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Monthly condensed analyses of crucial real estate and economic issues offered by the UCLA Anderson Forecast and UCLA Ziman Center for Real Estate. Here, Chandler Lutz, Researcher at the UCLA Ziman Center for Real Estate, describes how Google search data can paint a more accurate picture of homeowner distress than traditional surveys.

The Google Fear Index: Internet Searches Paint a Clearer Picture of Homeowner Distress

By Chandler Lutz, Assistant Professor, Copenhagen Business School

The financial concerns of homeowners are of paramount importance to mortgage and real estate investors. Yet traditional measures of housing distress, such as foreclosures or delinquencies, are subject to large measurement errors, limited frequency and availability, and are only released after a substantial lag, often leaving practitioners with a murky picture of the direction of housing market.
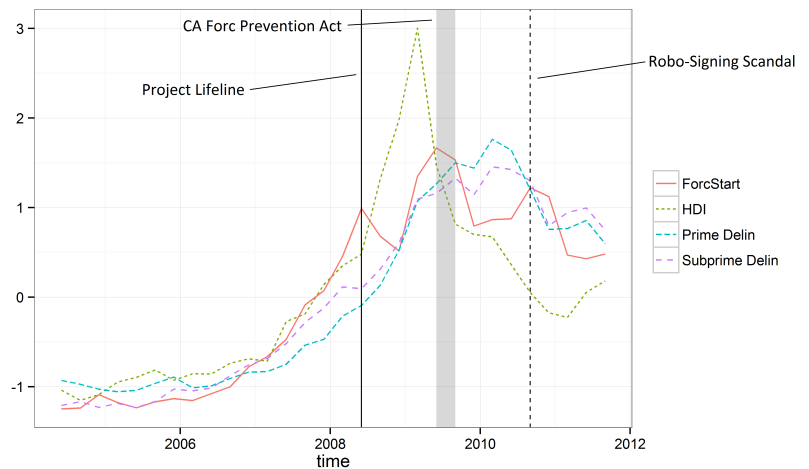
In a recent academic paper, I (along with Marcelle Chauvet, Professor of Economics at University of California, Riverside, and Stuart Gabriel, Director, UCLA Ziman Center for Real Estate) develop a novel – and potentially more accurate – measure of housing distress using Google search queries. This new Housing Distress Index (HDI) captures previously unobserved household behavior and yields key insights to the direction of the housing market. To build the HDI, we combine the frequency of Google search queries for keywords such as "foreclosure help," "mortgage help" and "government mortgage help." Thus, we collect sensitive information directly from individuals searching the internet on issues of housing or mortgage default.

> "When a Google user searches for 'mortgage foreclosure help' he *divulges* his concern about mortgage failure or foreclosure. This makes the Google Fear Index unique compared to traditional surveys."

When an internet user enters a search term into Google such as "mortgage foreclosure help," he *divulges* his concern about mortgage failure or foreclosure. This makes the HDI unique compared to other mortgage or housing indices. Those housing proxies arise from surveys or market outcomes. Surveys by organizations such as the University of Michigan or The Conference Board do not ask sensitive questions about mortgage distress and it is not clear that respondents would answer such questions truthfully. Furthermore, proxies such as the foreclosures depend on decisions by banks and government agencies in addition to household finances, obfuscating any potential signal of homeowner distress. Moreover, other indicators of distress, like the VIX stock market fear gauge, may reflect influences unrelated to housing markets. Our housing distress index is related to these

measures, but responds differently to market events. Indeed, this Google-based index can be interpreted as a "fear index" for housing markets.

We examine the relationship between the Google HDI and foreclosures and delinquencies as shown in the figure. Even though the HDI is highly correlated with foreclosures, the two series differed dramatically throughout the sample period. During the housing crisis and its aftermath, the path of foreclosures was dramatically altered by legal challenges and public programs designed to aid defaulted borrowers and slow evictions. These programs included Project Lifeline (black vertical line in the figure) and the California Foreclosure Prevention Act (grey shaded bar in the figure). Further, foreclosures fell markedly in the US in 2010 and 2011 after the discovery of widespread lender abuse of foreclosure practices (so-called "robo-signing" scandal; dotted vertical line in the figure). In contrast, despite some temporary abeyance of foreclosure activity, the HDI continued along its previous trend. This implies that although the government programs managed to temporarily limit foreclosures, they had less of an effect on actual behavioral measures of financial distress. Moreover, we find that the Google HDI predicts foreclosures, prime delinquencies, and subprime delinquencies. Thus, households signal their concerns regarding their financial distress via Google Searches before they become delinquent or enter foreclosure.

The HDI is also inversely related to house prices. In a predictive model, we find that an increase in the HDI predicts a drop in future national housing prices. These effects are more pronounced during times of crisis. Thus, the HDI is a barometer of fear associated with the implosion in housing. The Google HDI also predicts housing prices across FHFA divisions and Case-Shiller cities. More specifically, increases in the HDI lead to larger drops in future housing prices for the most-speculative and poorest-performing local housing markets.

Overall, the "fear index" approach has important implications for mortgage and real estate investors. Through the HDI, practitioners can gain valuable, real-time insights into housing and mortgage market performance, especially during times of financial distress for homeowners.

Yet the HDI is not the only potential practical application of search query data: Google data can be used to gain key insights into various dimensions of household behavior, offering businesses and investors a stronger signal of the direction of a variety of markets from Wall Street to Main Street.