BREAST IMAGING OUTCOMES INTELLIGENCE

Tier 1 Patient Retention and Return Compliance

What happened to the women who screened normal in 2022, and what it tells us about driving them back on time.

Study population: 2022 entry cohort, single de-identified facility
Observation window: January 2022 through May 30, 2026 (4.4 years)
Prepared by: Mammologix, Inc. (powered by I/O Trak)
Analytic method: Longitudinal cohort follow-up with censoring-adjusted return modeling

3,686	71.7%	25.7%
women entered Tier 1 in 2022	returned at least once	never seen again

Executive summary

In 2022, **3,686 women** came to this practice for a screening mammogram, were read as normal (negative or benign), and were told the same thing: come back in a year. This report follows every one of those women forward through May 2026 and answers three questions administration actually cares about. Did they come back? When they came back, were they on time? And where are the ones we lost?

The story is encouraging in the middle and troubling at the edges. **Most women who return do so on a tight annual rhythm**: of all return visits, **63.8% land inside a strict annual window** and more than three-quarters fall within roughly fifteen months. That is a genuinely healthy screening cadence and it is worth telling the board plainly.

The problem is not lateness. It is **disappearance**. Across four years, **28.3% of the cohort never returned for a single Tier 1 screen**, and **948 women (one in four) were never seen at this practice again in any capacity**. They did not move to diagnostic care, they did not transfer into a higher-risk pathway. They simply stopped coming. That group is the single largest opportunity in this report, and it is fully addressable.

The bottom line for administration: the practice has a strong on-time culture for the patients who stay, and a serious silent-attrition problem for the patients who leave. A focused recall program aimed at the women this report individually identifies is the most direct lever available to raise screening volume, protect patients, and demonstrate quality.

The four findings at a glance

- **Retention.** 71.7% of the 2022 cohort returned for at least one Tier 1 screen; 28.3% never did. Median time to a first return was about 18 months.
- **Compliance.** Among return visits, 63.8% were strict-annual and 77.4% fell within roughly fifteen months. Only 3.0% were extended lapses beyond 33 months.
- **Attrition.** 948 women (25.7%) vanished entirely after their 2022 screen; a further 96 were seen again but only outside routine screening.
- **Live opportunity.** 2,103 women are currently past their recommended return date with no screen on record, including 1,368 who are more than fifteen months overdue. This is a ready-made recall worklist.

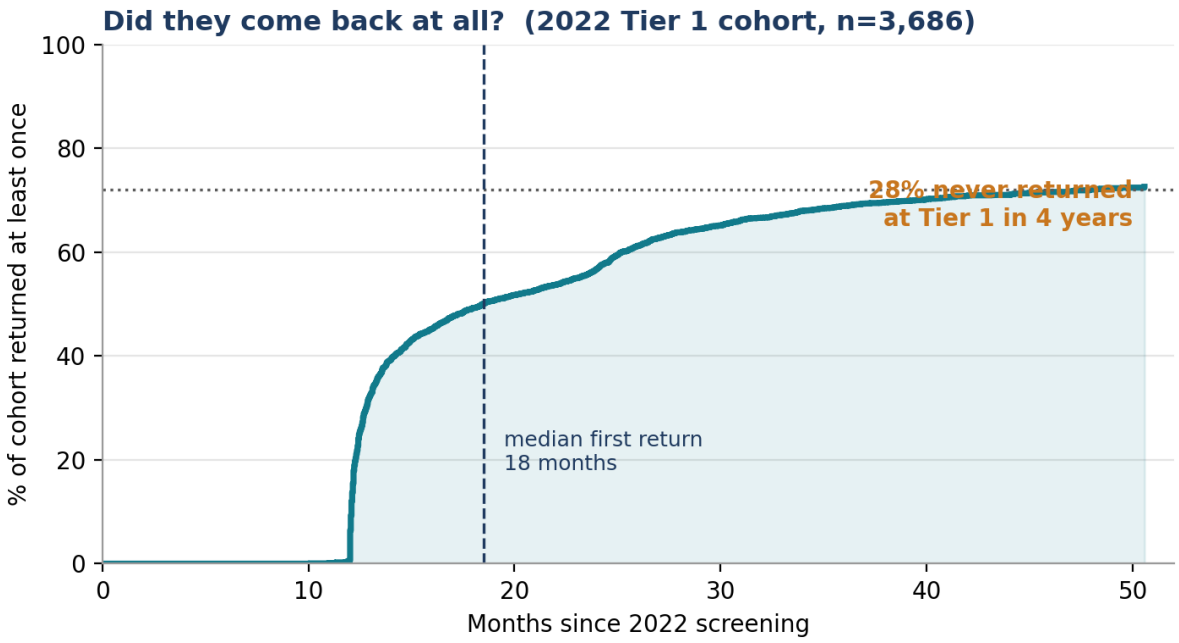
1. What this report measures

We define a **Tier 1 patient** as a woman who presented for an asymptomatic screening mammogram and was assessed as negative or benign, with a recommendation to return to routine annual screening. These are the practice's healthiest, most routine patients, and they are the population for whom an annual return is both expected and clinically appropriate.

The cohort is fixed: every woman in it had her qualifying 2022 screen, and we then watched what each one did over the following four-plus years. A woman can move in and out of Tier 1 as her breast-health circumstances change. If she returns the next year and is again a normal screen, she stays in Tier 1. If she returns but is recalled for additional imaging or arrives with symptoms, she is recorded as **seen, but not at Tier 1** for that year, which is exactly what should happen, and she can re-enter Tier 1 later.

One point of method that protects the credibility of every number that follows. We do not penalize a woman for not having returned yet if she is not due yet. A patient screened in late 2025 is not overdue in early 2026, and counting her as a non-returner would understate the practice unfairly. Throughout this report we use censoring-adjusted modeling (the Kaplan-Meier method), which keeps each woman in the denominator only for the time she has actually been eligible to return. The effect is conservative and honest: the practice gets credit where it is due and no false credit where it is not.

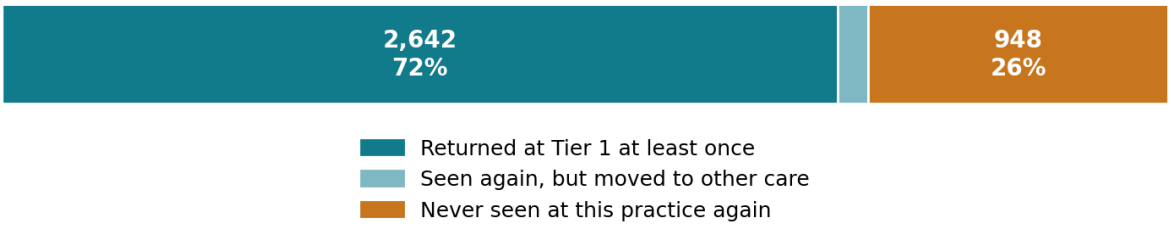
2. Finding one — Did they come back?



Reading the curve from left to right: almost no one returns before the twelve-month mark, which is exactly right, and then returns accumulate quickly through the second year. By four years, **71.7% of the cohort had come back for at least one Tier 1 screen**. The median woman who returns does so at about 18 months, a little later than the annual ideal but well within a reasonable screening interval.

The flat ceiling on the right is the part that matters. The curve never climbs past roughly 72%, which means **more than one in four women who screened normal in 2022 never returned for routine screening at all**. And when we ask where those women went, the answer is stark.

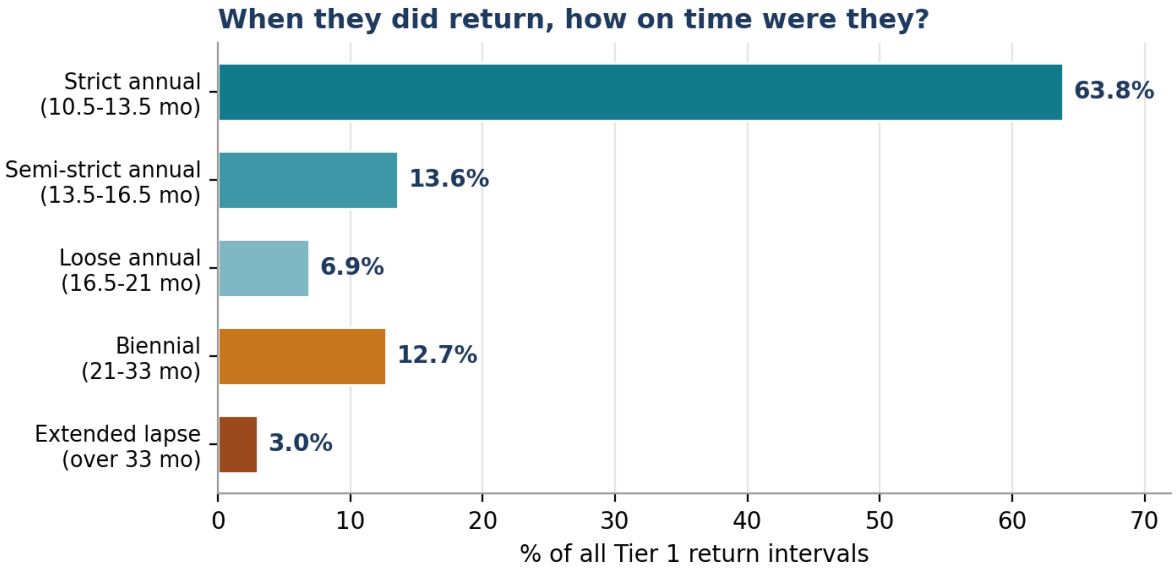
Where the 2022 cohort went over four years



Of the 1,044 women who never came back at Tier 1, only 96 were seen again in any other capacity (a diagnostic visit, a recall, a symptomatic presentation). The other **948 women were never seen at this practice again, period**. This is true attrition, not clinical escalation. These are not patients the system caught and redirected; these are patients the system lost. For a screening program, that is the number to circle.

3. Finding two — When they returned, were they on time?

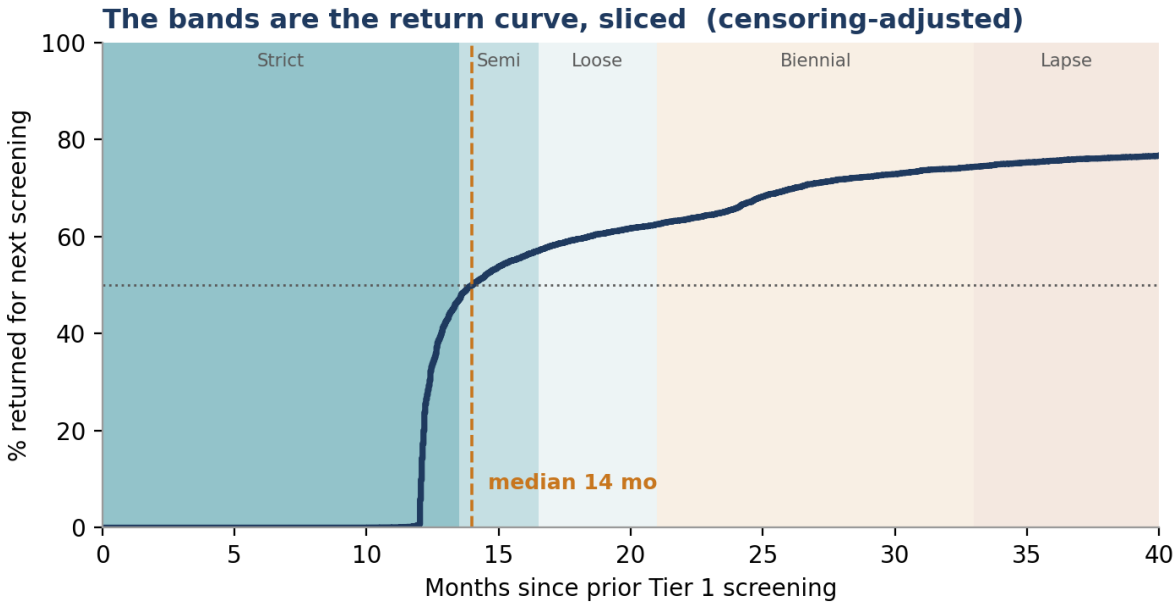
For the women who did come back, the picture is genuinely good, and it deserves to be shown as a spectrum rather than a pass-or-fail line. Every return interval is sorted into a named band by how long it took.



Strict annual (63.8%) means the woman returned within a month and a half of her one-year due date. Add **semi-strict (13.6%)** and over three-quarters of all returns happen within roughly fifteen months. **Loose annual (6.9%)** captures the merely tardy. The **biennial (12.7%)** group has effectively settled into an every-other-year rhythm, and the **extended lapse (3.0%)** group disappeared for more than three years before resurfacing. The shape is the message: when these patients return, they overwhelmingly return on a real annual cadence. The practice is not fighting chronic lateness. It is fighting non-return.

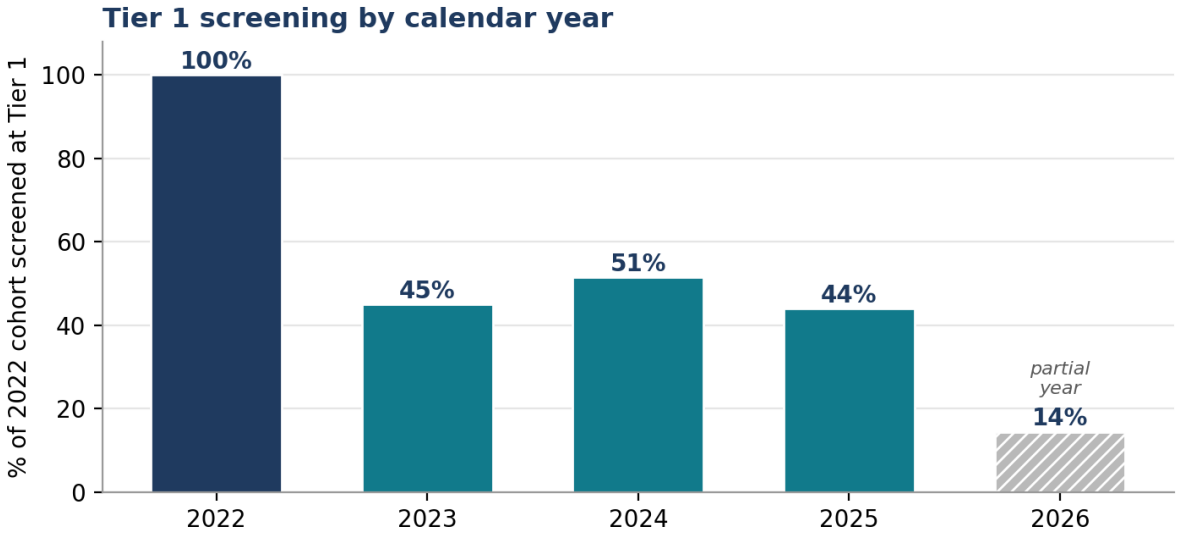
Why this holds up to scrutiny

If an analyst on your board asks how the bands were drawn, here is the honest answer, and it is a strength rather than a hedge. The named bands are not a separate scoring scheme bolted onto the data. They are simply the return curve, cut into labeled segments and corrected for the women who are not yet due.



Each shaded zone is one band; the curve is the censoring-adjusted probability that a woman has returned by a given month. Reading the bands off this curve, rather than off a raw tally, is what keeps the percentages truthful, and it is what will keep them truthful when we extend the analysis to the 2023, 2024, and 2025 cohorts, where many women legitimately are not due yet.

4. Finding three — The year-by-year view



Every woman in this cohort was present in 2022 by definition. After that, Tier 1 participation settles into the 44 to 51 percent range each year. (2026 is shown lighter because the year is only five months old; that bar will rise as the year completes and should not be read as a decline.) The steady-state pattern tells administration something useful: in any given year, roughly half of the eligible cohort is actually getting its annual screen here. Closing the gap between that and the share who intend to return is the practical target.

5. Finding four — Why this matters, and what is on the table

The recall opportunity is concrete and it is sitting in the data right now. As of today, **2,103 women from this single cohort are past their recommended return date with no subsequent screen on record**. They sort cleanly by urgency:

- **1,368 women** are more than fifteen months overdue — the deepest-lapse group and the highest-yield target for outreach.
- **277 women** are nine to fifteen months overdue — recently slipped, easiest to recover.
- **305 women** are three to nine months overdue — a gentle reminder likely suffices.

Each of these women is individually identifiable in the underlying data, which means this is not an abstract statistic. It is a printable, prioritized call list. Translating the list into recovered screening volume, and the downstream diagnostic and procedural volume that follows from it, is a straightforward exercise once the facility's own reimbursement figures are applied.

The clinical stakes are real, not rhetorical. Within this cohort, **42 women received a malignant diagnosis** somewhere in the four-year window. The entire purpose of routine annual screening is to find disease early, and the women most exposed to late detection are precisely the ones who lapse. We are not, in this report, attributing outcomes to specific gaps; that requires a dedicated outcomes study, which we recommend. But the presence of these diagnoses is the reason a retention program is a patient-safety initiative and not merely a revenue one.

6. Every patient has a record

The aggregate numbers above are built from individual histories, and the practice can act on them one woman at a time. Below are three real, de-identified records that represent the three patterns driving the whole report. Identifiers are masked to the final four characters.

Pattern A — the model patient (••YF03), one of 831 like her

Date	Reason	Assessment	Status
2022-10-10	Asymptomatic	Negative	Tier 1
2023-10-11	Asymptomatic	Benign	Tier 1
2024-11-25	Asymptomatic	Negative	Tier 1
2025-11-26	Asymptomatic	Negative	Tier 1

Plain-language record: *Returned at Tier 1 four years running, averaging about 1.05 years between screens. Strict annual compliance throughout. Her next visit is due in late 2026.*

Pattern B — seen, but not at Tier 1 (••R9AB), one of 105 like her

Date	Reason	Assessment	Status
2022-03-14	Asymptomatic	Negative	Tier 1
2023-03-15	Asymptomatic	Needs additional imaging	Seen, not Tier 1 (recalled)
2023-03-22	Symptomatic	Benign	Seen, not Tier 1 (worked up)
2024-04-09	Asymptomatic	Negative	Tier 1
2025-04-28	Asymptomatic	Negative	Tier 1

Plain-language record: *Entered Tier 1 in 2022. Returned on schedule in 2023 but was recalled for additional imaging and then worked up to a benign result, so she does not count as Tier 1 that year. Re-entered Tier 1 in 2024 and 2025. The system did its job here: she stayed in care the whole time.*

Pattern C — the lost patient (••NWN5), one of 948 like her

Date	Reason	Assessment	Status
2022-05-20	Asymptomatic	Negative	Tier 1

Plain-language record: *A single normal screen in 2022 and then nothing. Never recalled, never symptomatic, never seen again. She was due back in May 2023 and is now roughly three years overdue. This is the patient the recall program exists to recover.*

7. What we recommend

1. **Launch a tiered recall on the 2,103 overdue women now.** Start with the 277 recently-slipped patients (highest recovery rate) and the 1,368 deep-lapse patients (highest clinical risk). The list already exists.
2. **Treat the 948 vanished patients as a distinct re-engagement campaign.** These women left the practice entirely. Recovering even a fraction materially raises screening volume and closes a real care gap.
3. **Adopt the named-band spectrum as a standing quality metric.** Reporting strict / semi-strict / loose / biennial / lapse each quarter gives administration a single, honest scorecard that a regulator or board can read at a glance.
4. **Commission the outcomes linkage.** Connecting lapse patterns to the 42 malignant diagnoses, and to stage at detection, converts this from an operations report into a patient-safety case.

And then let us widen the lens. This analysis covers one tier and one entry year. The same engine applied to the 2023, 2024, and 2025 cohorts will show whether retention is improving or eroding over time, and applied to the higher tiers will show how the practice manages its more complex patients. The 2022 Tier 1 cohort was the proof. The full picture is the program.

Appendix — Methods and definitions

Cohort and Tier 1 definition

A qualifying 2022 Tier 1 event is an asymptomatic screening mammogram performed in calendar 2022 with an event-level assessment of negative or benign. The mammogram is identified by the presence of the MM procedure component. Applying this definition reproduces the practice's existing Tier 1 extract exactly (3,692 qualifying events). Six women had two same-day qualifying screens in 2022; these duplicates were collapsed to a single record, yielding a true patient cohort of 3,686.

Return intervals and bands

Intervals are measured between consecutive Tier 1 screens for the same woman. Visits that are symptomatic, recalled, or otherwise outside Tier 1 are recorded as “seen, not Tier 1” and do not enter the interval calculation, so a diagnostic work-up cannot masquerade as an on-time screen. Bands (in months between screens): strict annual 10.5 to 13.5; semi-strict 13.5 to 16.5; loose 16.5 to 21; biennial 21 to 33; extended lapse beyond 33. Band percentages are read from the censoring-adjusted return curve.

Censoring and the two curves

Two Kaplan-Meier curves underlie the report. A retention curve measures time from the 2022 index screen to a woman's first return and underwrites the patient-level figures. A cadence curve measures time from any screen to the next and underwrites the interval-level spectrum. Because a single woman contributes several intervals, confidence intervals on the cadence curve should be clustered at the patient level. The “never returned” figure separates true lapse (window closed without return) from not-yet-due (window still open); for this four-year cohort almost all non-returners fall in the former.

Overdue determination

A woman is counted as overdue when her most recent Tier 1 screen plus its recommended follow-up date (recorded on the exam, and effectively one year in nearly all cases) falls before the analysis date of May 30, 2026, with no subsequent qualifying screen. Outcome and resolution fields are carried for the recommended outcomes-linkage study and are not used in the compliance figures.

Prepared by Mammologix, Inc. (powered by I/O Trak). De-identified clinical operations analysis for internal administrative use.