# Estimating local building stock using novel data applications

**Elizabeth Szep**
**Associate Director, Real Estate Economics**

14/04/2026

OXFORD ECONOMICS | UNLOCK THE POWER OF ECONOMICS

# Content


1 Overview of Oxford Economics Real Estate

2 Building stock estimation

3 Questions

# Overview of Oxford Economics Real Estate

## Real Estate Economics Service

# The Global 100

Globally consistent, independent and transparent metro level property forecasting, underpinned by our world-class economic forecasting and analysis. Run shocks or scenarios through our Global Economic Model.



Geographies

**100 cities and 10 submarkets**

Sectors

**Office, industrial, retail, residential, hotels**

Forecasting

**Monthly updates, annual data, to 2060**

### Helps answer questions like:

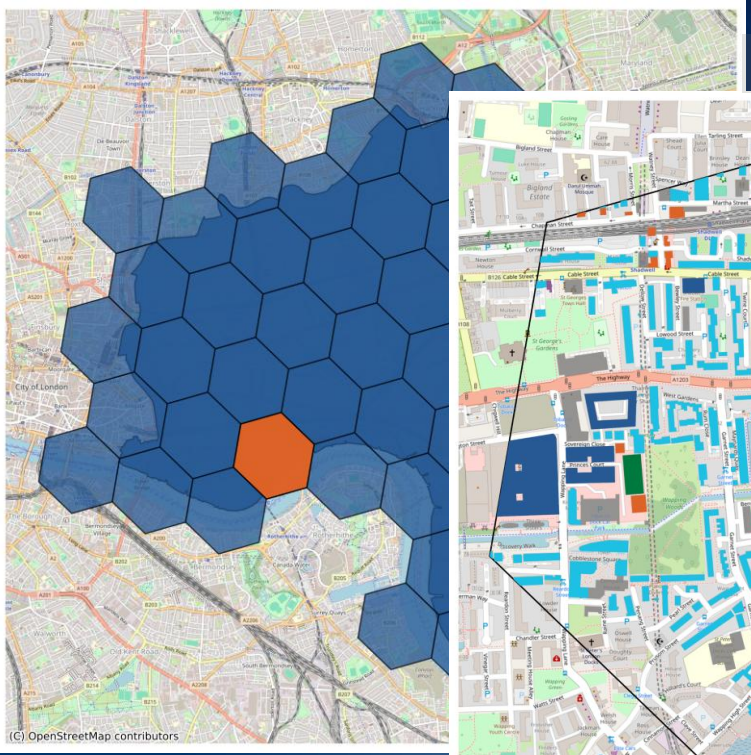
- How would a rise in bond yields affect office values in New York versus London and Tokyo?
- Where are the next global growth markets for logistics?
- What happens to metro level property returns if inflation spikes?

# A new way to track real estate supply

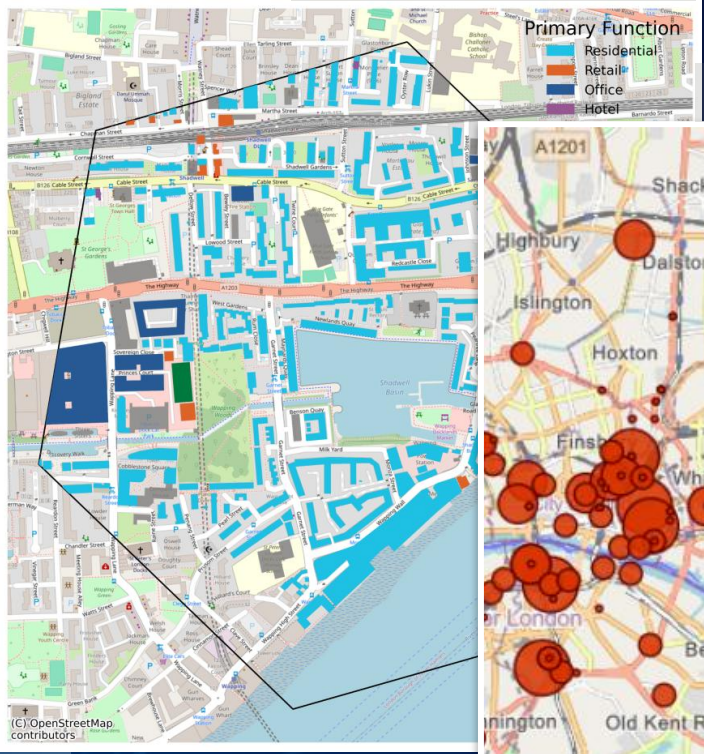
ES1

Proprietary to Oxford Economics, we have developed a novel approach to measure building stock and development pipeline using machine learning, AI and geospatial analytics.

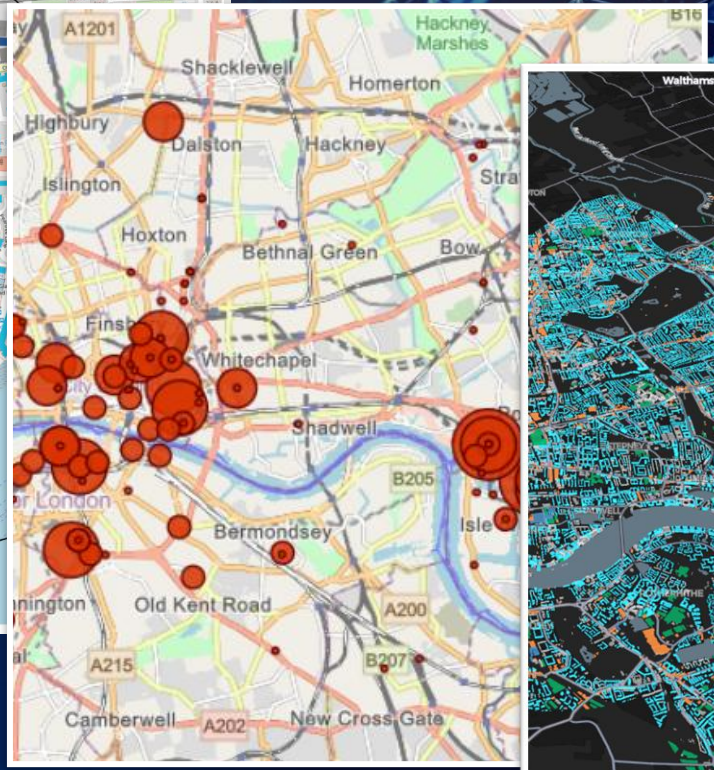
Hexagon base map



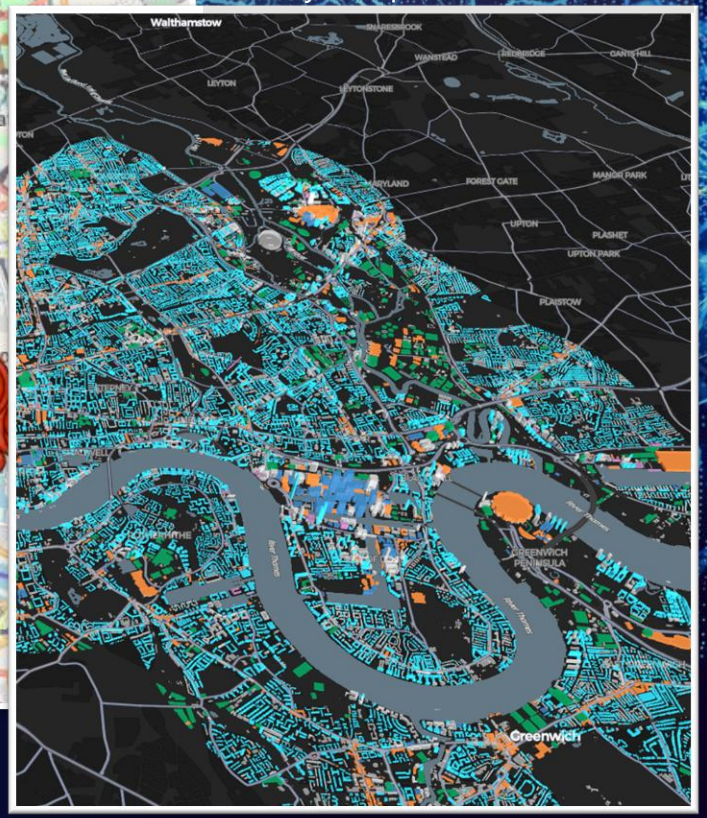

Function mapping




Pointwise new developments



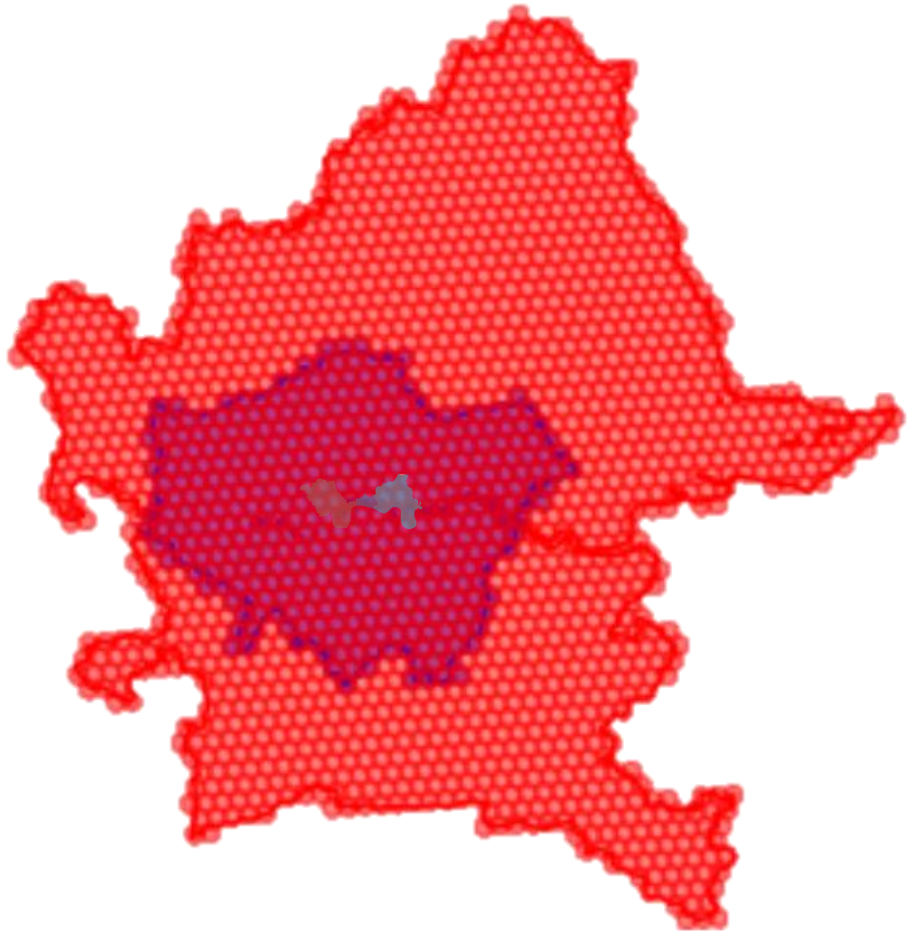

3D city composite



# Building stock estimation

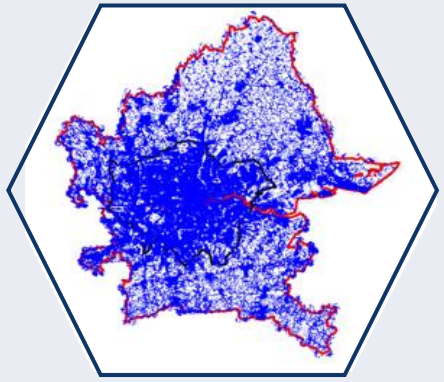
# Define functional urban area



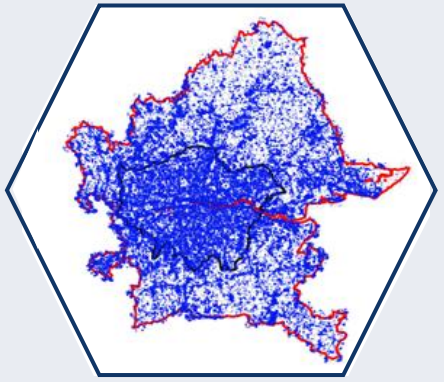



# Collect base and supplemental data

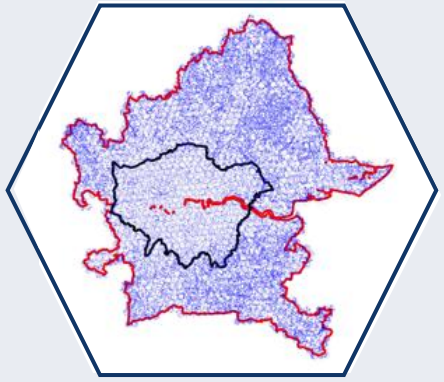
Building footprints



Places (POI)



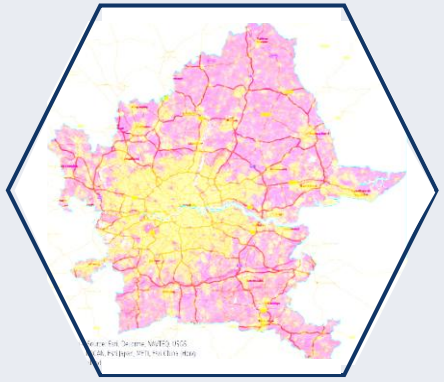
Road network & pathways



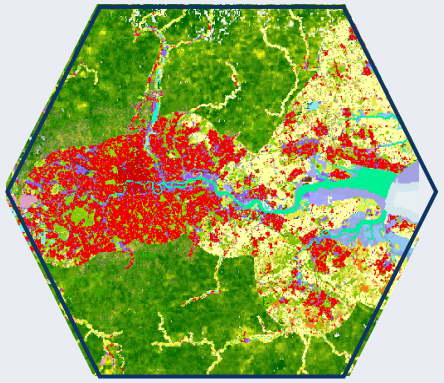
Land use



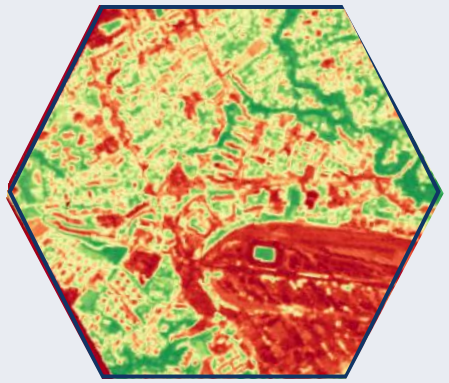
Population density



Land cover



Vegetation



Building-level spectrum



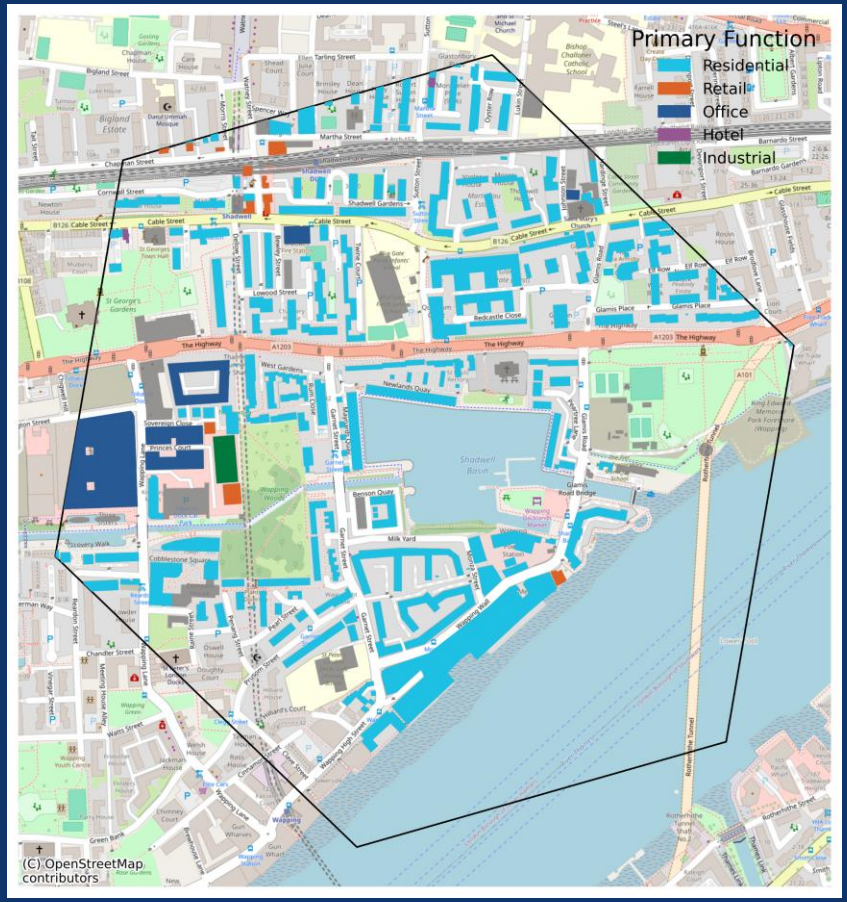
LIDAR



**+ More**

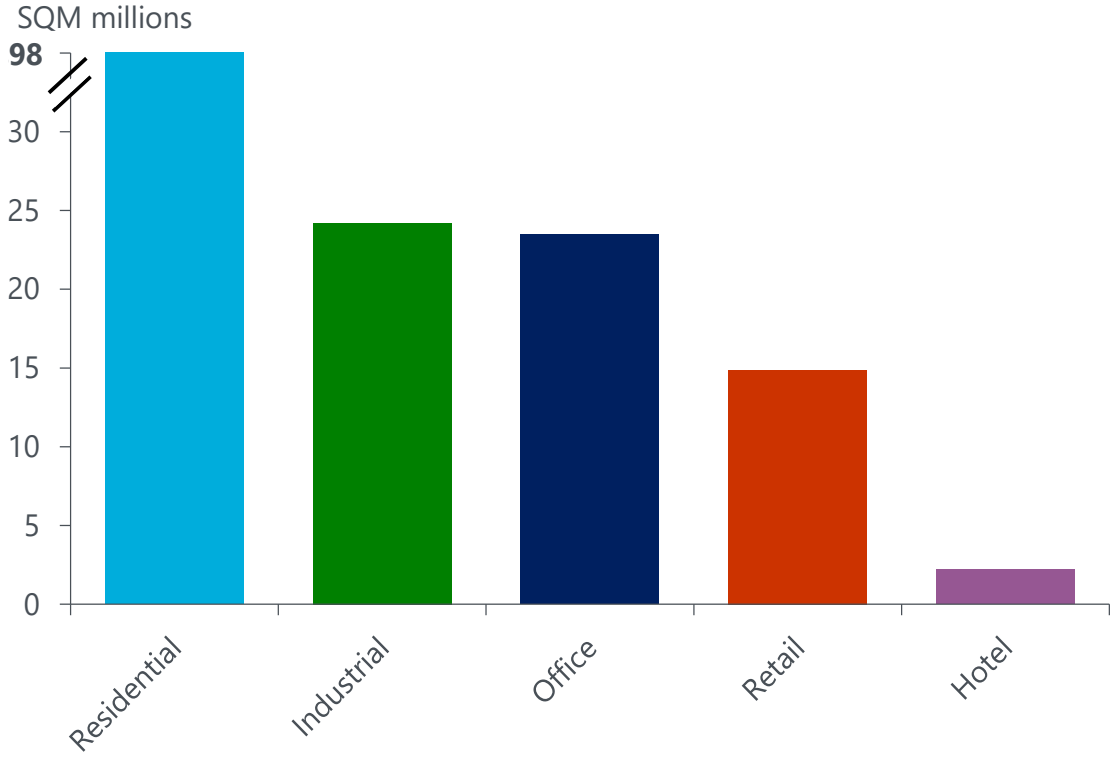
# Estimate building function

- **Deterministic algorithm:**
  - Directly estimate building function using land use, building type, zoning data, etc.
  - 88% match rate when validated by urban planners
- **Machine learning layer:**
  - Using balanced random forest machine learning technique
  - Accounts for mixed-use classification
  - Boosted number of classified buildings by 20-30%



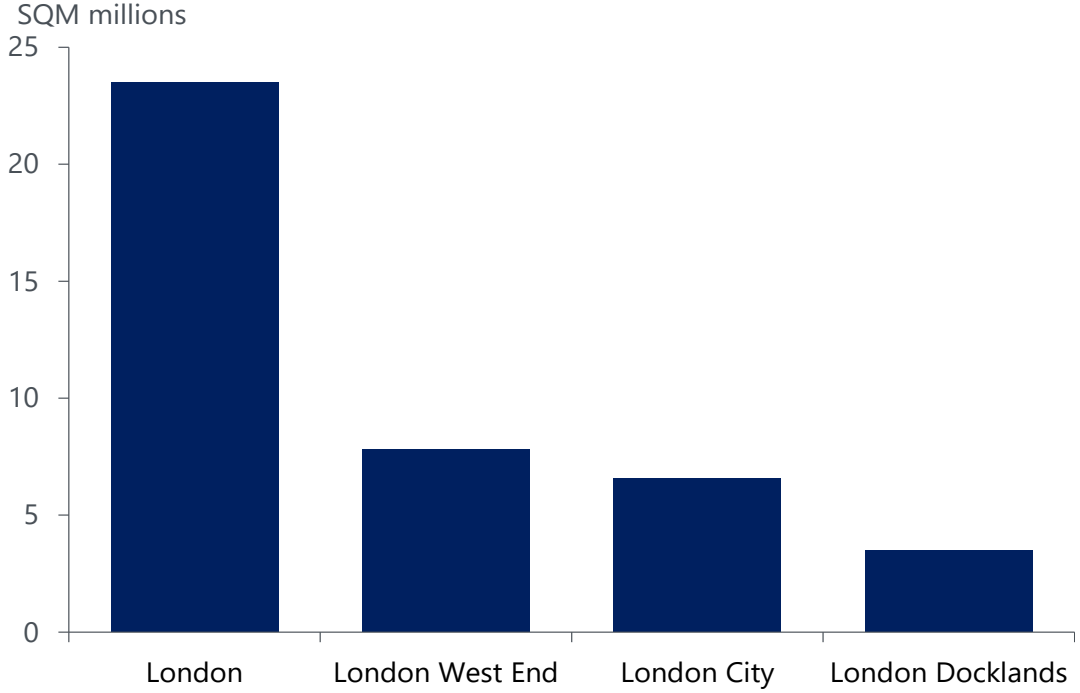
# Calculate current snapshot of building stock by sector

London: total building floorspace by sector



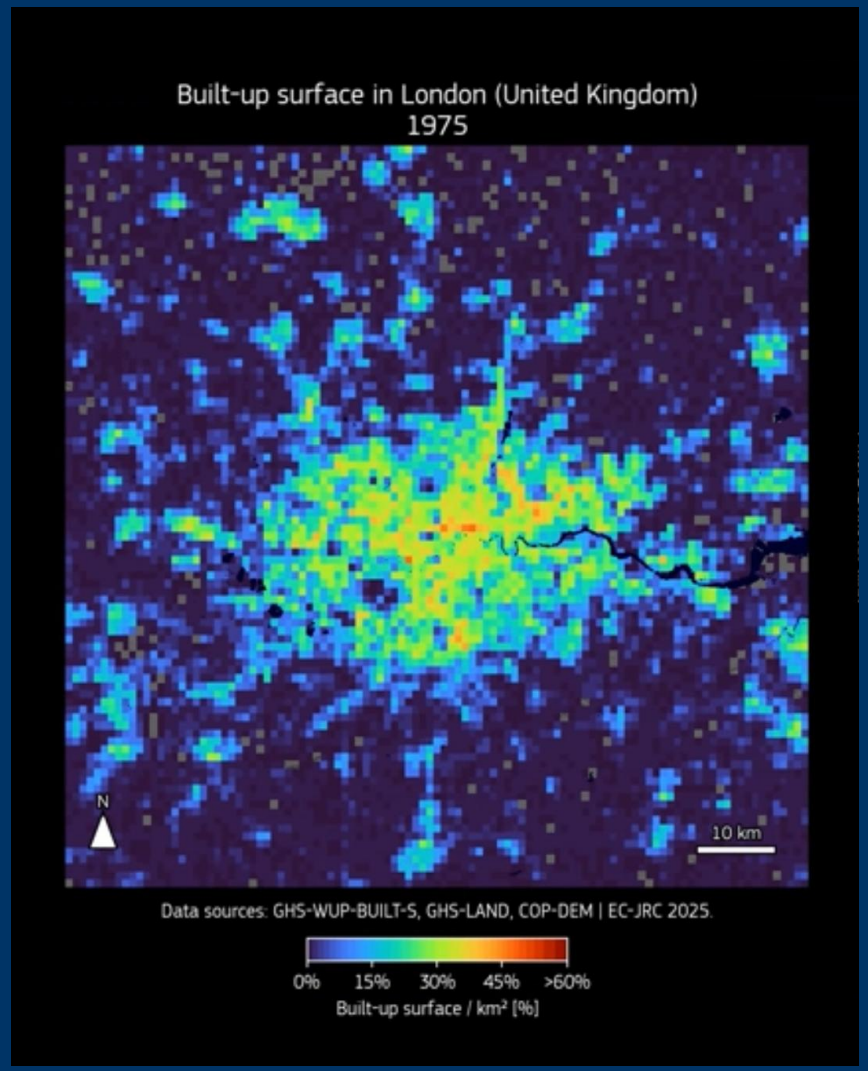

Sources: Oxford Economics

London: total office floorspace by submarket

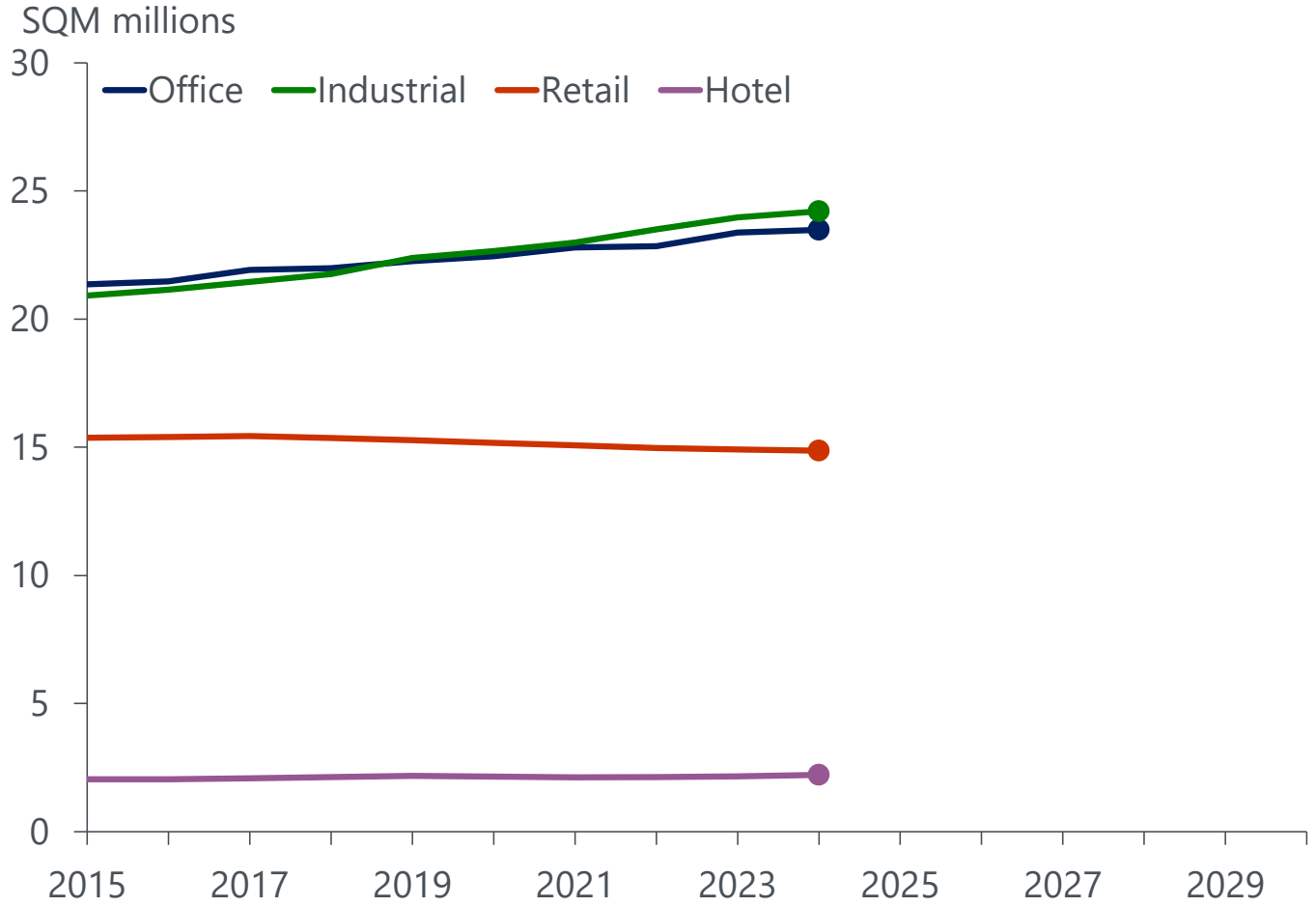



Sources: Oxford Economics

# Backcast stock levels, then …

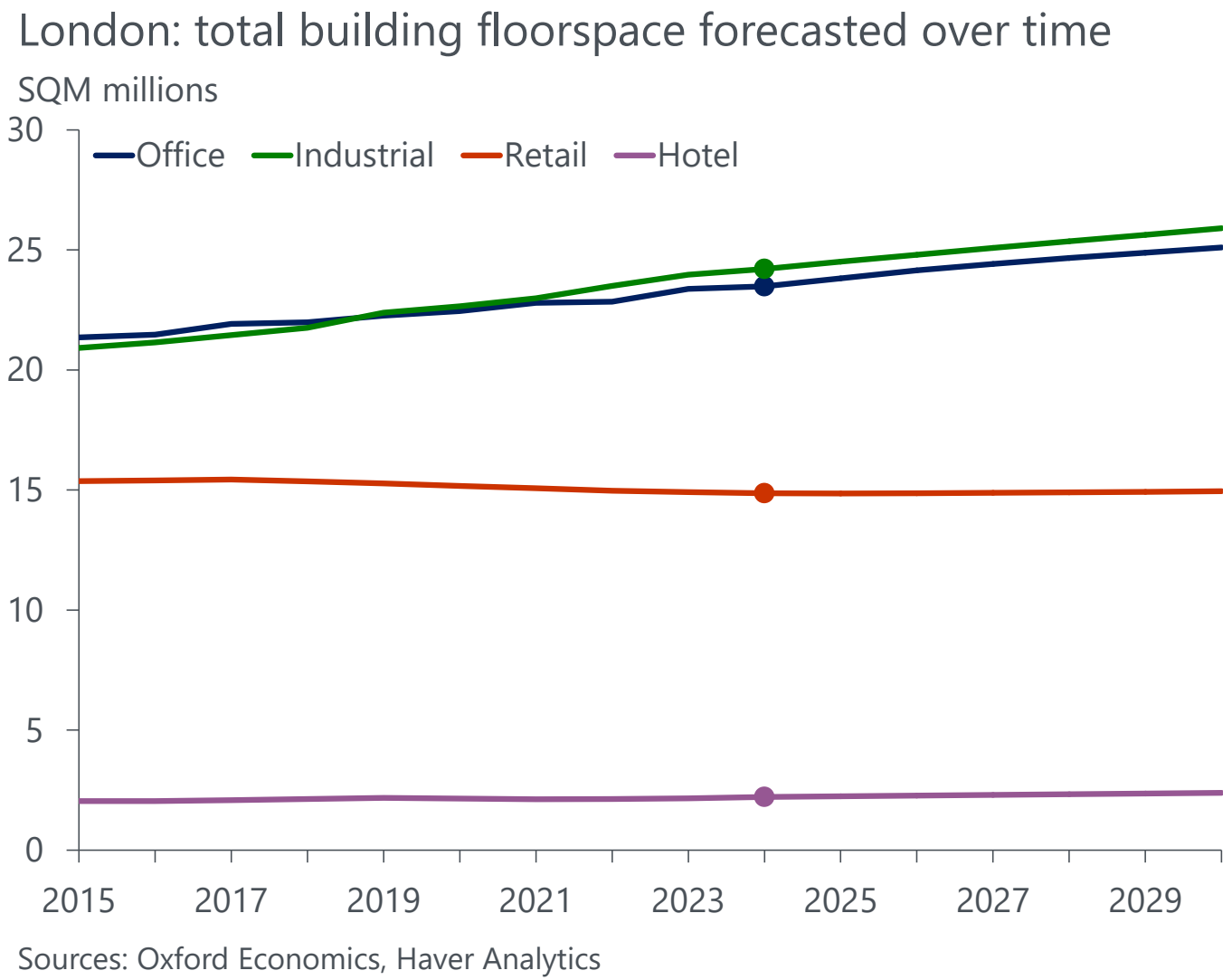



London: total building floorspace backcasted over time

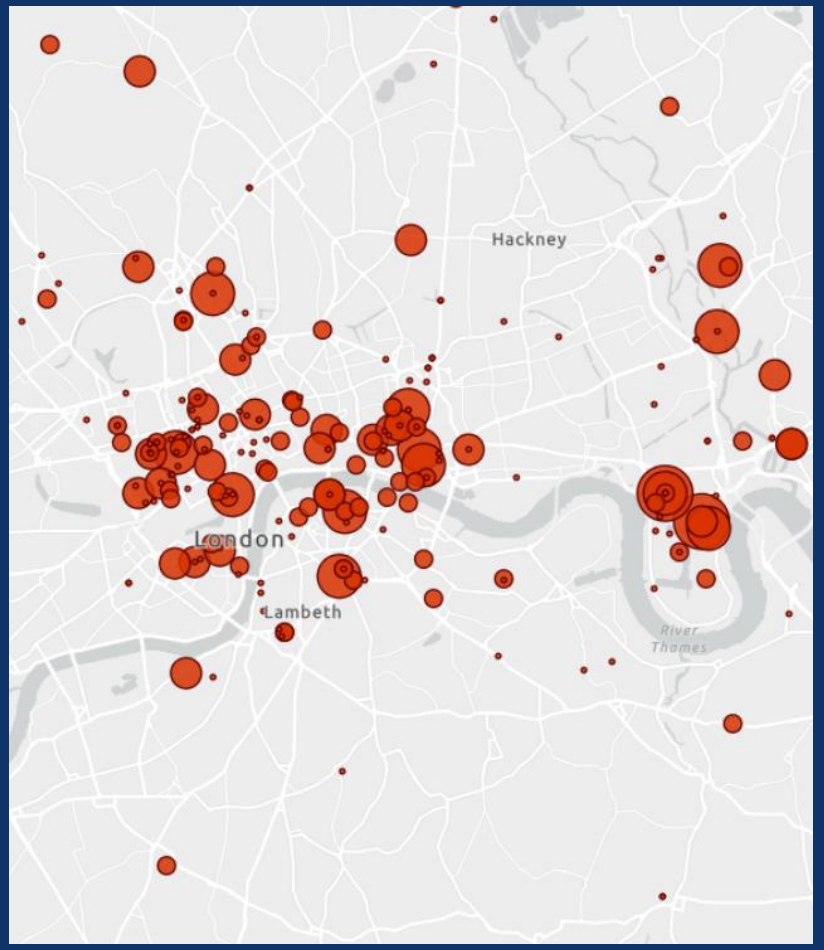



Sources: Oxford Economics, Haver Analytics

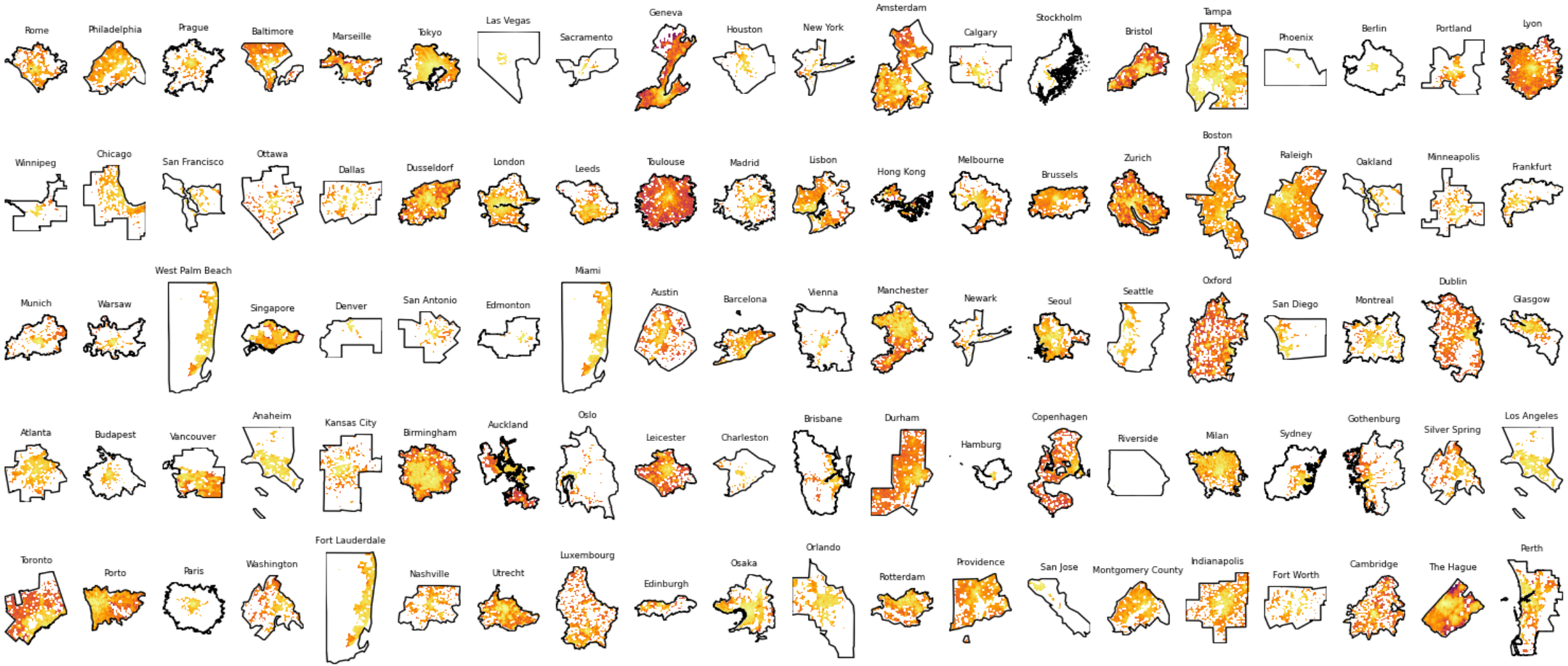
# … forecast future stock




Sources: Oxford Economics, Haver Analytics



# Repeat for all the markets!



# Independent, data-driven, and replicable

- **Scalable:** Works across 100+ cities globally with unified logic and at various spatial scales.
- **Flexible:** Modular integration of region-specific rules or machine learning models, as well as further data sources and even target categories.
- **Complete:** This methodology covers the entire available building stock and spatial area without any restriction on building height, type, or location.
- **Data-driven:** Uses satellite, open map, and population data for dynamic inference.
- **Validation-ready:** Compatible with local calibration points and reference datasets.
- **High accuracy:** All machine learning models used, averaged over cities, show 90%+ accuracy on building-level floor space, while expert-based manual validation yields 85%+ accuracy on building function.

# Questions?

Elizabeth Szep
eszep@oxfordeconomics.com