

ITA Municipal Merge Analysis

1. Introduction

OVERVIEW

This document provides an analysis of address points in ITA that fall within the boundaries of various ITA municipalities. Using advanced spatial analysis/SpatialFilter and HEX Encoded OGC WKB conversion, we filtered and visualized the data to understand the distribution of these points relative to municipal borders. municipalities were filtered to only include instances where `feature_id.total_count > 1`.

PURPOSE

The primary goal is to identify all address points that intersect with the boundaries of 301 municipalities, providing a detailed insight into their spatial relationships and the first stage of understanding changes in muni and references pre and post merge.

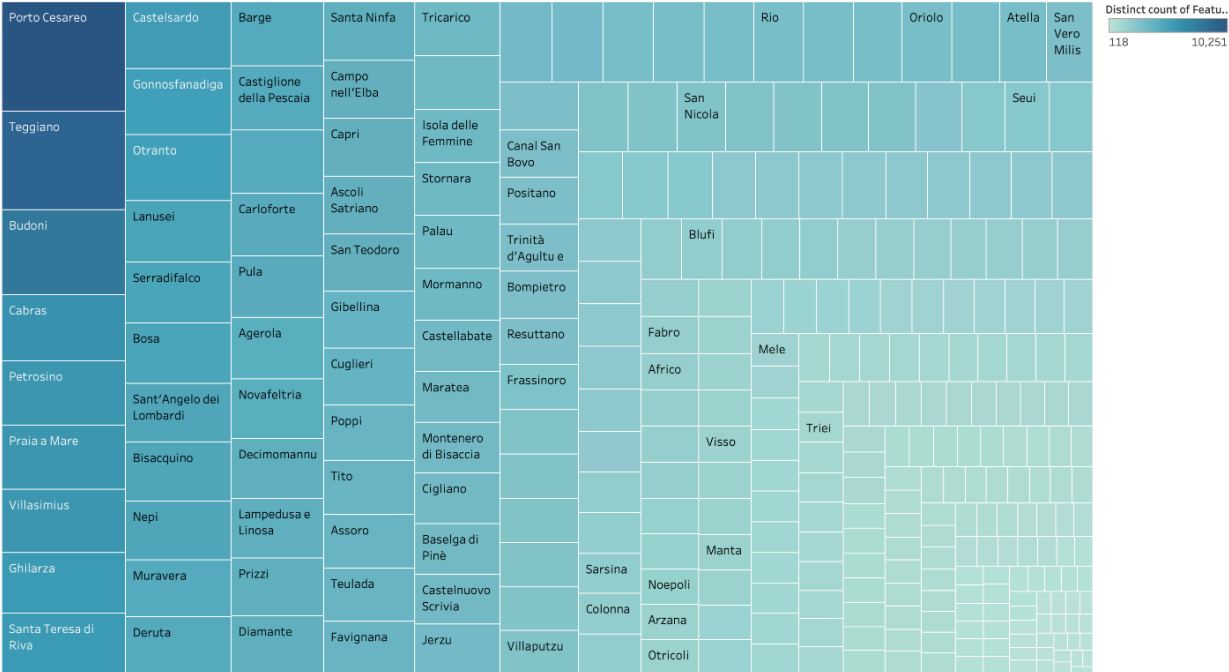
2. Analysis

SUMMARY OF FINDINGS

- Total Municipalities Analyzed: 301
- Total Address Points Analyzed: 25,674,395
- Address Points within Municipal Boundaries: 553,968

VISUALIZATION

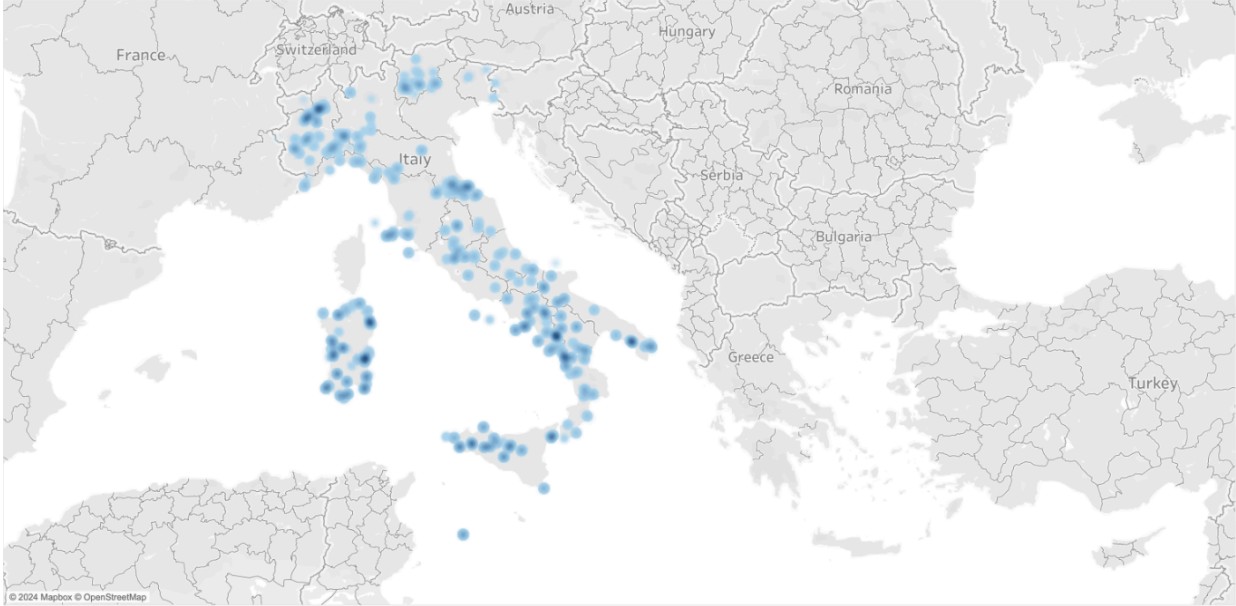
<muni_ita_jul_2024>



Unparsed Name. Color shows distinct count of Feature Id. Size shows distinct count of Feature Id. The marks are labeled by Unparsed Name.

POINT DENSITY MAP

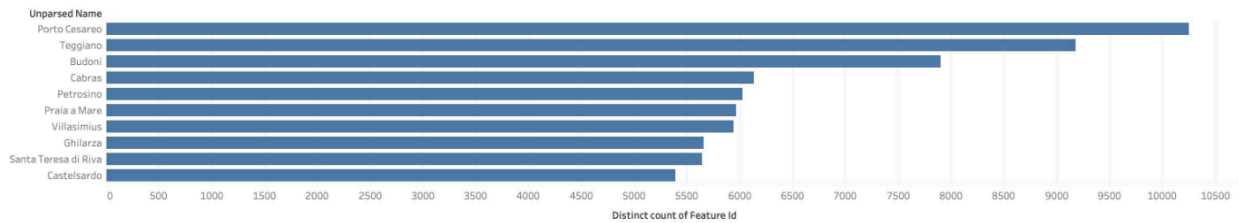
<ita_muni_1>



Map based on Rep Lng and Rep Lat. Details are shown for Feature Id, Unparsed Name and Iso Country Code.

STATISTICAL ANALYSIS

- Top 10 Municipalities by Address Points:



Distinct count of Feature Id for each Unparsed Name. The view is filtered on Unparsed Name, which keeps 10 of 301 members.

3. Data Sources

ADDRESS POINTS DATA

- **Dataset Name:** jq_sept_2024.Address

MUNICIPAL BOUNDARIES DATA

- **Dataset Name:** ita_sept_2024.territory (filtered result of municipalities)

3. Methodology

SPATIAL RELATIONSHIP: INTERSECT

USING FME'S SPATIALFILTER TRANSFORMER, WE DETERMINED WHICH ADDRESS POINTS INTERSECT WITH THE MUNICIPAL BOUNDARIES.

WORKFLOW STEPS:

1. **Data Input:** Loaded both address points and municipality boundary datasets.
2. **Spatial Filtering:** Applied the **SpatialFilter** transformer.
 - **Candidate:** Address Points
 - **Filter:** Municipal Boundaries
 - **Spatial Relationship:** Intersects
1. **Output Generation:** Filtered address points were exported to a CSV file for further analysis.

DATA VALIDATION

- **Geometry Conversion:** Converting address points from HEX encoded WKB and municipalities from WKT to FME binary code for Spatial relation processing
- **Geometry Checks:** Ensured that all address points had valid geometry before processing.
- **Spatial Accuracy:** Verified that all municipalities had correctly defined boundaries.

5. Conclusions & Recommendations

KEY INSIGHTS

NEXT STEPS

- **Further Analysis:** Perform further EDA on address points within municipalities to discover changes/relationships with references and naming after municipalities are merged in upcoming weeks.

6. Appendices

APPENDIX A: METHODOLOGY DETAILS

- **SpatialRelator Configuration:**

Transformer Name: SpatialFilter

Filter Type: Multiple Filters

Pass Criteria: Pass Against One Filter

Support Mode: Supports Aggregates

Spatial Predicates to Test: "Filter OGC-Intersects Candidate"

Use Bounding Box: No

Curve Boundary Rule: Default Rule

Accumulation Mode: Merge Filter

Conflict Resolution: Use Candidate

Output Attribute Name:

Predicate: _predicate

- **Validation Scripts:** https://github.com/tmcwilliam707/ITA_Merge_Analysis/blob/main/validation_checks.py

7. References

- **FME Documentation:**

https://github.com/tmcwilliam707/ITA_Merge_Analysis/blob/main/muni_ita_log.txt