

Forest Fires and Property Prices

Evidence from Western Australia

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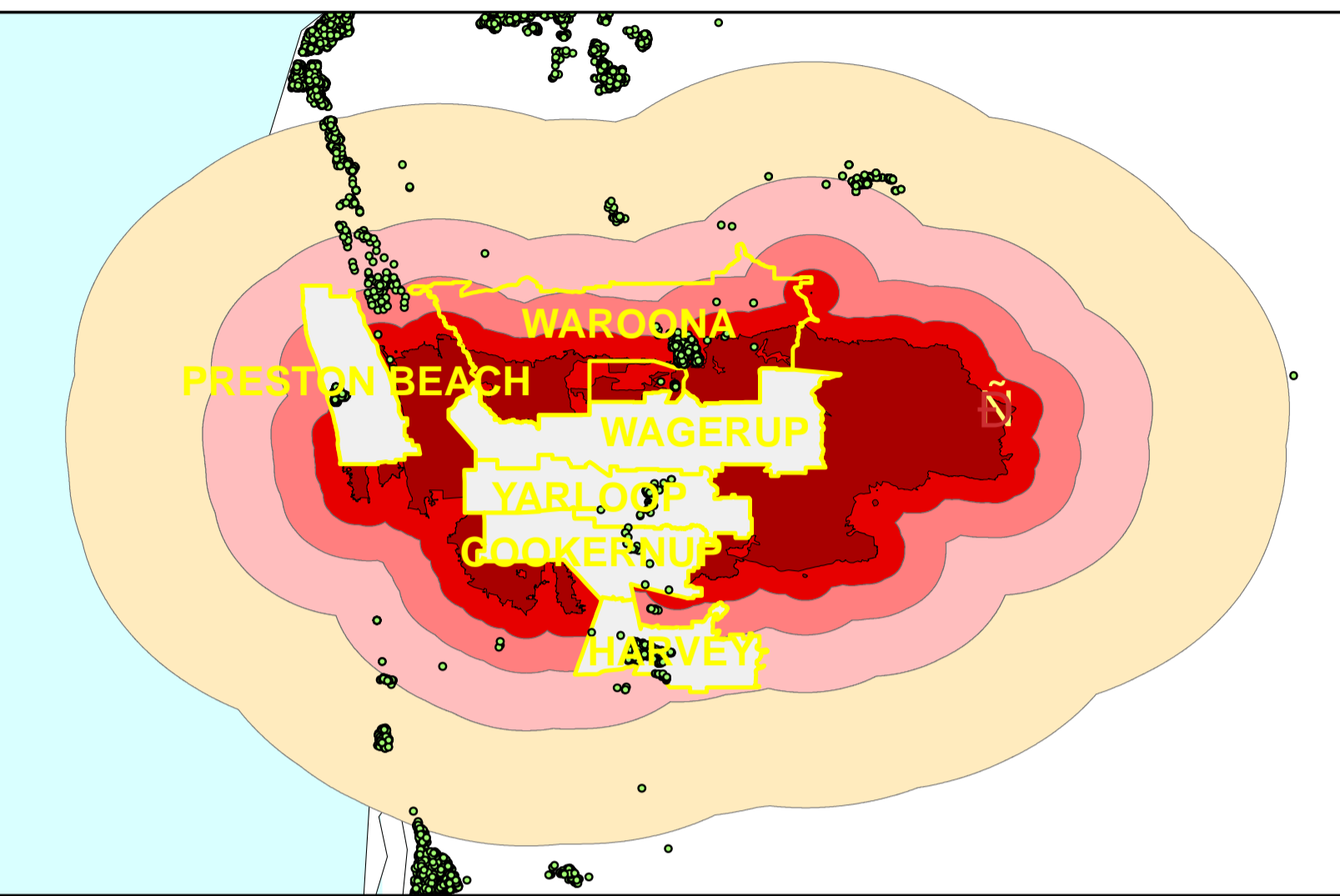
The Near-miss Effect of the *Waroona Fire of 2016*

Research Question: Are information effects from forest fire events capitalized into property prices?

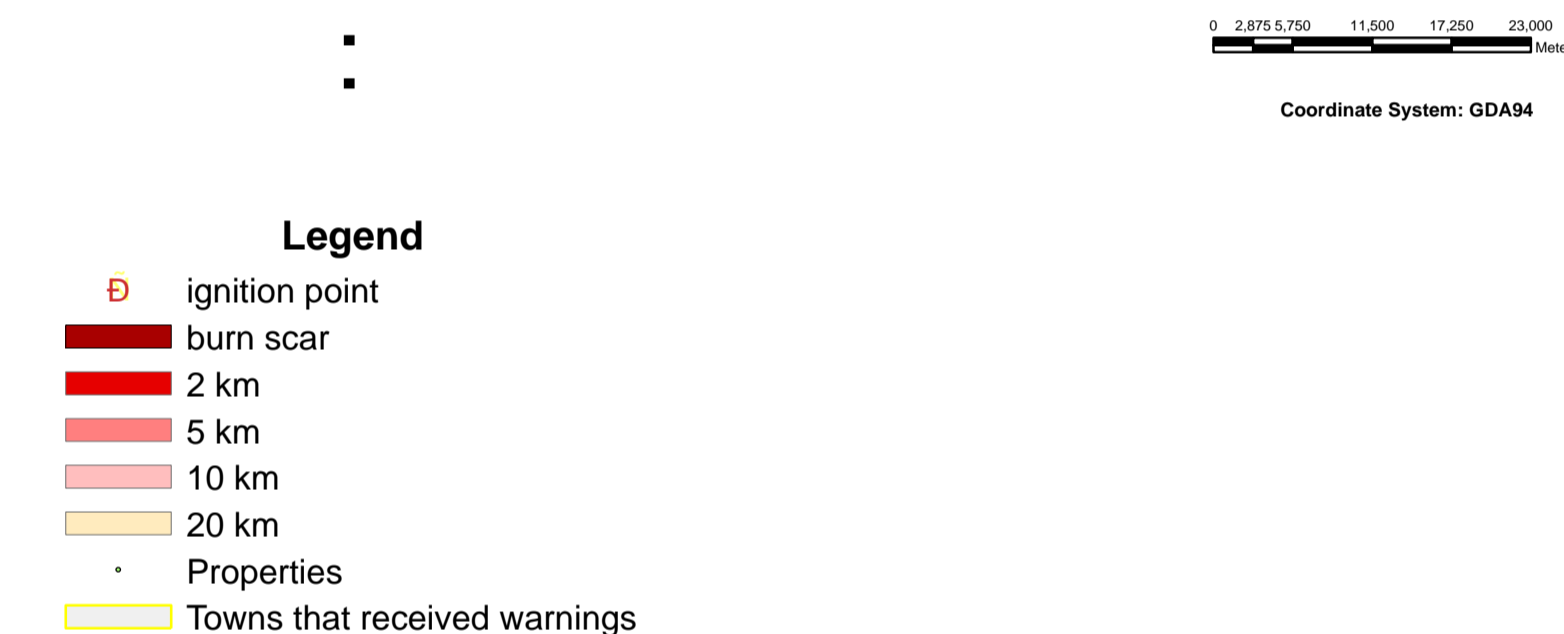
The Waroona Fire of 2016 originated by a lightning strike south of Dwellingup, a forested area in Western Australia (WA). It was the largest individual fire in the region since 1961, leaving behind 2 fatalities, 181 homes destroyed, and psychological trauma in the community.

The first two days of the fire were critical: evening downslope winds blowing from the east to the west-south-west colluded with burning embers, heavy and dry fuels from long unmanaged vegetation and very warm weather. Emergency management teams issued several bushfire alerts. Some expressly mentioned targeted towns, while others referred to areas enclosed by certain roads. The latter were perceived as unclear by the affected community.

Using a hedonic price model under a difference-in-differences framework and GIS data of 51,055 properties sold between 2010-2019, we estimate the impact of receiving warnings and being near the burn scar on property prices for properties that luckily escaped the fire. Our main findings suggest price mark-up of approx. 8% if located within 5 km from the burn scar and a price discount of 6% in towns that received warnings that clearly addressed targeted towns. These persist over our period of analysis. We believe the price mark-up responds to the capitalization of a perceived a risk reduction effect from fuel already burnt, and the price discount to increased vulnerability feelings and PTSD.



The Waroona Fire of 2016 burn scar and treatment groups



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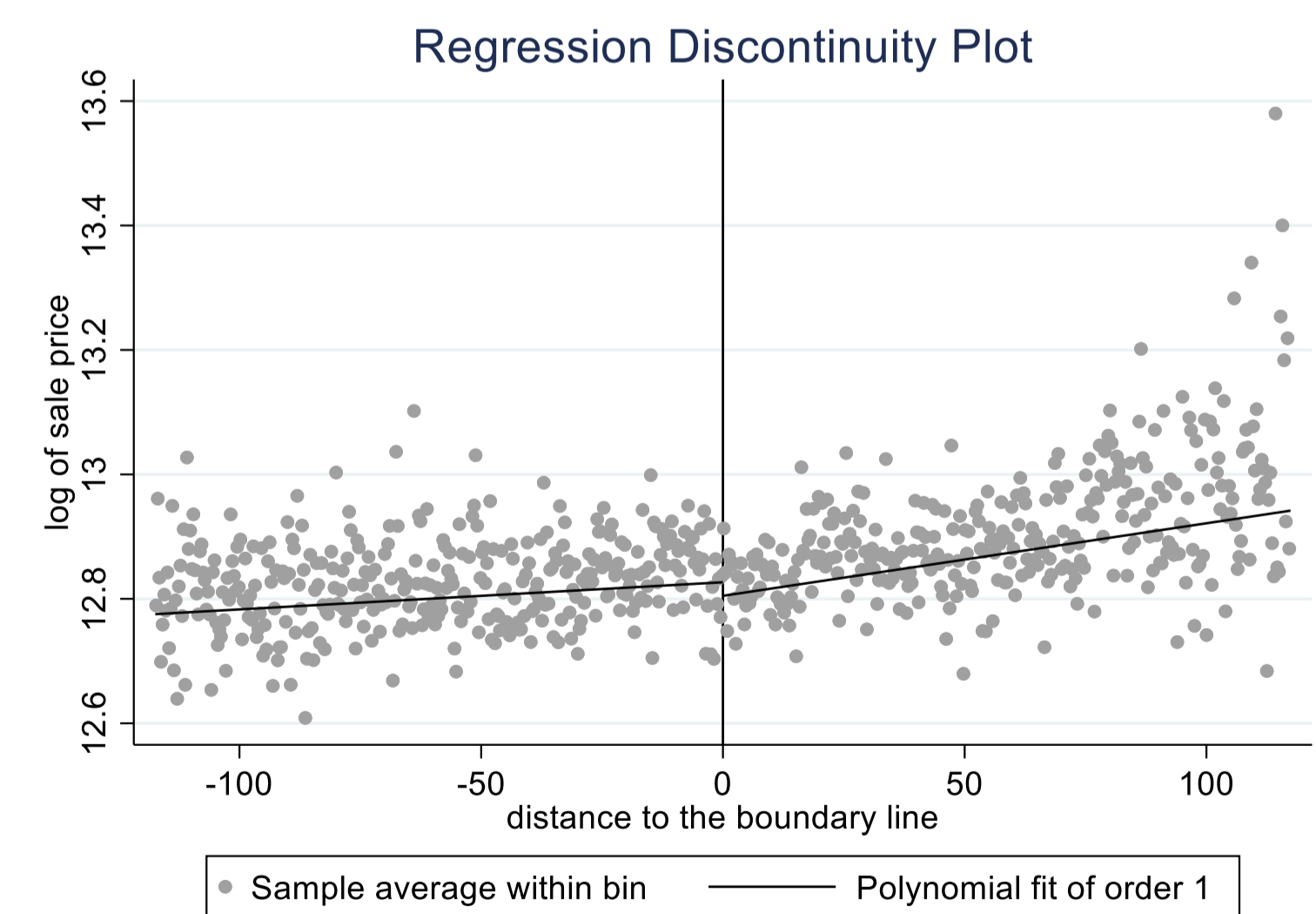
The Introduction of Bushfire Prone Area (BPA) maps

Research Question: is the introduction of the BPA zoning policy capitalized into property prices?

The 8th of December of 2015, BPA maps were introduced in WA. These are defined by the presence of bushfire prone vegetation (BPV) and the 100-m buffer immediately surrounding it. BPAs are subject to, or likely to be subject to, bushfire attack. Around 90% of WA is BPA.

BPA maps introduced an information shock on bushfire risk and more stringent planning proposals and building requirements in BPAs. The impact of BPA maps is therefore geographically discontinuous. We take advantage of this quasi-natural experiment and use the Regression Discontinuity Design (RDD) setting to examine the differences in property prices for the sample of properties in the neighbourhood of the geographical boundary distinguishing BPAs to non-BPAs. Our sample consists of 6,669 properties within and 7,234 outside BPAs, sold between 2010 to 2019.

We find that properties within BPAs are priced 4.15% lower than those in the control group. This result is consistent with the more stringent planning proposals and building requirements in BPAs. To test the robustness of our findings, we replicate the analysis for the period before the introduction of BPA maps and find no effect, implying that the price decline responds to the policy change and not to bushfire risk.



The plot displays a discontinuity in sale price around the threshold, where properties within BPAs (distance >0) have a price discount compared to those outside BPAs (distance <0).