

# Fracking sharply reduces property values for property owners who use well water

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Home values decline steeply when fracking occurs in neighborhoods that use well water, says new research from Duke University. But the outcome differs in neighborhoods that rely on piped water, where home values rise slightly after shale-gas drilling occurs.

The study, conducted in Pennsylvania, found that in areas using well water, home prices dropped by an average of \$30,1676 when shale [drilling](#) occurred within a distance of 1.5 kilometers. Meanwhile, homes using piped water gained an average of \$4,800 in value after shale wells opened nearby.

Hydraulic fracturing, or "fracking," is a relatively new technology in which gas is extracted by drilling into a shale formation and then applying a high-pressure mixture of water, sand and chemicals to create cracks from which the underground gas stores are released.

The paper is among the first to quantify the impact of fracking on property values in a wide geographic area, said lead author Christopher Timmins, a Duke economics professor who specializes in environmental economics. It appears online in the December issue of the *American Economic Review*.

"Our results show clearly that housing markets are responding to homeowners' concerns about groundwater contamination from [shale gas](#) development," Timmins said. "We may not know for many years whether these concerns are valid or not. However, they are creating a

real cost to property owners today."

The study comes at a time when shale gas development is expanding across the country. The research was conducted in Pennsylvania, which is home to one of the nation's largest natural gas reserves and where fracking activity has greatly increased in recent years.

To gauge the effects of drilling, the authors examined home sales in 36 Pennsylvania counties between 1995 and 2012. The analysis controlled for potentially confounding variables such as effects of the Great Recession and the benefits homeowners may receive in the form of lease payments.

The authors found that the precise distance between a shale well and a home matters greatly for home prices. Among homes that rely on well water, a shale well located within one kilometer was associated with a 13.9 percent average decrease in home values. But if the nearest shale gas drilling site was at least two kilometers away, [property values](#) remained constant.

In neighborhoods with a piped water supply, meanwhile, home values rose slightly after shale wells opened, perhaps due to royalty payments by shale gas companies.

Aesthetics mattered, though: Home values in those neighborhoods rose only when shale wells were out of view of the property.

The authors limited themselves to considering home values. However, they note that in areas which rely on well water, homeowners may face additional costs from fracking. For instance, these homeowners may purchase expensive whole-home water filters after a shale gas well opens nearby.

Home values reflect homeowners' perceptions and fears regarding fracking, the authors note. The actual risks of shale drilling to groundwater contamination are a different matter, and a subject deserving of more research, they said.

In the meantime, testing for [groundwater contamination](#) makes sense, Timmins said. Lawmakers may also want to consider new drilling standards, regulating chemicals used for fracking or mandating larger minimum distances between shale wells and homes to minimize economic harm to homeowners, he said.

"Regular [water](#) testing and Improved drilling and [hydraulic fracturing](#) regulations – or perhaps simply more transparency – could help allay homeowner's concerns," Timmins said.

**More information:** Lucija Muehlenbachs et al. The Housing Market Impacts of Shale Gas Development , *American Economic Review* (2015). [DOI: 10.1257/aer.20140079](https://doi.org/10.1257/aer.20140079)

Provided by Duke University

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