

DATA SOURCES

2.1 Primary Index Data

- **Main Source:** Oxford Economics Global Cities Index 2025
- **Rankings Data:** Pages 77-116 for complete rankings
- **Methodology Documentation:** Pages 69-75
- **Santiago Specific Data:** Page 84, position 160
- **Valparaíso Data:** Page 90, position 345

2.2 Urban Transformation Benchmarks

Seoul Digital Mayor's Office

- Document: "Seoul's Air Quality Improvement 2005-2015"
- Key Metric: PM2.5 reduction: 687→514 in ranking
- Investment: \$127B over 10 years
- URL: <https://isomer-user-content.by.gov.sg/50/3db854a5-473a-4d18-ae26-6991464a17a1/ssb/combined-cover-text.pdf>

Singapore Urban Redevelopment Authority

- Document: "Sustainable Singapore Blueprint 2015"
- Key Metric: Environmental improvement: 458→23 (1995-2005)
- Documented ROI: 1:8.5
- URL: <https://eservice.ura.gov.sg/maps/?service=mp&year=2014>

Copenhagen Climate Plan

- Document: "CPH 2025 Climate Plan"
- Key Metric: Emissions reduction: 42% (2005-2020)
- Investment: €2.7B
- URL: <https://urbandevdevelopmentcph.kk.dk/climate>

2.3 Economic Data and Investment Multipliers

python

Based on studies from the World Bank and IDB

```

multipliers = {
    'public_transport': 2.3,    # Source: World Bank Infrastructure Report 2021
    'green_infrastructure': 2.8, # Source: OECD Green Growth Studies 2020
    'energy_efficiency': 3.1,   # Source: IEA Energy Efficiency 2021
    'water_infrastructure': 2.1 # Source: IDB Water Investment Impact 2020
}

```

2.4 Santiago Environmental Data

Air Quality Data

- Source: SINCA (National Air Quality Information System)
- URL: sinca.mma.gob.cl
- Current PM2.5: 29.3 µg/m³ (2024 Average)

Climate Projections

- Source: CR2 (Center for Climate and Resilience Research)
- Temperature projection: +2.8°C above historical average
- URL: <https://mma.gob.cl/datos-estaciones-de-red-de-monitoreo-meteorologico-de-la-region-metropolitana/>

2.5 Infrastructure Cost Data

Santiago Metro Historical Costs:

python

Data from Metro S.A. annual reports

```

metro_costs = {
    'Line 3': {'km': 22, 'cost_usd': 1.75e9, 'per_km': 79.5e6},
    'Line 6': {'km': 15, 'cost_usd': 1.10e9, 'per_km': 73.3e6},
    # Projection for new lines

```

'projection_per_km': 85e6 # USD million per km (inflation-adjusted)

}

- Source: Metro S.A. Annual Reports 2017-2023

2.6 Analysis Limitations

- **Limited historical data:** Only 2 years of the Global Cities Index are available
- **Linearity assumptions:** Some effects may be non-linear
- **External factors:** Do not account for global economic shocks
- **Political context:** Assumes continued political stability