Luxury housing sales analysis: Work flow

Summary

This document outlines a comprehensive **Extract, Transform, Load (ETL)** pipeline for the Luxury Housing Sales Analysis project. The workflow follows this sequence:

- **Extract:** Source raw data (CSV)

- **Transform:** Clean and process data using Python

- **Load:** Insert cleaned data into SQL Server database

- **Connect:** Link SQL Server to Power BI

- **Visualize:** Create interactive dashboards and reports in Power BI

PYTHON DATA CLEANING & VALIDATION

- Load raw data using pandas

- Handle missing values & duplicates

- Data type conversion & validation

- Feature engineering & enrichment

- Generate cleaned Data Frame

PYTHON ↔ SQL SERVER CONNECTION AND DATABASE CREATION

- Install ODBC Driver for SQL Server

- Establish connection string

- Test connection & credentials

- Create Database (if not exists)

- Design table schema with proper data types

- Execute INSERT statements from Python

- Validate data insertion

- Commit changes to database

SQL SERVER ↔ POWER BI CONNECTION

- Open Power BI Desktop

- Navigate to "Get Data" → "SQL Server"

- Enter server & database credentials

- Select tables & write custom SQL queries

- Load data into Power BI model

- Build key performance indicators (KPIs)

- Design interactive visualizations

- Create dashboard pages & reports

- Set up filters, slicers, & drill-through

- Publish to Power BI Service

Luxury housing sales analysis: Insights Report

EXECUTIVE SUMMARY (Top-Level Takeaways)

- **Total Sales Value: ₹ 2,314.25 Cr**
- Sales are **evenly split between Primary & Secondary** transactions
- **Top 5 builders contribute a disproportionate share** of revenue
- **Infrastructure quality does NOT strongly drive price** beyond a baseline

- Buyers are **well diversified** (no single buyer type dominates)

- **Broker, Online, and NRI Desk channels perform almost equally**

- Demand is **evenly distributed across micro-markets**, indicating a stable luxury market

Total Sales Value KPI

Visual:

"Total Sales Value ₹ Cr" → ₹ 2,314.25 Cr

Business Insight:

- Indicates a **high-value luxury segment**

- No dependency on a single builder, buyer type, or micro-market

- Suggests **low concentration risk**

 "Revenue is well spread, making the market resilient to localized shocks."

Top Performers – Builders (Bar Chart)

Top Builders by Revenue:

1. **Prestige**

2. **Total Environment**

3. **L&T Realty**

4. **SNN Raj**

5. **Godrej**

Business Insight:

- These builders consistently outperform peers

- Likely due to:

  o Brand trust

  o Project scale

  o Prime micro-market presence

Investors and channel partners should prioritize partnerships with **Prestige & Total Environment**

Buyer Type Distribution (Donut Chart)

Distribution:

- CXO, NRI, HNI, Startup Founders, Others

- Each contributes ~**19–21%**

Business Insight:

- **No single buyer group dominates**

- Luxury demand comes from **multiple economic cohorts**

- Reduces exposure to downturns in any one segment

Marketing campaigns should stay **broad-based**, not hyper-focused on a single buyer persona.

Sales by Micro Market (Bar Chart)

Observation:

- Sarjapur Road, JP Nagar, Bannerghatta Road, Whitefield, Hebbal lead marginally

- Revenue spread is **very even**

Business Insight:

- Buyers are willing to purchase across the city

- Infrastructure parity across markets

- No single micro-market bubble

Infrastructure investments across Bangalore are paying off evenly.

Infrastructure vs Price (Scatter Plot)

Observation:

- Prices cluster heavily between **₹5–25 Cr**

- Even at **high infra scores (9–10)**, prices don't spike sharply

- Some outliers exist at ₹60–100 Cr (ultra-luxury)

Business Insight:

- **Infrastructure score is a hygiene factor, not a premium driver**

- Buyers expect good infra as baseline

- Ultra-luxury pricing driven by:

   - Brand

   - Exclusivity

   - Customization

"Better infrastructure helps sell, but doesn't justify extreme pricing by itself."

Sales by Possession Status (100% Stacked Bar)

Observation:

- Launch, Ready-to-Move, and Under-Construction are **almost equally split**

- Pattern consistent across all micro-markets

Business Insight:

- Buyers show **high confidence in developers**

- Construction risk is well-accepted

- Indicates **mature regulatory & trust environment**

Pre-launch and under-construction projects are viable revenue drivers.

Transaction Type Split (Pie Chart)

Result:

- **Primary:** ~50%

- **Secondary:** ~50%

Business Insight:

- Healthy **resale market**

- Strong liquidity

- End-users + investors both active

A balanced primary-secondary split signals a **stable and transparent market**.

Sales Channel Performance (Bar Chart)

Observation:

- Broker, Online, Direct, NRI Desk → **almost equal revenue**
- No single channel dominates

Business Insight:

- Buyers use **multiple touchpoints**
- Digital channels now match traditional brokers
- NRI Desk is strategically important

Builders must maintain **omnichannel presence** — cutting any channel risks revenue loss.

Geographic Insights (Map)

Observation:

- Sales spread across:
    - North (Yelahanka, Hebbal)
    - East (Whitefield)
    - South (Bannerghatta, JP Nagar)
    - Central areas

Business Insight:

- City-wide demand
- No regional stagnation
- Infrastructure growth has balanced demand geographically

Bangalore luxury demand is no longer centralized — it's **city-wide**.

Quarterly Builder Contribution (Matrix Table)

Observation:

- Quarterly revenue is **remarkably stable**
- Each quarter contributes ~₹575–580 Cr
- No seasonal spikes

Business Insight:

- Luxury buying is **non-seasonal**
- Cash-rich buyers purchase year-round
- Predictable revenue forecasting

Builders can plan cash flows confidently without seasonal risk.

CONCLUSION

The Bangalore luxury housing market shows strong maturity. Revenue is evenly distributed across builders, buyer types, micro-markets, and channels. Infrastructure acts as a baseline expectation rather than a price escalator. The balanced primary-secondary split and stable quarterly performance indicate low volatility and high investor confidence.