

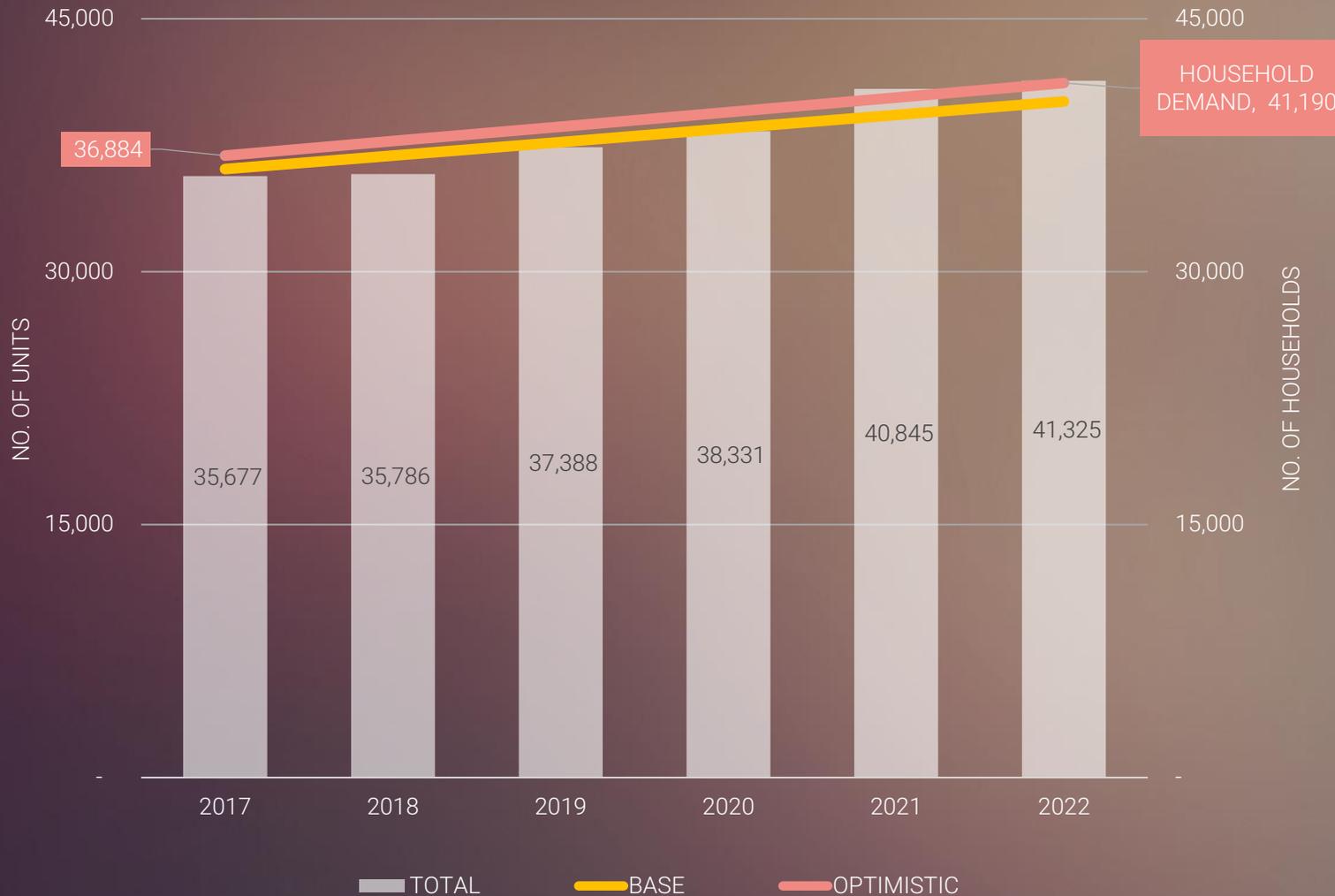
INTELLIGENCE PLACED

DECODING CITIES WITH BIG DATA
& ARTIFICIAL INTELLIGENCE

U R B A N
M E T R Y

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SUPPLY & DEMAND: THE HOLY GRAIL OF PROPERTY MARKET



Source: Urbanmetry Database

SEEKING INTELLIGENCE

Timely and accurate supply and demand data is essentially the Holy Grail for the property market, where a close to a third of Malaysia and the World's investments are centered.

Previously, this intelligence is only available in countries where clean and timely data are readily provided by governments.

In developing countries, government, banks and stakeholders are basing their investments on experience only.

Fortunately, with the technology and possibilities of BIG DATA, we have succeeded in making this available to developing countries such as Malaysia and going forward, to Indonesia.

HOW OUR CLIENTS USE OUR DATA?

PROPERTY DEVELOPERS	LAND ACQUISITION	PRODUCT PLANNING	MARKETING
CURRENT CLIENTS	Property developers procure data from Urbanmetry before land acquisition to stress test the assumptions on the GDV and Sales potential of property in locations of interest.	Property developers with existing landbank uses Urbanmetry data to determine the type and timing of product launch. The data is also used to guide design decisions with architects and planners.	Property developers also uses Urbanmetry data to determine the best marketing approach to reach the target market for the product.
GOVERNMENT	POLICY	MONITORING OF PROPERTY MARKET	AFFORDABLE HOUSING PLANNING & STRATEGY
CURRENT CLIENTS	Government are able to investigate the effectiveness of various Housing and Property Policies with the data. This will also help with modelling impact of new policies.	Government Departments often work in silos and data is usually fragmented across Ministries and Departments. Our consolidated data helps all levels of government gain a comprehensive view of the market.	Different states and federal government agencies have a variety of Affordable housing strategies. Urbanmetry's data allows government to make data driven strategy and planning decisions to best utilise available resources.
BANKS	RISK MANAGEMENT FOR PROPERTY DEVELOPMENTS	MONITORING OF PROPERTY STOCKS & MARKET	MORTGAGE VALUATION
TARGETED CLIENTS	Banks require market research to support term and bridging loans for property developments. Urbanmetry's report is able to quantify the possible risks of property developments funded by the banks.	Funds and investment banks need better data to model the health of property stocks and the overall property market. Urbanmetry's data is able to identify the health of listed property developers.	Urbanmetry's data is able to generate near term forecast valuation of individual properties. This would expedite the mortgage application process for Clients.

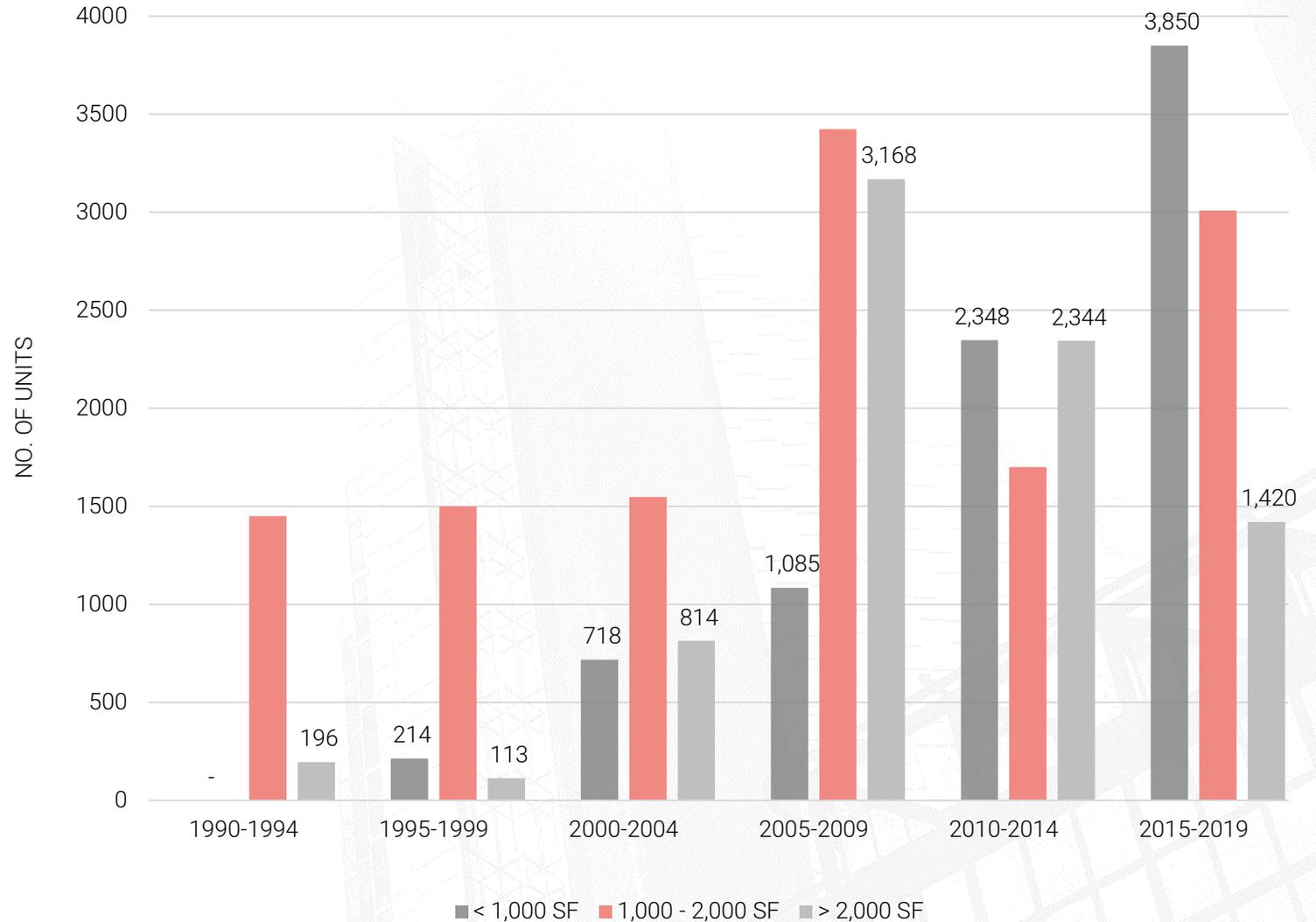
MARKET INTELLIGENCE

URBANMETRY provides comprehensive property market reports to housing developers, banks and government bodies based on the past, present and future data it compiles.

REPORTS INCLUDE:

- Site References
- Population
- Residential Stock
- Supply & Demand
- Price Trends
- Product Analysis
- Competitor Analysis

PROPERTY SIZE STOCK TAKE



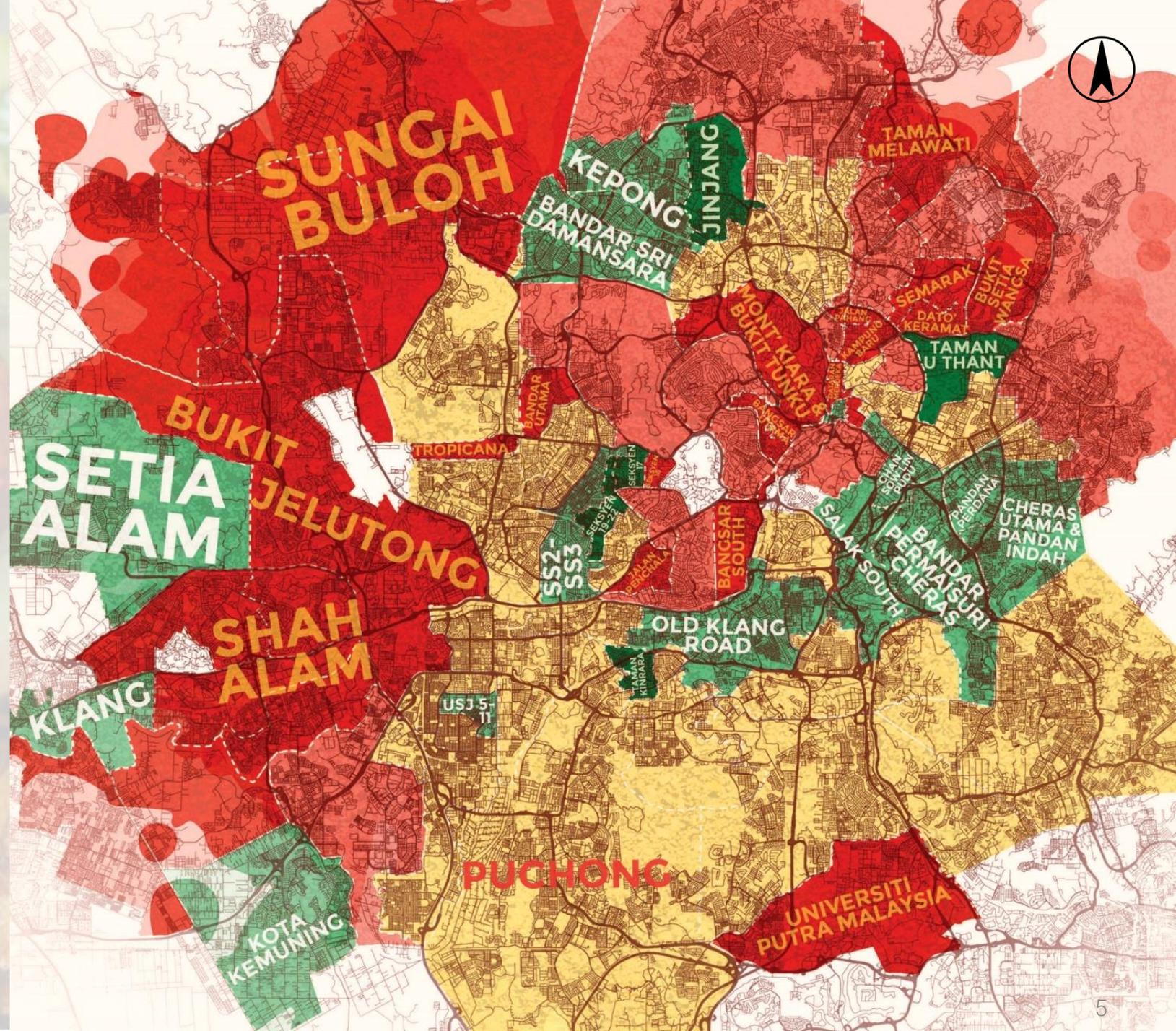
NASI LEMAK INDEX

How does the city feed its people?

We track the density of halal and non-halal establishments serving food priced under RM15 to see where different communities live.

NASI LEMAK INDEX

-  MOSTLY NON-HALAL FOOD
-  MORE NON-HALAL FOOD
-  NEUTRAL
-  MORE HALAL FOOD
-  MOSTLY HALAL



CAFÉ INDEX

Mushrooming cafés in your neighbourhood?

This could be a good sign for potential upside of your property price.



CURRENT HOUSING STOCK IN MALAYSIA

KUALA LUMPUR



JOHOR

INCOMING HOUSING STOCK IN MALAYSIA

KUALA LUMPUR



JOHOR

PAST & PRESENT

AS POLICIES AND SUPPLY FOR HOUSING REQUIRE TIME, TIME SENSITIVE DATA THAT REFLECTS CURRENT AND FUTURE HOUSING STOCK IS IMPORTANT TO EMPOWER POLICYMAKERS AND KEY STAKEHOLDERS TO UNDERSTAND AND RESPOND TO THE MARKET

Figure 7. Excess Supply of Housing

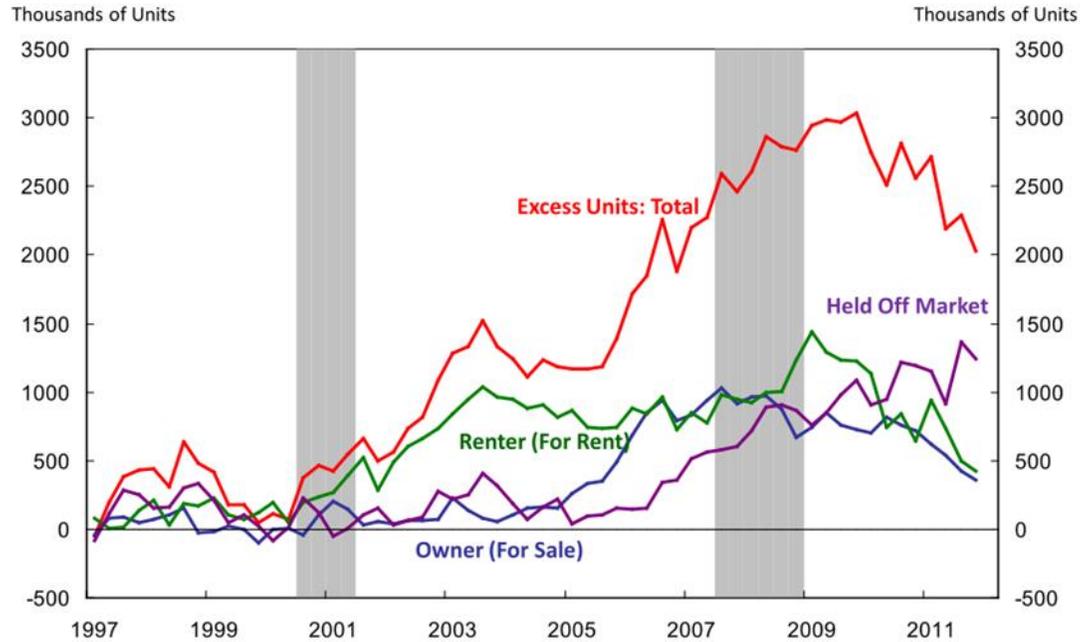
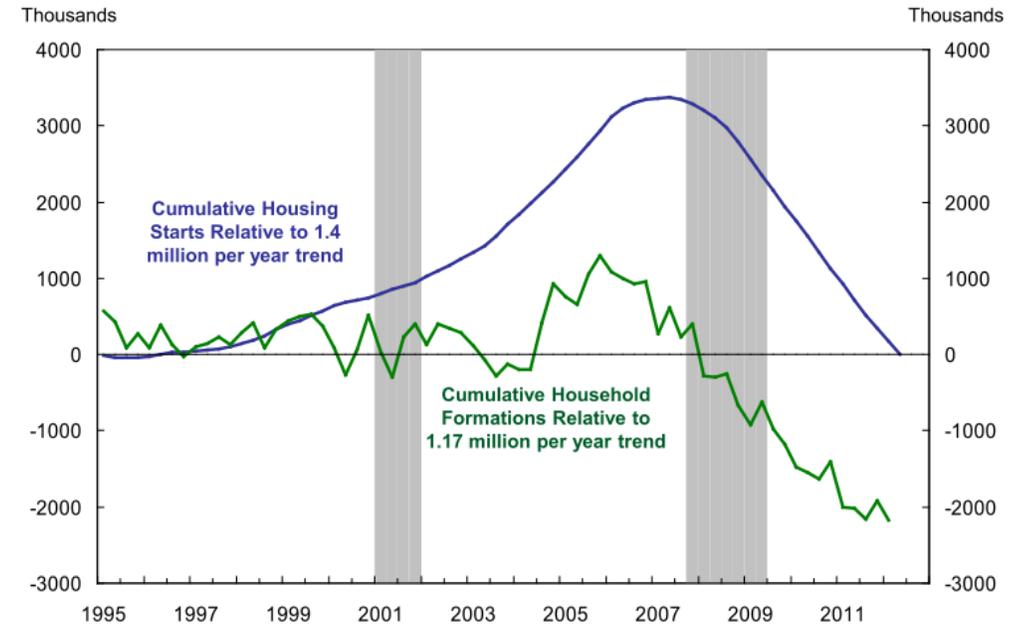


Figure 8. Cumulative Housing Production and Household Formations Relative to Trend



Note: Shading reflects NBER recessions. Data Source: US Bureau of the Census and author's calculations.

OVERSUPPLY IN HOUSING PRIOR TO THE SUBPRIME CRISIS



The importance of oversupply of housing is shown in the case of US's subprime crisis in the 2000's. The paper by Federal Reserve Bank of New York showed that oversupply was a strong indicator of the market deviating strongly from fundamentals. The oversupply and elastic nature of supply in some cities and regions also caused a protracted reaction that drove prices below the pre-boom levels.

Should we take a closer look at the fundamentals? Perhaps a closer look at the need for affordable housing in specific markets?

Source: Andrew F. Haughwout & Richard Peach & John Sporn & Joseph Tracy, 2012. "The supply side of the housing boom and bust of the 2000s," *Staff Reports* 556, Federal Reserve Bank of New York.

RECENT RESEARCH USING DEEP LEARNING ALGORITHMS HAVE SHOWN THAT THERE IS A NEED TO DIVERSIFY GEOGRAPHICALLY

of borrowers to the local economy. This, in turn, emphasizes the need for mortgage-backed security investors to diversify loan risk geographically, beyond the conventional borrower characteristics highlighted in the literature.

Sirignano, Justin and Sadhwani, Apaar and Giesecke, Kay, Deep Learning for Mortgage Risk (November 20, 2018).

Available at SSRN: <https://arxiv.org/abs/1607.02470>

- Recent advancement in machine learning has allowed researchers to study the mortgage default behavior using DEEP LEARNING techniques that could capture non-linear behavior between variables beyond the conventional borrower behavior.
- Research by Sirignano, Sadhwani and Giesecke that harvested the knowledge of 3.5 billion monthly data points across 118 million mortgage loans in the United States that capture 272 explanatory variables to test the most relevant factors in determining mortgage default.
- The table here shows the most significant factors, topping the chart being unemployment while LTV ratio only is much lower in the list.
- Other important factor is the micro-neighbourhood housing price changes, representing here in the **Zillow zip code housing price change since origination**.

Variable	Test Loss
State unemployment rate	1.160
Current outstanding balance	.303
Original interest rate	.233
FICO score	.204
Number of times 30dd in last 12 months	.179
Number of times current in last 12 months	.175
Original loan balance	.175
Total days delinquent \geq 160	.171
Vintage year < 1995	.171
Prime mortgage flag	.171
Lien type = first lien	.171
Original interest rate - national mortgage rate	.170
LTV ratio	.169
Burnout (number of months where it was optimal to prepay but did not)	.168
Time since origination	.168
Current interest rate - national mortgage rate	.168
Number of times 60dd in last 12 months	.168
Number of times foreclosure in last 12 months	.168
Number of days delinquent	.168
Product type = Fixed Rate Loan	.168
Not a convertible loan	.168
Number of times 90+ days delinquent in last 12 months	.168
Lagged prime prepayment rate in same zip code	.168
Zillow zip code housing price change since origination	.168
No pool insurance	.168
Channel = corresponded lender	.168
Documentation = full documentation	.168
Number of units \leq 5	.168
Loan type = conventional loan	.168
:	:



THANK YOU

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