



China's Property Market Visual Report: An Interactive Web-based Narrative Visualization for Data Journalism

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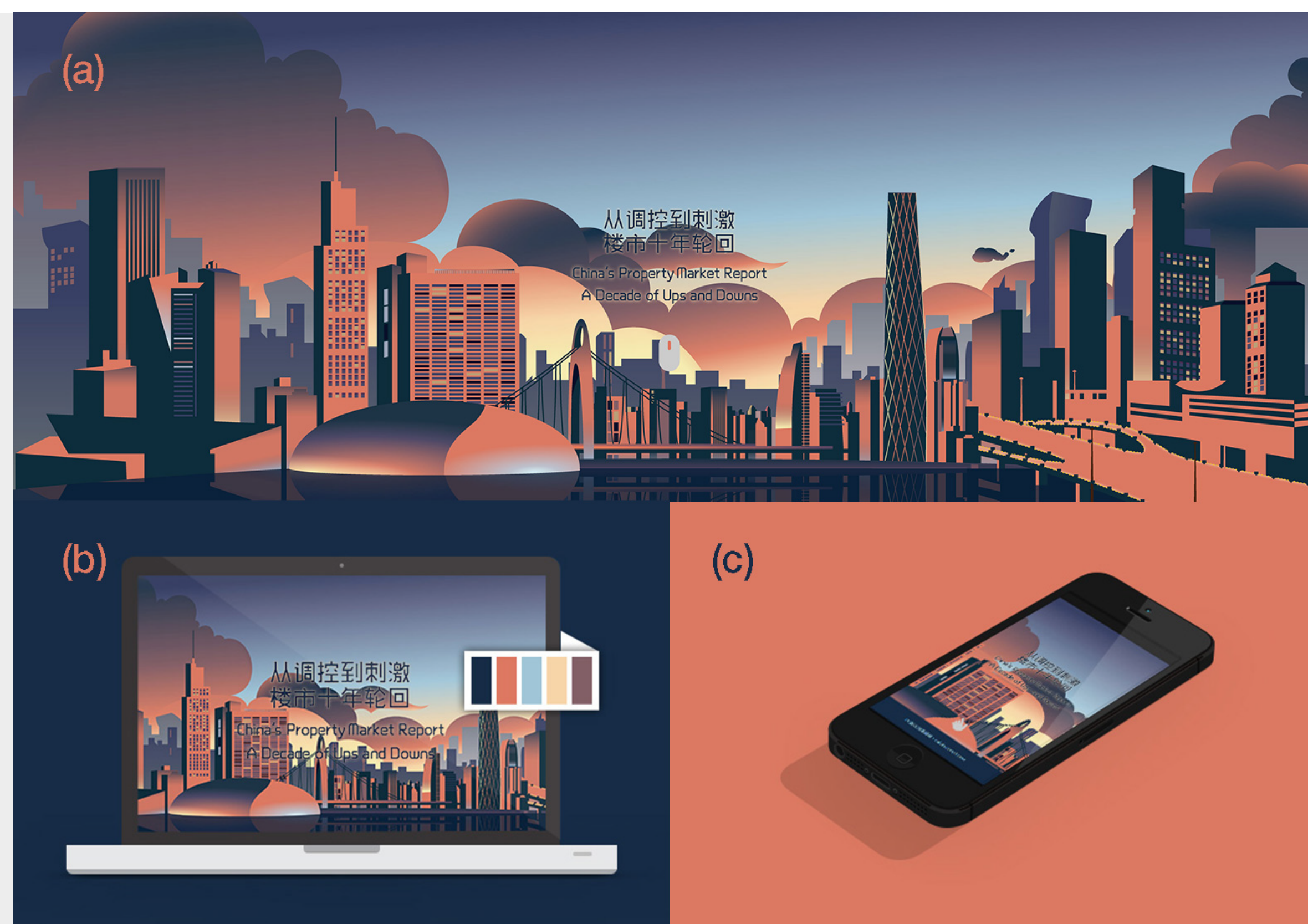
INTRODUCTION

Recently, information visualization techniques have been applied in the field of industry, such as journalism, sports, finance, and education, etc. For industry field, the key point of information visualization is to present data in a clearer way to provide an easier understanding. Especially for the press industry, the general readers, unlike experienced experts, are not trained for data analysis. It is a challenge for the general readers to discover patterns or derive insights from the data. To address this issue, narrative visualization was developed.

In our work, we combined a series of visualization techniques including a WebGL based 3D map, a linkage matrix and an annular histogram calculator in a narrative visualization entitled "China's Property Market Report". It is a trial to use narrative visualization for a deep journalism report with the real world case. We deployed our work online.

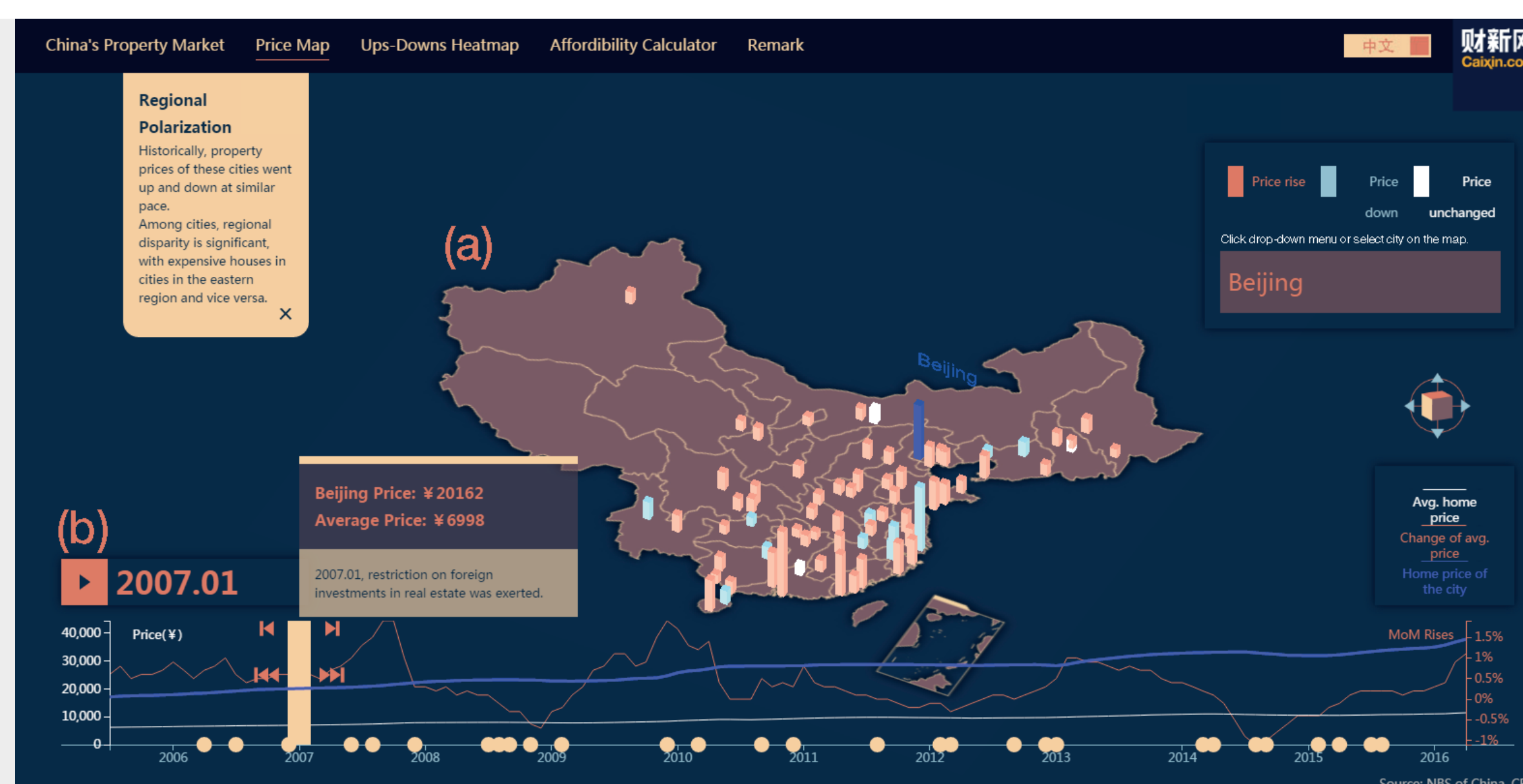
PROJECT DESIGN

In this project, editors collected property market data of 70 Chinese cities, including the monthly housing prices, month-on-month (MoM) index, average household disposable income and annual policies from 2005 to 2016. The project is developed on both PC and mobile platforms, with two different GUI principles (a). A theme picture (c) subtly matching with colour palette (b) was used as cover to attract the readers and introduce the interesting topics of the later pages. Then there are three different views sequentially presenting data: 1) 3D map view, 2) Linkage matrix view, 3) Annular histogram calculator view.



1 3D Map View

For this view, the design goal is to help readers understand the housing price of each month in different cities easily. Monthly changes of property price are shown on an interactive 3D map (a) and updated with the timeline (b). Users could brush the time range and play animations. Linked with these operations, line chart, 3D map and tips board will change accordingly to show current trend.

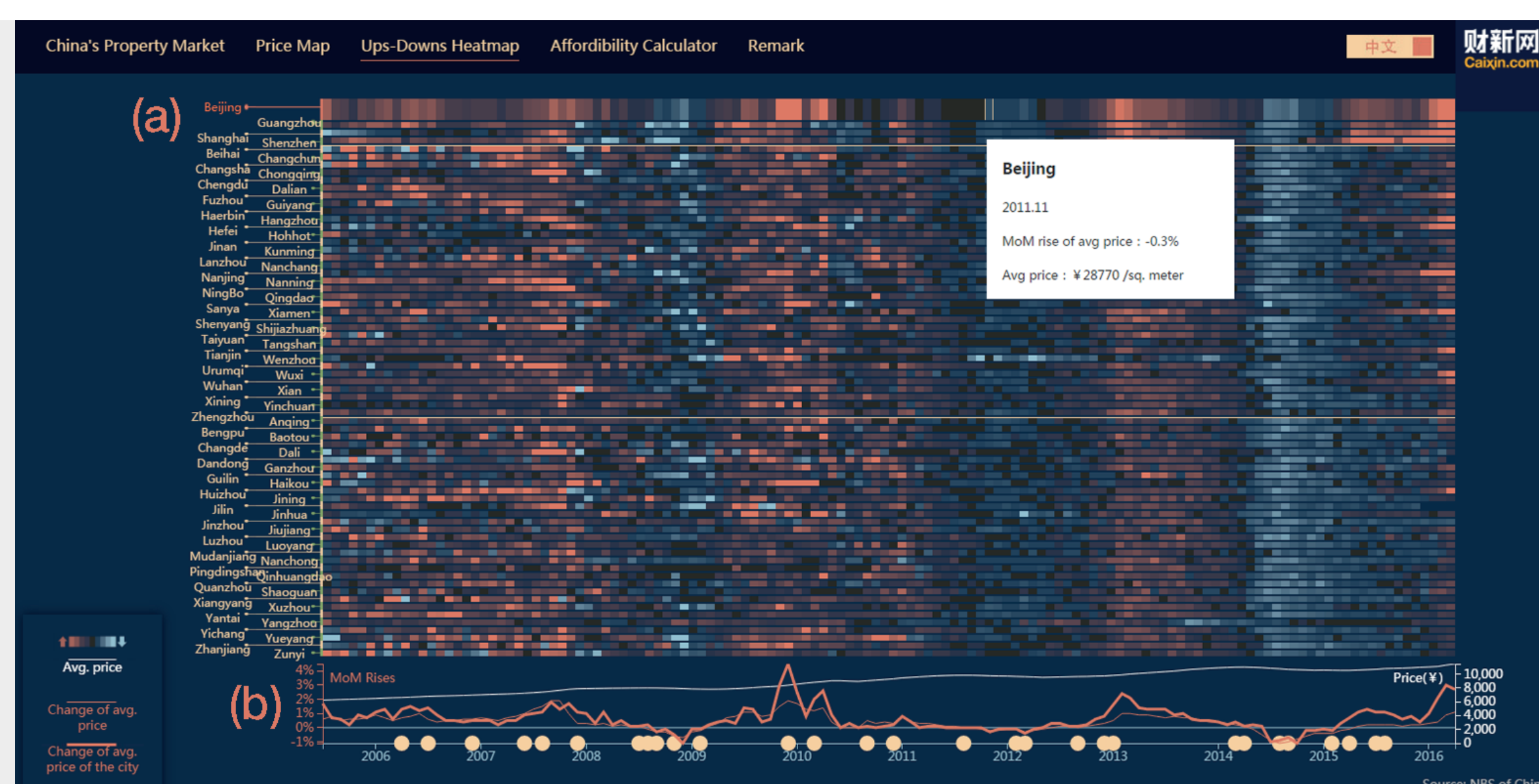


EARLY EVALUATION AND DISCUSSION

The project was published in Caixin Datanews (a Chinese press) in December, 2015[1] and was awarded as 2016 SOPA "Excellence in Digital News". Judges commented this project as "The sheer amount of data crunching for this project is admirable ... this package uses code but vivid numbers to approach one of the China's most important economic and social topic, deciphering it from so many lenses that any Chinese resident can both get a comprehensive view and information relevant to him/herself." Since deployed online, over 4000 users visited this project, and user average stay time is over 7 minutes. At this early stage, we contribute this success to the emphasis on immersive and narrative visualization. In the future we will summarize the general design principles and lessons learned for the data journalism from the proposed application.

2 Linkage Matrix View

In this view, we focus on presenting the MoM index to highlight the changing patterns with an overview matrix for each city (a) and the detailed comparison timeline (b). When hovering on each rectangle, a notice board will provide the MoM rise and average price of the current city in that month while the timeline will show the details.



3 Annular Histogram Calculator View

In this view, we focus on relating the average household disposable income with housing prices. The concept of income-to-price ratio (time required for a family to purchase a standard flat in a city) is introduced to help citizens understand the housing problem phenomenon. Each bar surrounding the circle represents one city's income-to-price ratio (a). Users can type in their information to calculate their own ratio (b).



Illustrative reports are placed next to each visualization views to explain the history and transformation of China's housing system. Cited articles and infographics were added to these reports.



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