VIRTUAL ASSET PRIORITIZATION RESOURCE

WHITE PAPER

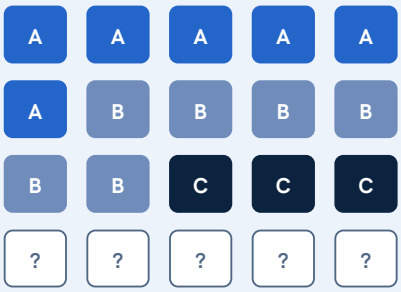
Understanding Asset Condition Across a Portfolio



COMPARABLE OBSERVATIONS + VISIBLE GAPS

Coverage before comparison

A practical guide to reading portfolio condition summaries with clear coverage, dates, measurement context, and limits on what the data can support.



ILLUSTRATIVE PORTFOLIO

15 / 20

assets observed = **75% coverage**

5 not observed; condition remains unknown

Bands A / B / C: 6 / 6 / 3. Labels have no safety meaning.

Illustrative example only. Coverage measures observation availability, not accuracy or safety.

Three ideas to take into your next review

01 Define the population and denominator before interpreting a percentage.

02 Show unknown, older, and non-comparable records explicitly.

03 Use differences to ask better questions before claiming a trend.

For: Portfolio asset managers, engineering reviewers, and planning teams.

October 2026 · Editorial draft for review. Cover image: AI-generated illustration, not documentary evidence.

01 / SET THE BOUNDARY

Define what the summary describes

A portfolio view compresses many observations into a small number of categories or indicators. That compression is useful only if a reader understands which assets were included, what was measured, and what information is missing. A polished chart cannot supply those definitions after the fact.

FHWA's national conditions report distinguishes raw counts from measures weighted by length, area, or traffic. Those measures answer different questions. Its highway examples also caution that assets without data may differ from those observed. The point is to state the basis of the summary, not to borrow the report's historical percentages or condition thresholds. [1]

Define	Question	What to show
Population	Which managed assets belong in this review?	Boundary, asset group, exclusions, and inventory date.
Measurement	What observation and classification are used?	Method, units or categories, and relevant limitations.
Time	Which period does each observation represent?	Observation date or period, distinct from report publication.
Denominator	What does the percentage divide by?	Count, length, area, or another explicitly justified basis.
Coverage	How much of the defined population has usable observations?	Included records and visible missing or excluded groups.

> **Proposed caption:** "Condition distribution for the defined asset group, using usable observations from the stated period; unknown and excluded records shown separately." Fill in the actual boundary and method before using it.

02 / ESTABLISH COMPARABILITY

Compare like with like

Similar-looking category labels do not establish equivalent measurements. Before combining groups or comparing years, check the asset type, component scope, collection method, classification rules, and observation period. A shared label may conceal a different definition or a different level of inspection.

The UK Department for Transport's technical note describes measurement consistency issues in automated pavement surveys, including effects of equipment and processing changes. A movement in an indicator therefore needs method context before it is interpreted as equivalent physical change. This does not mean that all methods are incompatible; suitability for the intended comparison must be established. [2]

Check	Possible difference	Proposed response
Population	New assets entered or assets left the inventory.	Show the changed population and, where useful, a consistent comparison group.
Method	Equipment, inspection scope, or processing changed.	Document the change and assess comparability before joining results.
Classification	A threshold, category definition, or unit changed.	Retain the applicable definition; do not silently relabel older records.
Time	Groups were observed in different periods.	Show dates and decide whether the comparison serves the review purpose.

Keep different scales separate when needed

Do not average unrelated ordinal categories just because they can be assigned numbers. If a combined view is required, explain the mapping and the information it loses, and obtain appropriate technical review. Separate panels can be more honest and more useful than a single unsupported portfolio score.

Original comparison checklist. This paper does not define an engineering condition scale, a safety rating, or an investment-priority formula.

03 / READ COVERAGE AND FRESHNESS

Make the data gaps visible

The UK Government Data Quality Framework distinguishes completeness from accuracy and treats timeliness in relation to the intended use. Duplicate, inconsistent, or outdated records can undermine interpretation even when a table has no empty cells. This general data-quality context does not prescribe infrastructure inspection intervals. [3]

Record state	Meaning in the proposed summary	How to communicate it
Usable for this view	Meets the stated inclusion and comparison criteria.	Include in the distribution and describe the criteria.
Not observed	No observation was made during the selected period.	Keep an explicit unknown group; do not treat as favorable condition.
Older observation	Evidence exists but represents an earlier period.	Show the date and explain whether it is included for this purpose.
Not comparable	Evidence uses a method or scope not accepted for this comparison.	Show the excluded group and the reason.
Unresolved data issue	Identity, duplication, or a material field is uncertain.	Assign a reconciliation task before using it in the affected measure.

WSDOT's guardrail reporting describes condition observations as a snapshot that may change and identifies years without collection. Its example supports showing when evidence was captured and where the time series has gaps. It does not establish the condition of any asset in this guide. [4]

> **Keep two questions separate:** "What does the usable evidence show?" and "How much of the portfolio does that evidence cover?" Answering only the first can make an incomplete view appear comprehensive.

04 / ILLUSTRATIVE EXAMPLE

One group, two honest denominators

Illustrative example. Assume 20 assets in one comparable group. The same classification rule applies to all, and 15 usable observations represent the selected review period. Five assets have not been observed during that period. Bands A, B, and C are illustrative labels with no defined engineering or safety meaning.

Group	Count	Share of 15 observed	Share of all 20
Band A	6	6 / 15 = 40%	6 / 20 = 30%
Band B	6	6 / 15 = 40%	6 / 20 = 30%
Band C	3	3 / 15 = 20%	3 / 20 = 15%
Not observed	5	Not in this denominator	5 / 20 = 25%
Total	20	15 observed = 100%	20 assets = 100%

Coverage is 15 / 20 = **75%**. Band C represents **20% of the observed group**. The assets identified as C represent **15% of the full inventory**. Both statements are arithmetically correct, but neither tells us the condition of the five unobserved assets.

What the summary cannot conclude

It cannot conclude that only 15% of the entire portfolio belongs to C. It cannot distribute the unknown five across A, B, and C without additional assumptions and evidence. It also cannot claim that 75% coverage means 75% accuracy, or that any band determines safety or funding priority.

> **A clear presentation:** show the A/B/C distribution for the 15 usable observations alongside “15 of 20 assets observed; 5 unknown.” Keep the population and period visible when the chart is copied into a report.

All numbers are invented for arithmetic explanation only. Counts are unweighted; no asset area, length, value, failure probability, or statistical extrapolation is assumed.

05 / PORTFOLIO REVIEW CHECKLIST

Turn the gaps into an information plan

- ☐ **Boundary:** the inventory group and exclusions are stated, including changes from the previous review.
- ☐ **Basis:** the measure's numerator, denominator, and weighting are explicit.
- ☐ **Comparability:** methods, category definitions, and periods support the comparison being made.
- ☐ **Coverage:** unknown and excluded records remain visible beside the observed distribution.
- ☐ **Time:** observation dates are distinguishable from report dates and data-entry dates.
- ☐ **Traceability:** a reviewer can move from the summary to the underlying asset observations.
- ☐ **Limits:** the caption states material gaps and avoids unsupported conclusions about safety or priority.

Choose the next question, not an automatic ranking

When the summary exposes a gap, identify the decision or review it prevents. A missing observation in a high-consequence context may need a different response from an older record used only for background. Assign the appropriate professional or owner role to decide what information is needed and when. Do not derive the answer from coverage alone.

For the example, a useful next step is to clarify why five assets have not been observed: not scheduled or inaccessible. Missing records and differing methods should be tracked as separate data issues. Those reasons lead to different information tasks. Keep the task and its responsible role connected to the affected asset group.

Limits of this guide

This paper explains interpretation of information, not asset-specific condition assessment, statistical sampling design, or investment optimization. Current owner procedures and qualified engineering review remain necessary. It does not claim that VAPR calculates portfolio scores, predicts deterioration, or certifies the quality of supplied data.

Use the proposed captions and checklist as discussion aids, adapting them to the actual data and intended use.

REFERENCES

Sources and editorial notes

[1] **U.S. Department of Transportation / FHWA.** Status of the Nation's Highways, Bridges, and Transit: Conditions & Performance, 23rd Edition. Chapter 6: Infrastructure Conditions. Report submitted November 22, 2019. Weighted Versus Raw Counts; Current Pavement Conditions; Historical Trends; pp. 6-5 and 6-8.
Open source document · Accessed October 15, 2026.

[2] **Department for Transport, United Kingdom.** Road condition statistics: Technical note — Section 2: measuring surface condition using automated visual methods. Version updated October 14, 2026. SCANNER and Consistency of SCANNER data; historical measurement examples 2015–2021.
Open source document · Accessed October 15, 2026.

[3] **Government Data Quality Hub, United Kingdom.** The Government Data Quality Framework. December 3, 2020. Principles 4.1–4.2; Prepare, store and maintain; data quality dimensions and user needs.
Open source document · Accessed October 15, 2026.

[4] **Washington State Department of Transportation.** Gray Notebook — Highway maintenance: HATS data collection. Publication date not shown; labeled analyses 2020–2024. Statewide guardrail damage assessment; 2022 condition and 2023–2024 coverage discussions.
Open source document · Accessed October 15, 2026.

Original example and source boundaries

The 20-asset example, coverage diagram, tables, and checklist are original editorial work. No source statistics are reused. FHWA and WSDOT examples retain their historical context; DfT measurement issues are specific to pavement surveys; the government framework addresses general data quality.

VAPR Resources · Editorial draft for review, October 2026. No actual client portfolio, safety assessment, product analytics claim, or endorsement by the cited organizations is represented.