

Auditing reproducibility bundles

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Every successful app or programmatic run can be exported as a reproducibility bundle. This example uses 60 synthetic observations, 19 permutations, and a fixed seed.

```
d <- demo_spatial_data(n = 60, seed = 2026)
mapping <- list(x = "x", y = "y")
features <- "APC"
result <- run_analysis(
  "spatial_qc", d, mapping, features,
  list(feature = "APC", neighbors = 5L, permutations = 19L, seed = 2026)
)
```

0.1 Inspect the manifest before writing

```
manifest <- result_manifest(result)
manifest[c("application", "application_version", "analysis_id", "method", "features")]
#> $application
#> [1] "Spatial Methods Workbench"
#>
#> $application_version
#> [1] "0.2.1"
#>
#> $analysis_id
#> [1] "spatial_qc"
#>
#> $method
#> [1] "Spatial exploration & autocorrelation"
#>
#> $features
#> [1] "APC"
manifest$parameters
#> $feature
#> [1] "APC"
#>
#> $neighbors
#> [1] 5
#>
#> $permutations
#> [1] 19
#>
```

```
#> $seed
#> [1] 2026
```

0.2 Write and list the archive

```
bundle <- file.path(tempdir(), "spatial-methods-workbench-bundle.zip")
write_result_bundle(result, bundle)
contents <- utils::unzip(bundle, list = TRUE)
contents[, c("Name", "Length")]
#>           Name Length
#> 1 CITATION.txt   376
#> 2 COLLABORATION.txt 217
#> 3 figure.png  70884
#> 4 manifest.json   949
#> 5 result_object.rds 553237
#> 6 results.csv    120
```

0.3 Audit the archived metadata

```
extract_dir <- tempfile("workbench-bundle-")
dir.create(extract_dir)
utils::unzip(bundle, exdir = extract_dir)

archived_manifest <- jsonlite::read_json(
  file.path(extract_dir, "manifest.json"), simplifyVector = TRUE
)
archived_manifest[c("application_version", "analysis_id", "method", "features")]
#> $application_version
#> [1] "0.2.1"
#>
#> $analysis_id
#> [1] "spatial_qc"
#>
#> $method
#> [1] "Spatial exploration & autocorrelation"
#>
#> $features
#> [1] "APC"

readLines(file.path(extract_dir, "CITATION.txt"), n = 8)
#> [1] "Please cite the software and method references below in work that uses these results:"
#> [2] ""
#> [3] "- Bhadury, S. (2026). SpatialMethodsWorkbench: Spatial Methods Workbench (Version 0.2.1) [Compu
#> [4] "- Moran, P. A. P. (1950). Notes on continuous stochastic phenomena. Biometrika 37(1-2):17-23. h
```

The archive should contain `results.csv`, `figure.png`, `manifest.json`, `result_object.rds`, `CITATION.txt`, and `COLLABORATION.txt`. It intentionally excludes the input dataset and automated result interpretation.

0.4 Reopen the exact R result

```
restored <- readRDS(file.path(extract_dir, "result_object.rds"))
identical(restored$analysis_id, result$analysis_id)
```

```
#> [1] TRUE  
identical(restored$params, result$params)  
#> [1] TRUE
```

Record the Workbench version, method citations, seed, mapping, features, and controls when reporting an analysis. Scientific interpretation still requires study design and domain context outside the application.