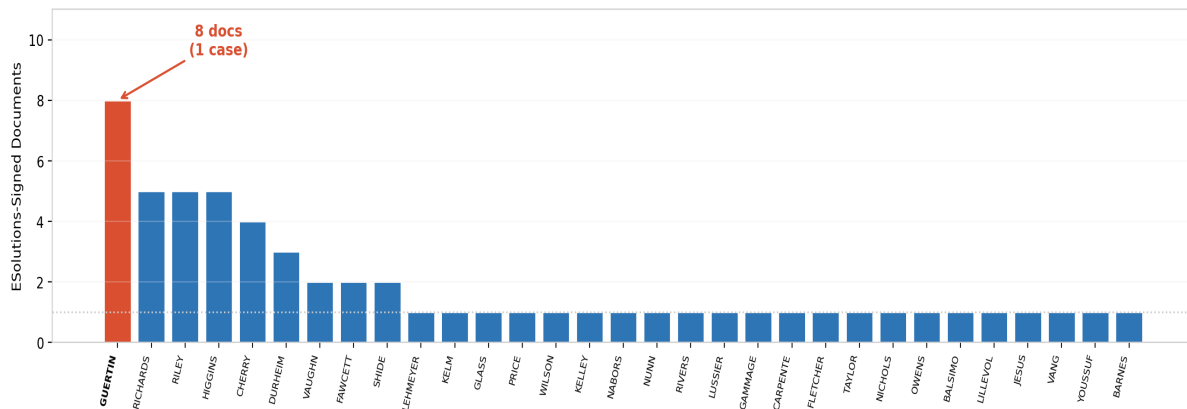


Only Muad Abdulkadir (28.0 sigs/case) exceeds Guertin (24.0). However, Abdulkadir's 56 signature records are driven by two documents each containing 27 ESolutions signature indices — an extreme multi-signature pattern concentrated in 2 documents from 2 cases. Guertin's 24 records are distributed across 8 documents from a single case, representing broader document-level penetration rather than a single high-multiplicity anomaly.

Finding 4: Single-Case Cohort — Guertin Among Peers

31 of the 47 ESolutions-bearing clusters have only a single case. This cohort isolates defendants whose entire ESolutions signature exposure comes from one case — making per-case normalization irrelevant (the raw count IS the per-case count). Within this apples-to-apples comparison:

Single-Case Clusters: ESolutions Doc Count
Guertin (8 docs) = 1.6× the next nearest, 8× the median



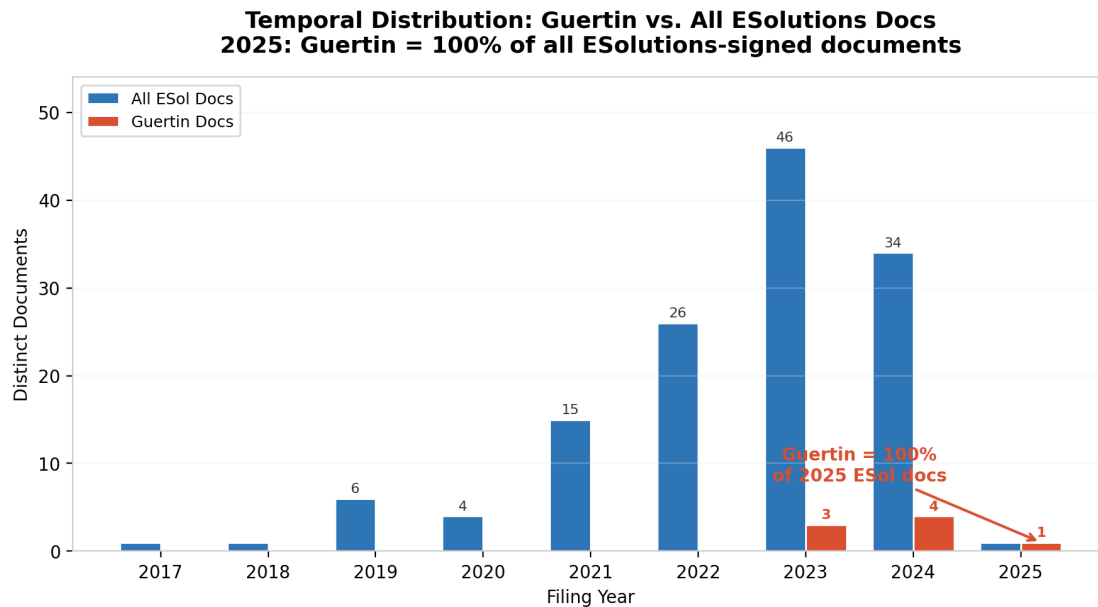
Single-Case Clusters — Top 10 by Doc Count

Cluster	Cluster ID	Docs	Sig Records	Sigs/Doc	Δ
MATTHEW GUERTIN	1570	8	24	3.0	•
RASHEED RICHARDSON	1730	5	13	2.6	
ANNE RILEY	825	5	10	2.0	
JULIET HIGGINS	33	5	9	1.8	
AARON CHERRY	195	4	16	4.0	
LAWRENCE DURHEIM	1518	3	5	1.7	
JARELLE VAUGHN	594	2	10	5.0	
NICOLLE FAWCETT	1664	2	3	1.5	
MOHAMED SHIDE	42	2	2	1.0	
PETER LEHMEYER	696	1	9	9.0	

Guertin holds 8 of 58 total ESolutions-signed documents in the single-case cohort (13.8%). **He has 1.6× the doc count of the next nearest peer (Richardson/Riley/Higgins at 5 each) and 22 of the 31 single-case clusters have only 1 document.**

Finding 5: Temporal Distribution — The 2025 Singleton

ESolutions-signed documents span 2017–2025. Guertin's 8 documents fall in 2023 (3 docs), 2024 (4 docs), and 2025 (1 doc).



Guertin Share by Year

Year	All Docs	All Sigs	Guertin Docs	Guertin Sigs	Guertin % Docs	Δ
2017	1	3	0	0	0.0%	
2018	1	3	0	0	0.0%	
2019	6	26	0	0	0.0%	
2020	4	6	0	0	0.0%	
2021	15	29	0	0	0.0%	
2022	26	54	0	0	0.0%	
2023	46	156	3	15	6.5%	
2024	34	74	4	5	11.8%	
2025	1	4	1	4	100.0%	•

In 2025, Guertin accounts for 100% of all ESolutions-signed documents (1 of 1) and 100% of all ESolutions signature records (4 of 4). While the corpus's collection window largely ends in 2024, making the 2025 sample inherently small, it is notable that the only document to carry an ESolutions signature in 2025 is the same document that is also the first MSIP-labeled filing in the corpus, also carries a deprecated RSA-1024 key, and also has `edits_after_sig_flag = true` on both the ESolutions and judicial officer signatures.

Finding 6: Guertin ESolutions Document Inventory

All 8 ESolutions-signed documents from case 27-CR-23-1886 are listed below, in chronological order (see Appendix A9).

Filing Date	Filing Type	ESol Sigs	Pag es	Year	Sigs/ Page	Δ
2023-06-14	Order for Continuance	1	1	2023	1.0	
2023-07-13	Finding of Incompetency and Order	7	7	2023	1.0	
2023-07-13	Order-Other	7	7	2023	1.0	
2024-04-12	Order Denying Motion	2	2	2024	1.0	
2024-05-23	Order Denying Fee Waiver	1	1	2024	1.0	
2024-05-30	Order Denying Fee Waiver	1	1	2024	1.0	
2024-07-15	Order to Recuse	1	1	2024	1.0	
2025-04-03	Order-Other (Competency Finding)	4	4	2025	1.0	•

The two July 13, 2023 documents (Finding of Incompetency and Order, Order-Other) each carry 7 ESolutions signature indices — the highest per-document count in Guertin's case. The April 3, 2025 competency order carries 4. These three documents alone account for 18 of Guertin's 24 ESolutions signature records (75%).

Finding 7: Signature Validity Profile

The cryptographic status profile for all 355 ESolutions signature records is unchanged from v1. Every ESolutions signature in the corpus — including all 24 Guertin records — has `edits_after_sig_flag = true`. 86.5% (307 records) return NULL for cryptographic validation; the remaining 13.5% (48 records) return “Signature is Valid” despite post-signature edits.

Crypto Status	Valid Flag	Edits After Sig	Count	% of Total
NULL (inconclusive)	NULL	true	307	86.5%
Signature is Valid.	true	true	48	13.5%

Coverage Statistics (All ESolutions Signatures)

Avg Coverage	Median	Min	Max
62.99%	67.48%	28.38%	99.51%

LIMITATIONS

- The 2025 sample consists of a single document. The finding that Guertin represents 100% of 2025 ESolutions docs is factually correct but reflects the corpus's collection window, which largely ends in 2024. Additional 2025 filings may exist in MCRO that were not captured.
- Per-case normalization assumes that cases are comparable units. A single complex case may legitimately generate more judicial orders than a simpler one, which would increase ESolutions signature frequency without implying anomalous treatment.
- Cryptographic validation was performed using the pyhanko/pdfminer toolchain. The 86.5% NULL validation rate for ESolutions signatures may reflect toolchain limitations rather than inherent signature invalidity.
- The edits_after_sig_flag = true pattern for all ESolutions records is consistent with standard multi-signature workflows where subsequent signers modify the document after the ESolutions CA signature is applied.

APPENDIX | REPRODUCIBLE SQL QUERIES

A1 — Scout — ESolutions Universe

```
SELECT
  COUNT(*) AS total_esol_sigs,
  COUNT(DISTINCT evidence_uid) AS distinct_docs,
  COUNT(DISTINCT case_uid) AS distinct_cases
FROM children_signatures_full_report
WHERE signer_name ILIKE '%ESolutions%';
```

A2 — Corpus Totals

```
SELECT
  (SELECT COUNT(*) FROM children_signatures_full_report) AS total_all_sigs,
  (SELECT COUNT(DISTINCT evidence_uid) FROM children) AS total_all_docs,
  (SELECT COUNT(DISTINCT s.cluster_id)
   FROM children_signatures_full_report s
   JOIN children c ON s.evidence_uid = c.evidence_uid
   WHERE s.signer_name ILIKE '%ESolutions%') AS esol_distinct_clusters;
```

A3 — Cluster Ranking — Raw

```
SELECT c.cluster_id, c.cluster_name,
  COUNT(DISTINCT s.evidence_uid) AS doc_count,
  COUNT(DISTINCT s.case_uid) AS case_count,
  COUNT(*) AS esol_sig_records
FROM children_signatures_full_report s
JOIN children c ON s.evidence_uid = c.evidence_uid
WHERE s.signer_name ILIKE '%ESolutions%'
GROUP BY c.cluster_id, c.cluster_name
ORDER BY doc_count DESC;
```

A4 — Cluster Ranking — Case-Normalized (Docs/Case, Sigs/Case)

```
SELECT c.cluster_id, c.cluster_name,
       COUNT(DISTINCT s.case_uid) AS case_count,
       COUNT(DISTINCT s.evidence_uid) AS doc_count,
       COUNT(*) AS sig_records,
       ROUND(COUNT(DISTINCT s.evidence_uid)::numeric
             / COUNT(DISTINCT s.case_uid), 2) AS docs_per_case,
       ROUND(COUNT(*)::numeric
             / COUNT(DISTINCT s.case_uid), 2) AS sigs_per_case
FROM children_signatures_full_report s
JOIN children c ON s.evidence_uid = c.evidence_uid
WHERE s.signer_name ILIKE '%ESolutions%'
GROUP BY c.cluster_id, c.cluster_name
ORDER BY docs_per_case DESC;
```

A5 — Distributional Statistics — Docs Per Case

```
WITH cluster_stats AS (
  SELECT c.cluster_id,
         COUNT(DISTINCT s.case_uid) AS case_count,
         COUNT(DISTINCT s.evidence_uid) AS doc_count,
         COUNT(*) AS sig_records,
         COUNT(DISTINCT s.evidence_uid)::numeric
           / COUNT(DISTINCT s.case_uid) AS docs_per_case,
         COUNT(*)::numeric
           / COUNT(DISTINCT s.case_uid) AS sigs_per_case
  FROM children_signatures_full_report s
  JOIN children c ON s.evidence_uid = c.evidence_uid
  WHERE s.signer_name ILIKE '%ESolutions%'
  GROUP BY c.cluster_id
)
SELECT
  AVG(docs_per_case)::numeric(6,2) AS mean,
  PERCENTILE_CONT(0.5) WITHIN GROUP
    (ORDER BY docs_per_case)::numeric(6,2) AS median,
  STDDEV_POP(docs_per_case)::numeric(6,2) AS stddev,
  MAX(docs_per_case)::numeric(6,2) AS max,
  ROUND(COUNT(*) FILTER
    (WHERE docs_per_case <= 8)::numeric / COUNT(*) * 100, 1)
    AS guertin_percentile
FROM cluster_stats;
```

A6 — Single-Case Clusters Only

```
WITH cluster_stats AS (
  SELECT c.cluster_id, c.cluster_name,
         COUNT(DISTINCT s.case_uid) AS case_count,
         COUNT(DISTINCT s.evidence_uid) AS doc_count,
         COUNT(*) AS sig_records
  FROM children_signatures_full_report s
  JOIN children c ON s.evidence_uid = c.evidence_uid
  WHERE s.signer_name ILIKE '%ESolutions%'
```

```
GROUP BY c.cluster_id, c.cluster_name
)
SELECT * FROM cluster_stats
WHERE case_count = 1
ORDER BY doc_count DESC, sig_records DESC;
```

A7 — Temporal Distribution with Guertin Overlay

```
SELECT
  EXTRACT(YEAR FROM c.filing_date)::int AS yr,
  COUNT(DISTINCT s.evidence_uid) AS all_docs,
  COUNT(DISTINCT s.evidence_uid)
    FILTER (WHERE c.cluster_id = 1570) AS guertin_docs
FROM children_signatures_full_report s
JOIN children c ON s.evidence_uid = c.evidence_uid
WHERE s.signer_name ILIKE '%ESolutions%'
GROUP BY EXTRACT(YEAR FROM c.filing_date)
ORDER BY yr;
```

A8 — Signature Validity Profile

```
SELECT sig_crypto_status, sig_crypto_valid_flag,
  edits_after_sig_flag, COUNT(*) AS sig_count
FROM children_signatures_full_report
WHERE signer_name ILIKE '%ESolutions%'
GROUP BY sig_crypto_status, sig_crypto_valid_flag,
  edits_after_sig_flag
ORDER BY sig_count DESC;
```

A9 — Guertin ESolutions Document Inventory

```
SELECT c.case_id, c.filing_type, c.filing_date,
  c.filename, COUNT(*) AS esol_sigs_in_doc
FROM children_signatures_full_report s
JOIN children c ON s.evidence_uid = c.evidence_uid
WHERE s.signer_name ILIKE '%ESolutions%'
  AND c.cluster_id = 1570
GROUP BY c.case_id, c.filing_type,
  c.filing_date, c.filename
ORDER BY c.filing_date;
```

A10 — Guertin Total Corpus Docs vs ESolutions Docs

```
SELECT
  COUNT(*) AS total_guertin_docs,
  COUNT(*) FILTER (WHERE evidence_uid IN (
    SELECT DISTINCT evidence_uid
    FROM children_signatures_full_report
    WHERE signer_name ILIKE '%ESolutions%'
  )) AS esol_signed_docs
FROM children
```

```
WHERE cluster_id = 1570;
```