ZILLOW HOUSING INDICES:

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Zillow Home Value Index: SSA median of US Home Values

Source: Zillow Home Value Index (Dec 2017)
U.S. home values have just surpassed pre-recession highs

Source: Zillow Home Value Index (Dec 2017)
National ZHVI vs Headline Case-Shiller

- ZHVI as dollar denominated alternative to repeat sales index
  - Stock weighted vs flow
  - Larger footprint
Zillow Rental Index: SSA monthly median of estimated market rate rent across full housing stock

Source: Zillow Rent Index (Dec 2017)
ZRI versus median rent list price

Source: Zillow Rent Index and Zillow Median Rental List Price (Dec 2017)
Geographic Coverage and User base

• Regional Coverage:
  - Currently available:
    • Nation
    • States
    • 2013 Census Defined CBSAs
    • County
    • Cities (formed by postal address designation)
    • ZIP code
    • Neighborhoods (combination of city definitions and custom Zillow boundaries)
  - Upcoming:
    • Urban/rural metro areas
    • Census tracts
    • Congressional districts

• User base:
  - Consumers, media, industry and finance professionals, academic & other researchers, policy makers

• Access points:
  - CSV downloads from Zillow.com/data
  - Zillow API
  - Bloomberg terminal
  - Kaggle
  - Data.World
  - …
Greater Adoption Sophisticated Use Drives Greater Transparency

- Core/basic methodology briefs are posted/published
  - ZHVI methodology [here](#).
  - ZRI methodology [here](#).
  - Building blocks (Zestimate and Rental Zestimate): [zillow.com/zestimate](#) /

- Challenges to Transparency
  - Users bring a wide range of sophistication
  - Protecting intellectual property

- Greater adoption means more transparency need, different sources for different users:
  - Challenge: there is no truth
  - Upcoming:
    - ZHVI White Paper: Simulating housing stock, true prices, and index performance when assumptions breakdown
    - Zestimate White Paper
    - ZRI revision: Rental stock weighted => White Paper
Recent data enhancements and/or methodology improvements

- Common/regular: Teaching moments, educating lay users about latency
  - Restatement monthly. Bias adjustment is continually performed as latent sale records received
  - Re-Zestimation of historical Zestimates annually (eventually to be quarterly)

- Switched data sources – emphasize future potential to users

- Overhaul technology stack – emphasize future potential, innovation to users

- Major Zestimate algorithm changes – emphasize best in class AVM, continual improvement
  - Challenge: Two distinct Zestimates now produced on every home
    - Index Zestimate: Constant stock, fixed algorithm
    - Consumer Zestimate: Evolving stock, evolving algorithm optimized for current period
Undermining users trust and announcing changes

• User trust is something we worry about a lot.

• A scientists caution in story telling, especially for small geographies

• Always honest but not always loud
  - Optimize for low volatility/restatement as well as accuracy
  - Core methodology consistent, but refined, then no big announcement
  - National series impacted significantly? Investigate source/cause, have explanation ready, emphasize merits to method
    • Inflection points move?
    • Magnitude of peaks to trough, trough to current substantially different?
    • YoY(t=T) <<<YoY′(t=T)

• Core methodology change/innovation: Big announcement, shout from the roof tops

• Demonstrating integrity as often as possible
  - Zillow Transaction and Assessor Dataset (ZTRAX): Zillow’s raw and dirty public record database made freely available to academic, non-profit, and policy researchers
  - Long honest conversations with media, analysts, government orgs
  - Providing more detailed accuracy information where appropriate