

DORI · DERMALIFE ONCOLOGY & RESEARCH INSTITUTE

Skin Cancer Risk Intelligence & Patient Diagnosis Optimization

A Healthcare Data Analytics Report · SQL Analysis on 1,088 Patients & 1,088 Lesion Records

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About Dermalife Oncology & Research Institute

DORI is a specialized healthcare organization dedicated to combating skin cancer through:

- Clinical research
- Advanced diagnostics
- Population health analytics.

As part of its digital transformation initiative, DORI commissioned this SQL-driven analytics project to uncover actionable insights from its patient and lesion database — spanning demographics, lesion characteristics, environmental conditions, and lifestyle risk factors.

1,088

Patients on record

1,088

Lesion records analyzed

31.8%

Overall malignancy rate

PostgreSQL

Analysis engine (SQL)

DORI's Mission

Reduce mortality · Improve early diagnosis · Personalize risk assessment · Support evidence-based care

Rising Late-Stage Diagnoses, No Structured Framework

DORI has experienced a rise in late-stage skin cancer diagnoses, high-risk lesion progression, and recurring complications — particularly among elderly and underserved populations.

Administrators suspect environmental conditions, hereditary history, smoking, alcohol consumption, and poor sanitation access are contributing factors, but lacked a structured analytical framework to confirm which patients, regions, symptoms, and lifestyle factors carry the greatest risk.

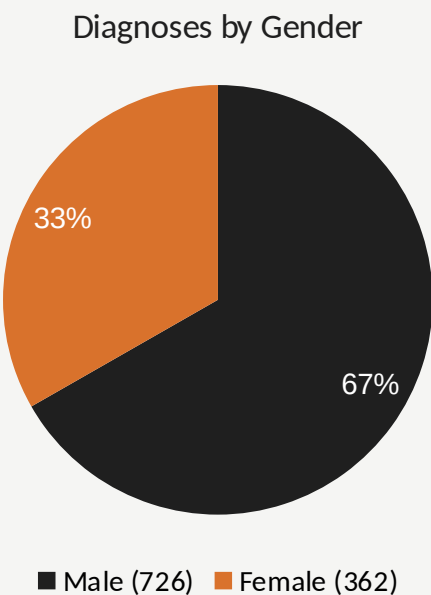
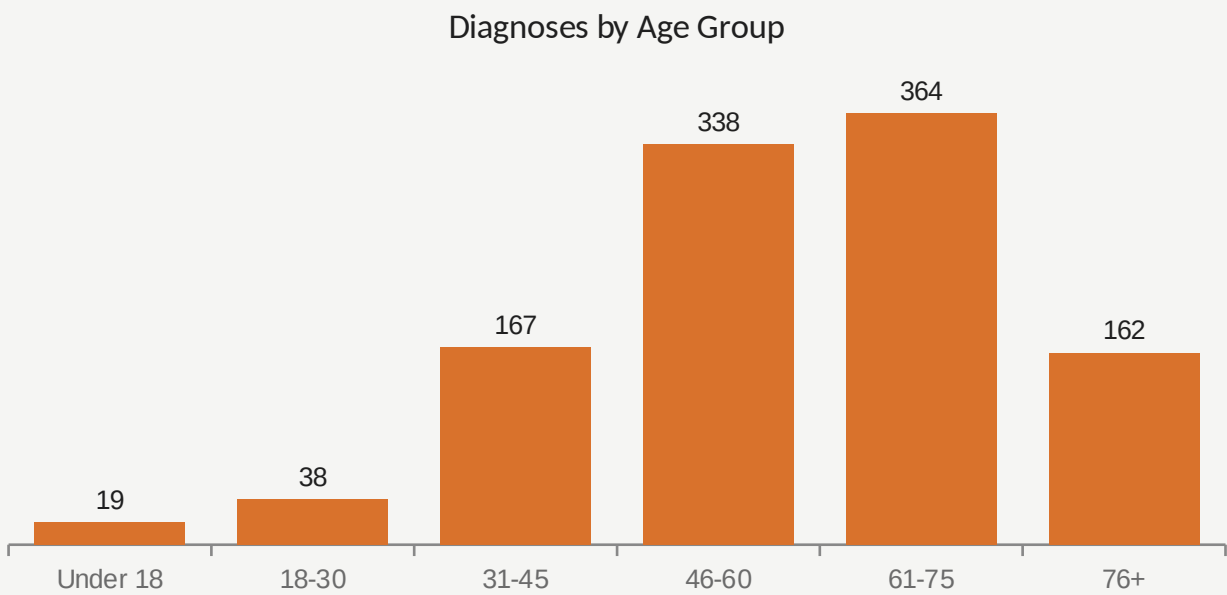
- Which patients are most at risk?
- Which regions need urgent intervention?
- Which symptoms signal malignancy?
- Which lifestyle factors worsen outcomes?

Consultant's Role

Engaged as a Healthcare Data Analyst Consultant to analyze patient, diagnosis, and environmental health data using SQL and analytics techniques — identifying high-risk patients, uncovering diagnosis trends, and producing data-driven recommendations for early detection and preventive care.

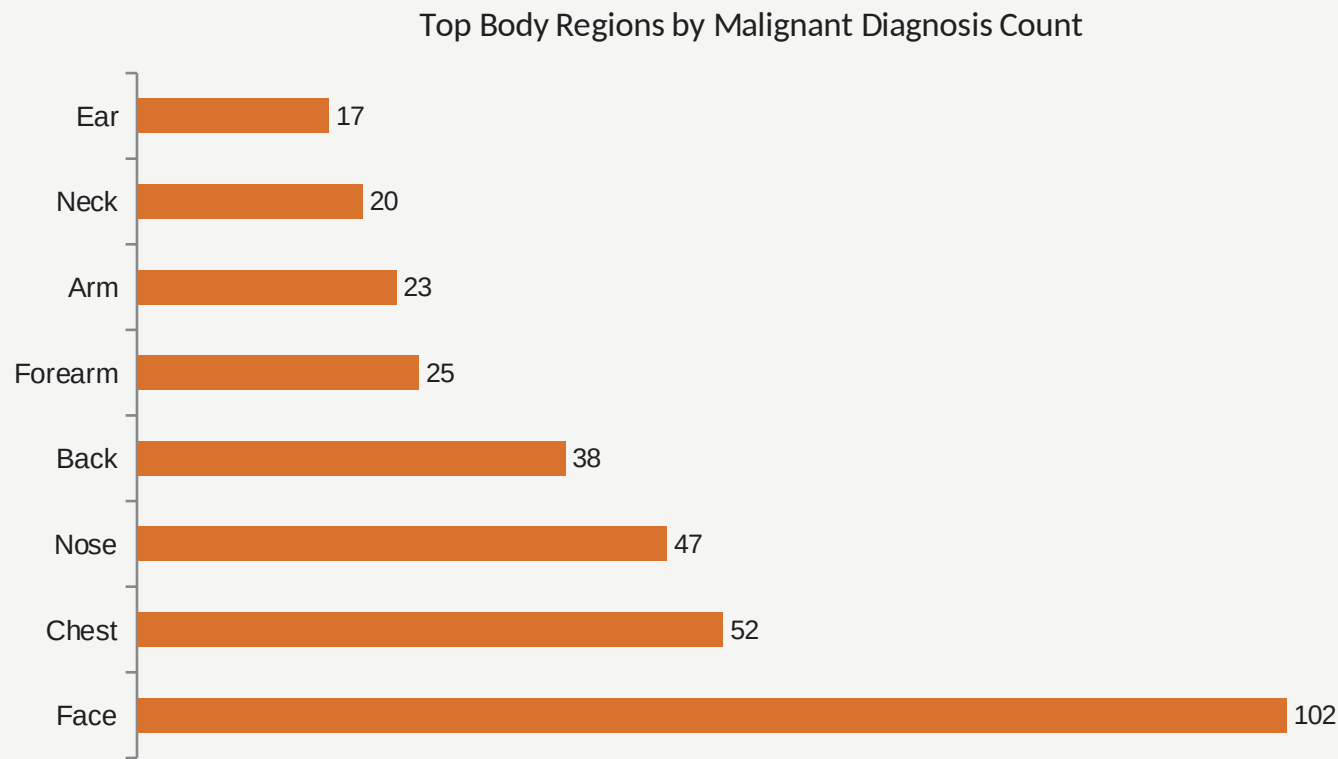
This report answers that need using SQL analysis across four areas: demographics, lesion/diagnosis patterns, environment, and lifestyle.

Who Is Most Affected?



Malignancy climbs sharply with age: 0% (under 18) → 5.3% (18-30) → 19.8% (31-45) → 34.6% (46-60) → 33.2% (61-75) → 45.1% (76+). Patients 46+ account for 79% of all diagnoses. Malignancy is also proportionally higher in women (43.4%) than men (26.0%), despite men receiving more total diagnoses in absolute terms.

Where on the Body — and Prior History



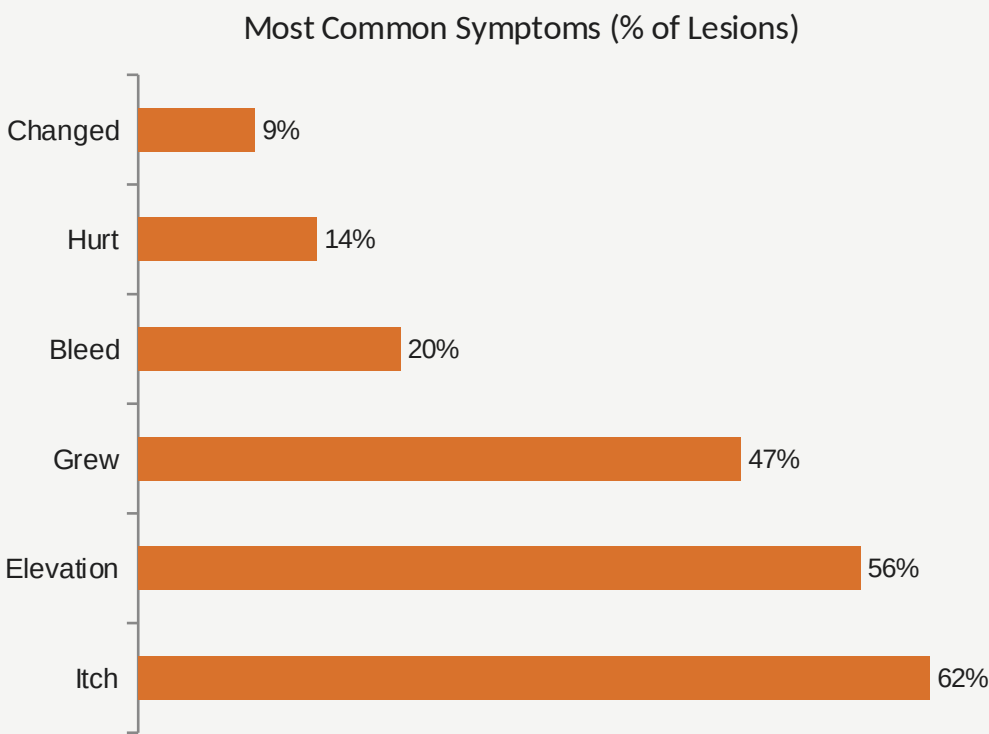
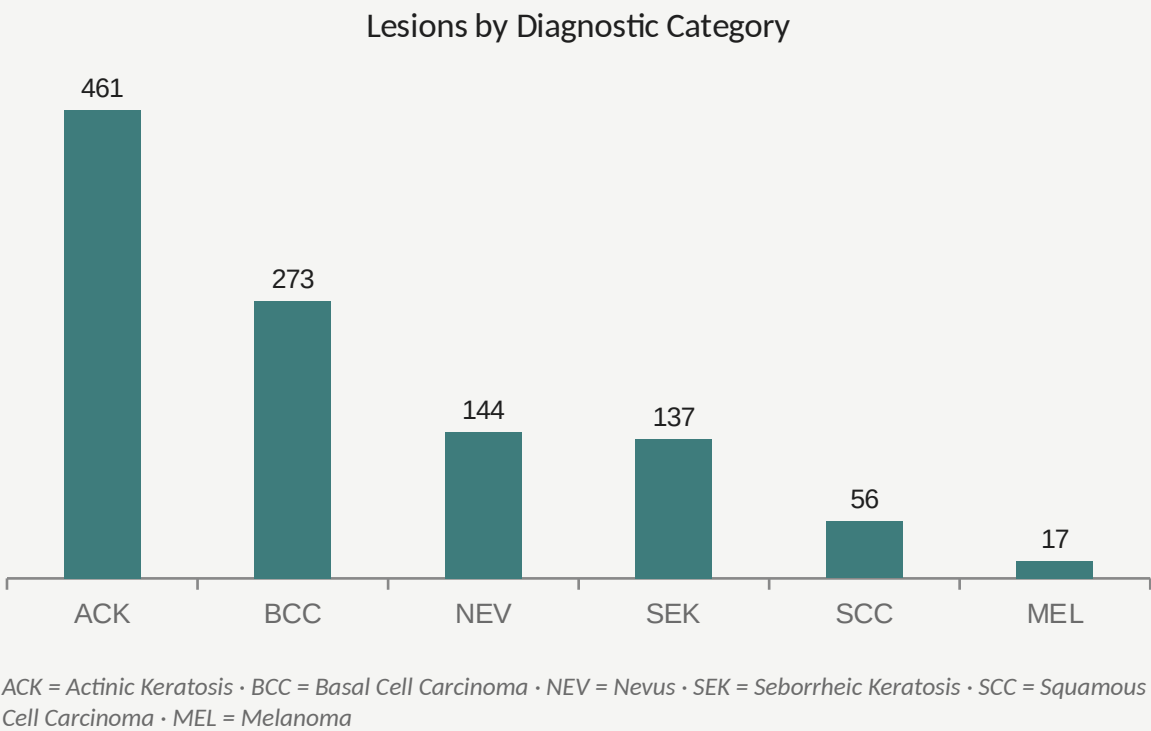
224

Patients with a prior skin cancer history (20.6% of 1,088)

864

Patients with no prior skin cancer history (79.4%)

Diagnosis Mix and Warning Symptoms



Growth, Biopsy Confirmation, and Lesion Size

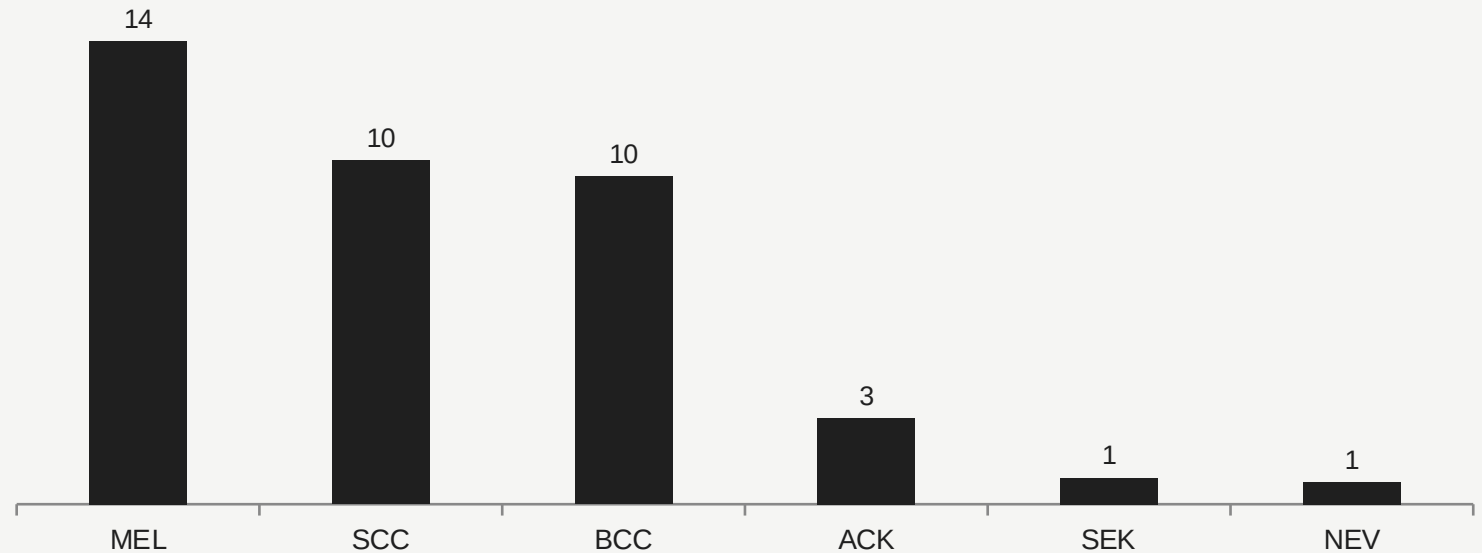
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Lesions reported as growing (46.9% of 1,088)

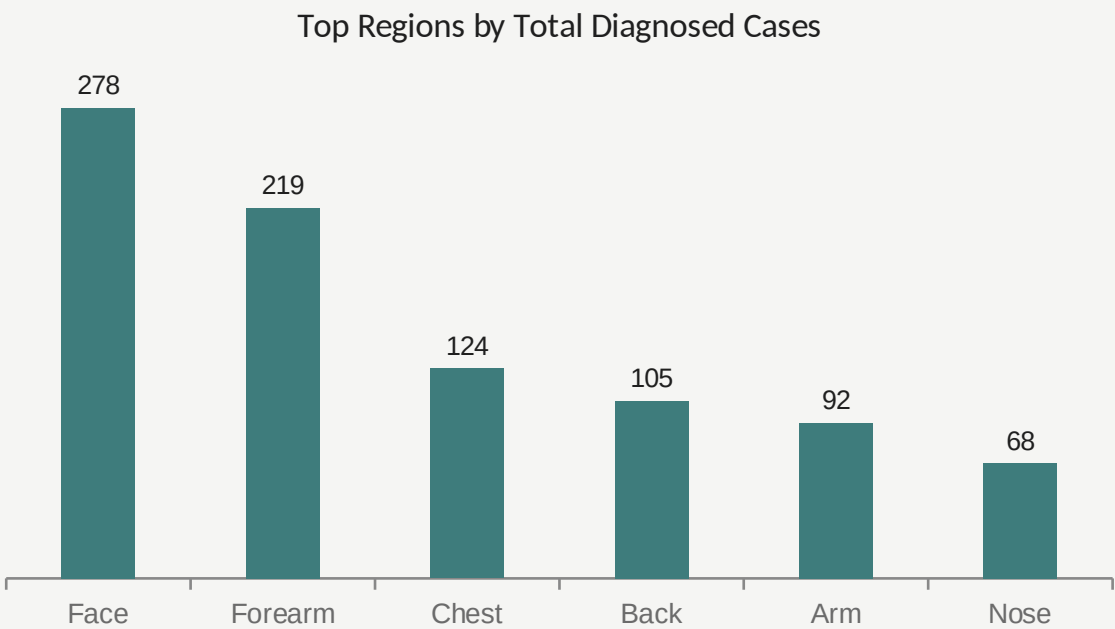
458

Lesions biopsied before diagnosis (42.1%)

Average Lesion Diameter (mm) by Diagnosis



Regions, Access, and Sanitation



Highest biopsy volume: Face (124), Chest (63), Nose (54), Back (45), Forearm (44).

71.9%

Patients lacking piped water (782 of 1,088)

74.9%

Patients lacking a sewage system (815 of 1,088)

Sanitation Access vs. Malignancy Rate

Adequate access: 61.8% malignant (n=262)

Poor access: 22.3% malignant (n=826)

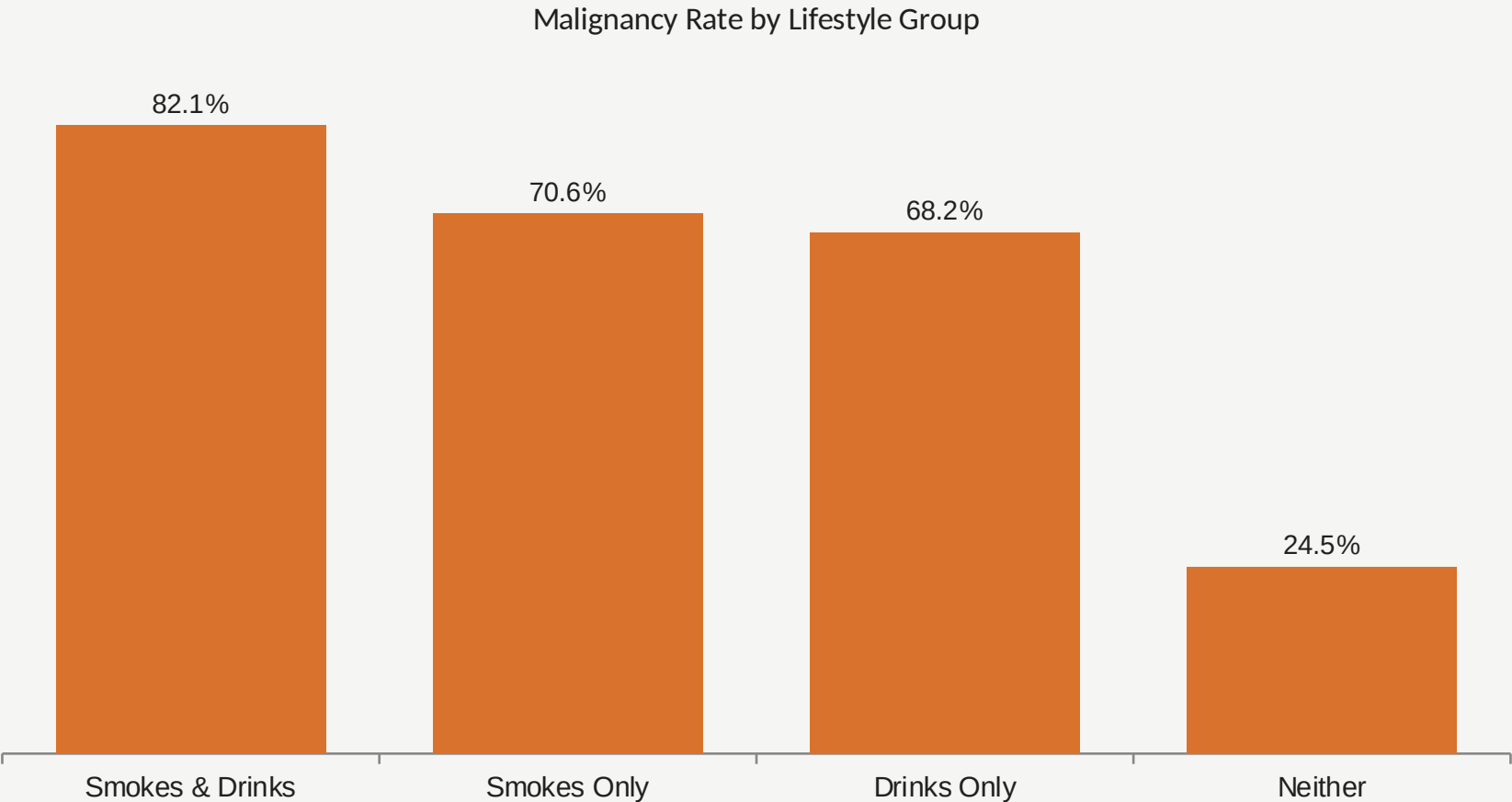
Counter-intuitive result — very likely a detection/access bias (better-served patients get more biopsy-confirmed diagnoses), not a protective effect of poor sanitation. Needs multivariate follow-up.

Smoking, Drinking, and Malignancy Rate

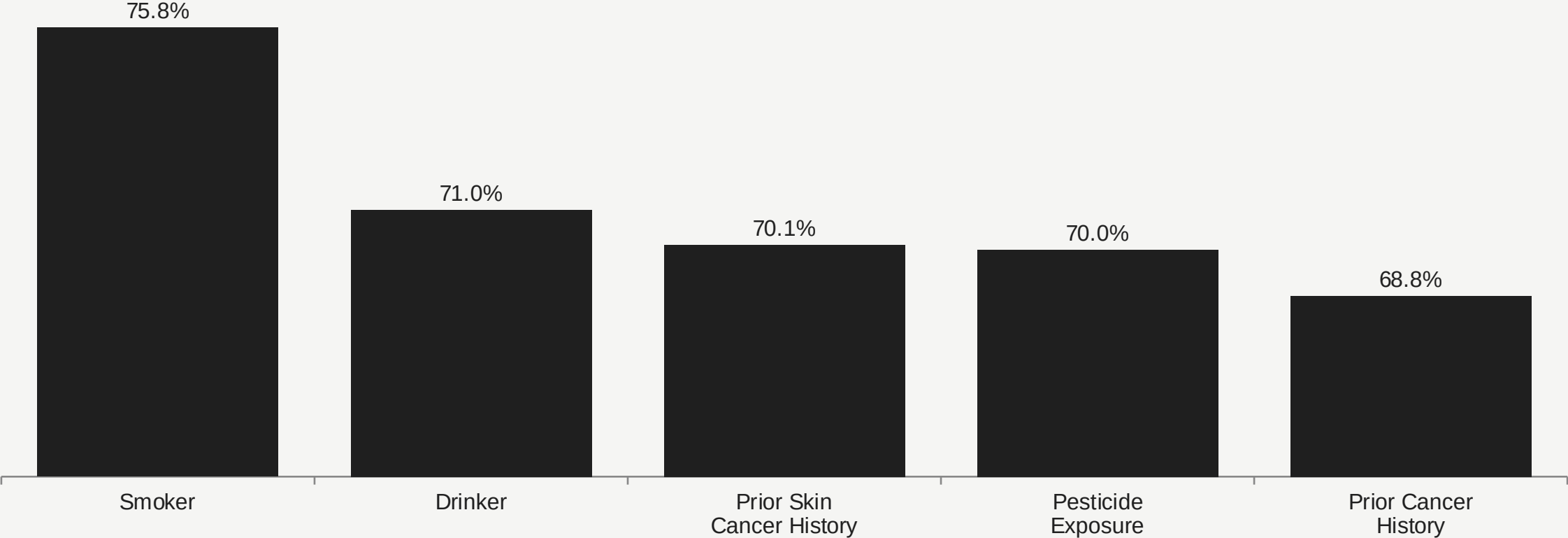
5.7%
Patients who smoke (62 of 1,088)

12.7%
Patients who drink (138 of 1,088)

45.2%
Of smokers also drink alcohol



Which Risk Factor Matters Most?



Note: smoker (n=62) and drinker (n=138) groups are relatively small — treat rates as directional, not population-level estimates.

Conclusion

What the Data Tells Us

1 Age drives risk

Patients 46+ make up 79% of diagnoses; malignancy rises from 0% (under 18) to 45% (76+).

2 Symptoms are diagnostic

Malignant lesions grow (75%) and bleed (52%) far more than benign ones (34%, 6%).

3 Sun-exposed regions dominate

Face, chest, and nose lead in both diagnosis volume and malignancy.

4 Smoking + drinking compounds risk

82% malignant when both habits are present, vs. 24% with neither.

5 Smoking is the top single factor

75.8% malignant among smokers — highest of all factors tested.

6 Sanitation link needs care

Raw data shows higher malignancy with better sanitation — likely detection bias, not causation.

Recommended Actions for DORI

- 1 Prioritize enhanced screening for patients aged 46+, especially 61-75, given their outsized share of diagnoses and rising malignancy rates.
- 2 Fast-track biopsy referral for face, chest, and nose lesions — the highest-malignancy body regions.
- 3 Adopt symptom-based triage: flag growing, bleeding, or elevated lesions for urgent clinical review.
- 4 Launch smoking- and alcohol-cessation counseling as preventive care, given malignancy rates up to 82% in patients with both habits.
- 5 Re-investigate the sanitation-access relationship with a multivariate model before using it in patient-facing risk messaging.
- 6 Track biopsy rates by region and demographic group to confirm high-risk populations are being biopsied, not just diagnosed.

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Any Questions
or suggestions