

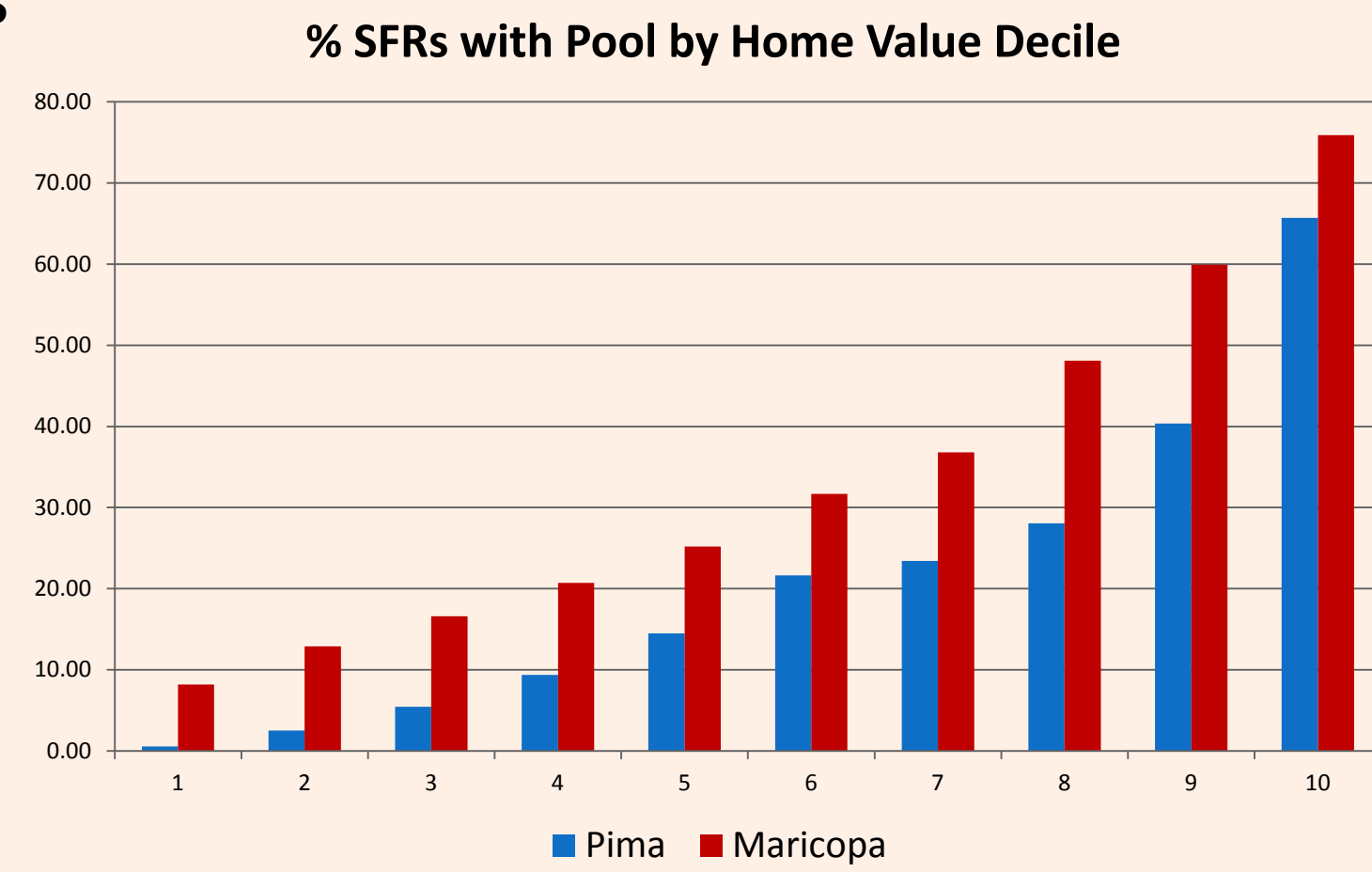
SWIMMING POOL REMOVALS: TRENDS, WATER SAVINGS, REMOVAL COSTS, CONSUMER BENEFITS

Gary C. Woodard, Sr. Water Policy & Economics Consultant, Montgomery & Associates

Candice Rupprecht, Water Conservation Program Supervisor, Tucson Water

Pool Penetration Rates and Patterns

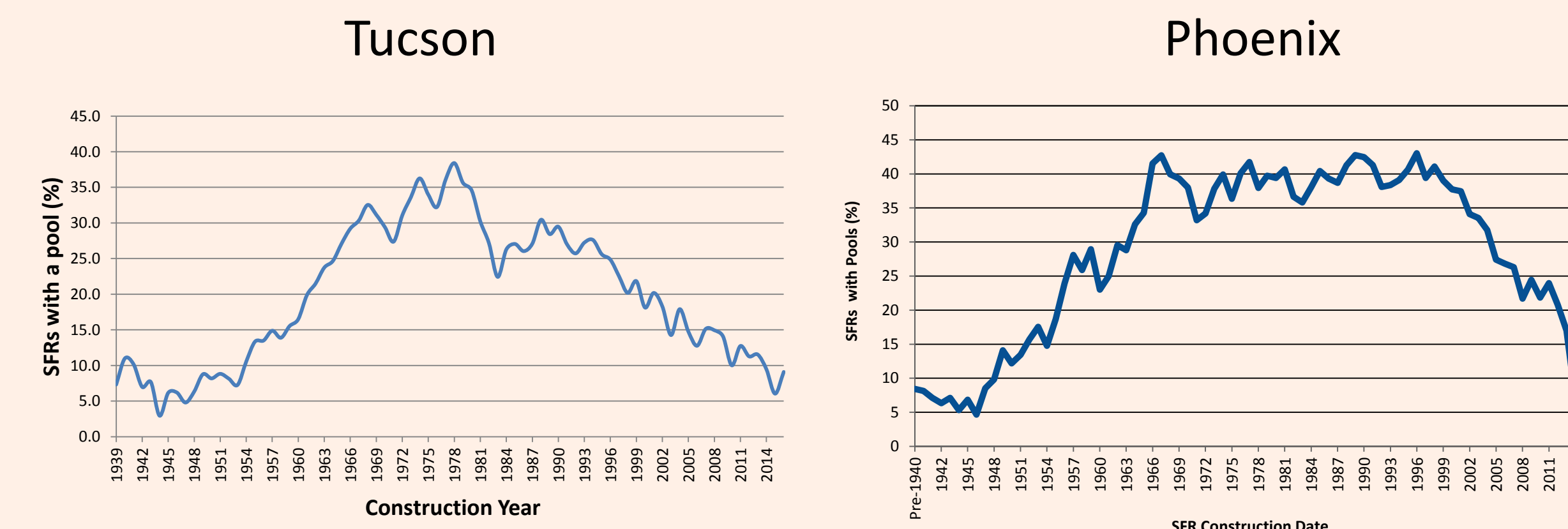
Backyard swimming pools are common in Arizona. They are found in nearly 40% of homes in the metropolitan Phoenix area, and 20% in metropolitan Tucson. They are far more common in higher-valued homes.



Waning Popularity of Backyard Pools

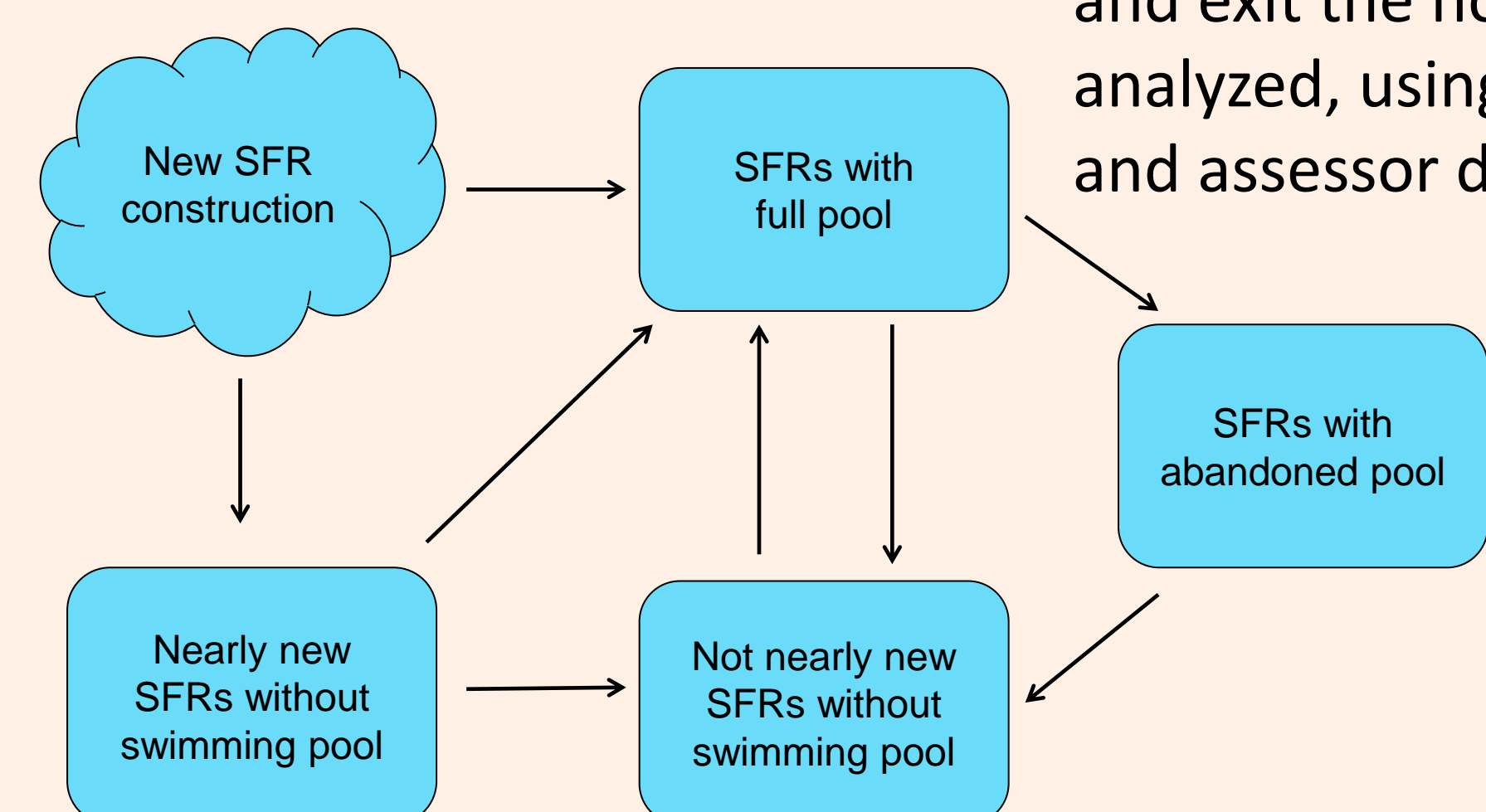
While still common, penetration rates of backyard swimming pools have been declining across Arizona for decades. Pools are most common in homes built in the 1970s & 1980s; they are far less common in newer homes.

Pool Penetration Rates by Date of Home Construction



Pools Come, and Pools Go

Not only are pool construction rates down, anecdotal evidence suggested that existing swimming pools are being removed or abandoned at an accelerated rate. All pathways by which pools enter and exit the housing stock were analyzed, using remote sensing and assessor databases.

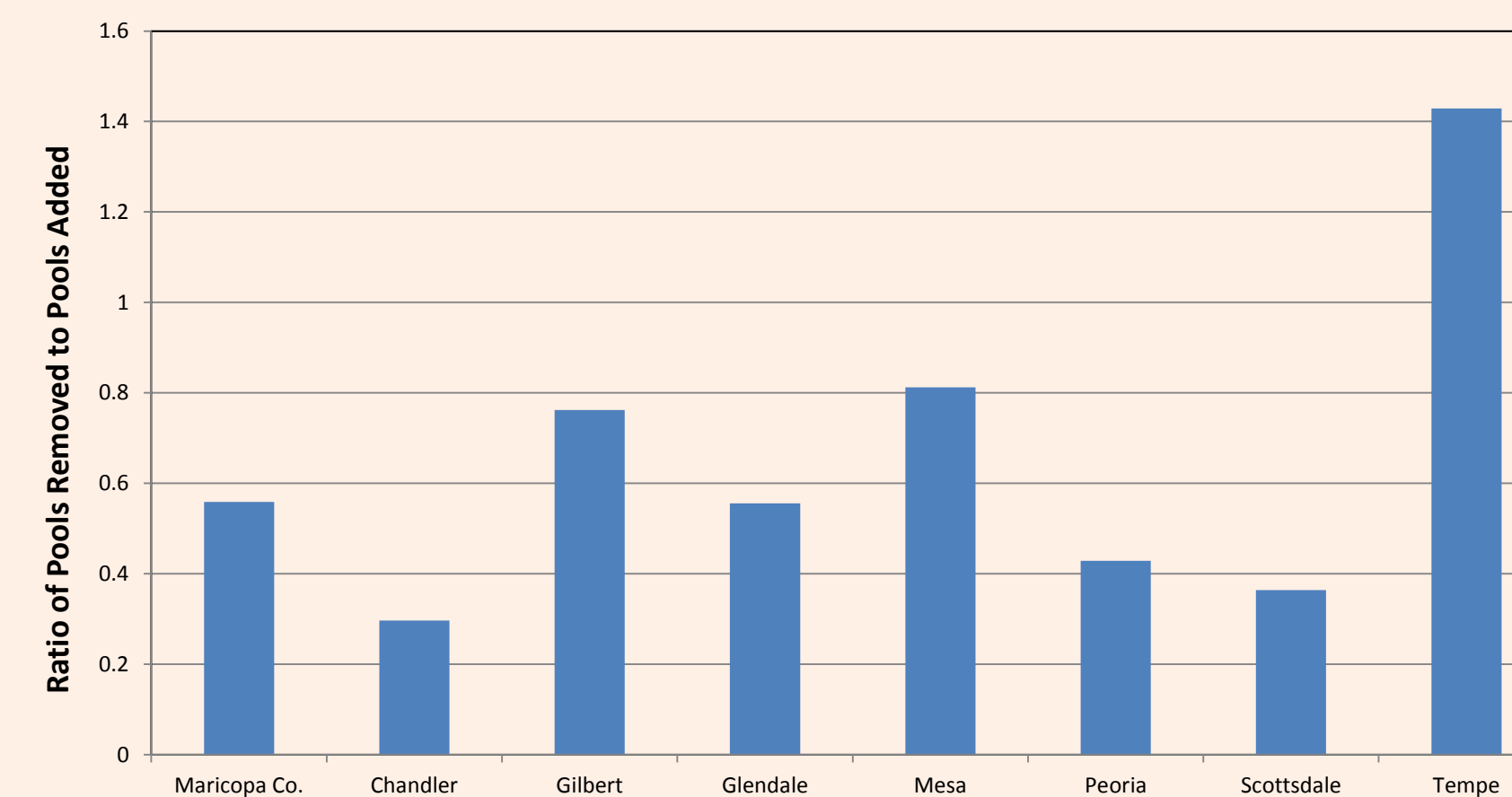


Images were examined over time to assess pool status as full, empty, covered, or removed.

Who is Removing Pools?

The rate of pools being removed or abandoned in metropolitan Phoenix is approaching the rate of new pool construction in some areas, and at least one service area has passed "peak pool", with more pools being removed than installed.

Ratio, Removed Pools to New Pools

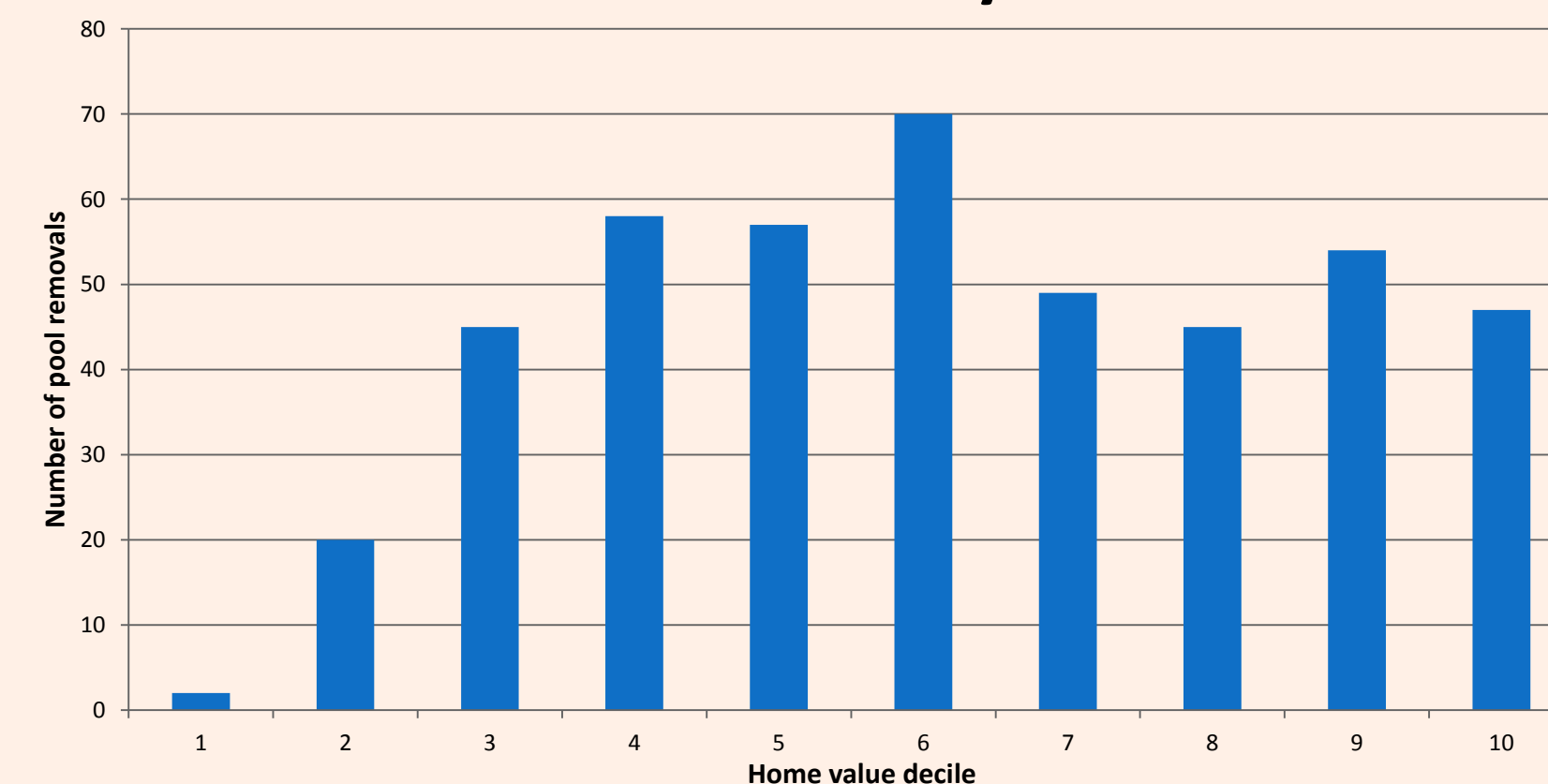


In the Tucson area, there is a higher rate of pool abandonment, with nearly half of all pools that are eventually removed sitting empty for one or more years before being excavated or filled.

Older pools in moderate-value homes account for most of the pools that were removed or abandoned. While far fewer in number, pools in lower-valued homes are most likely to be removed.

Note the bimodal distribution in removal rates as a function of home value.

Pool removal distribution by home value decile



Anecdotal evidence suggests that most homeowners removing pools from moderately valued and lower-valued homes are motivated by saving money, while those removed from more expensive homes are often removed as part of backyard make-overs.

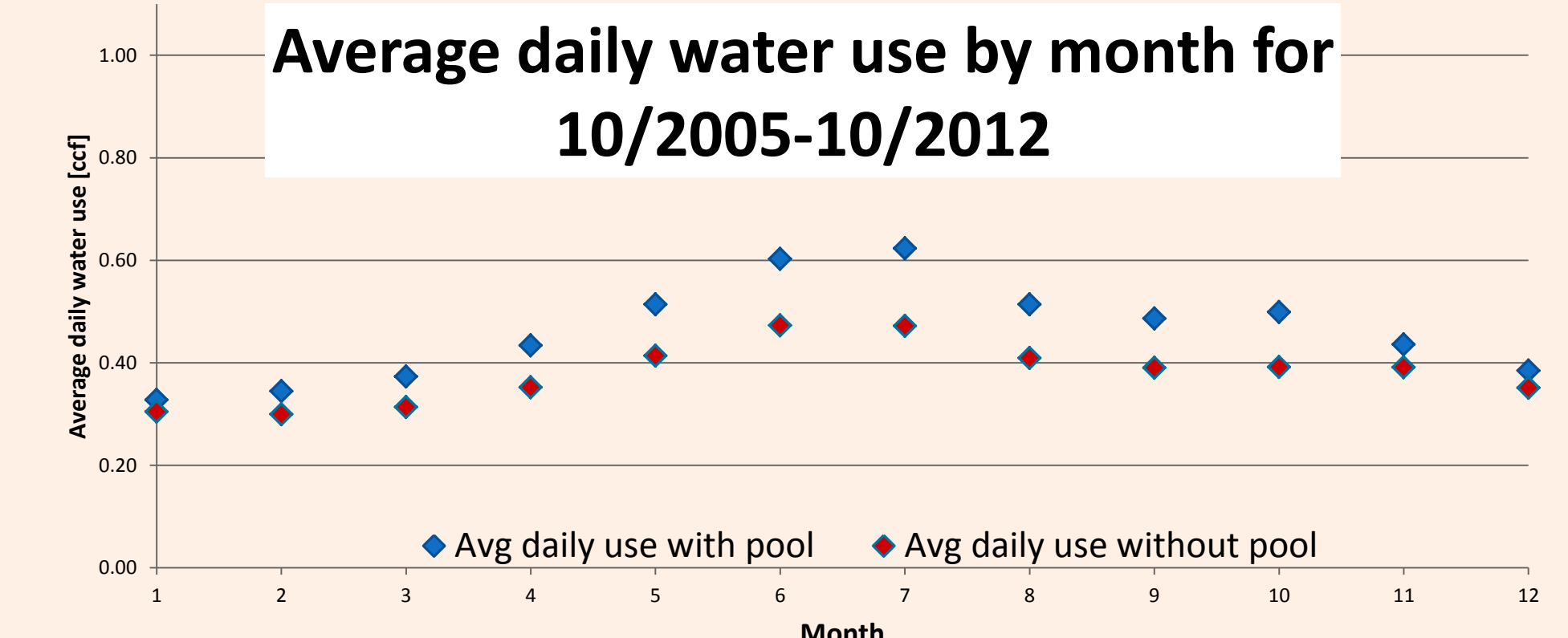
Impact of Pool Removal on Water Demand

We noted virtually no instances where removed pools were replaced with turf or other water-intensive landscaping. This suggests that pool removals should substantially reduce residential water demand.

Average monthly and annual water savings were made using a pooled time series/cross sectional approach on households known to have removed a pool. The estimated water savings agrees well with an engineering estimate.

Regression estimate: 29,213 gals/year

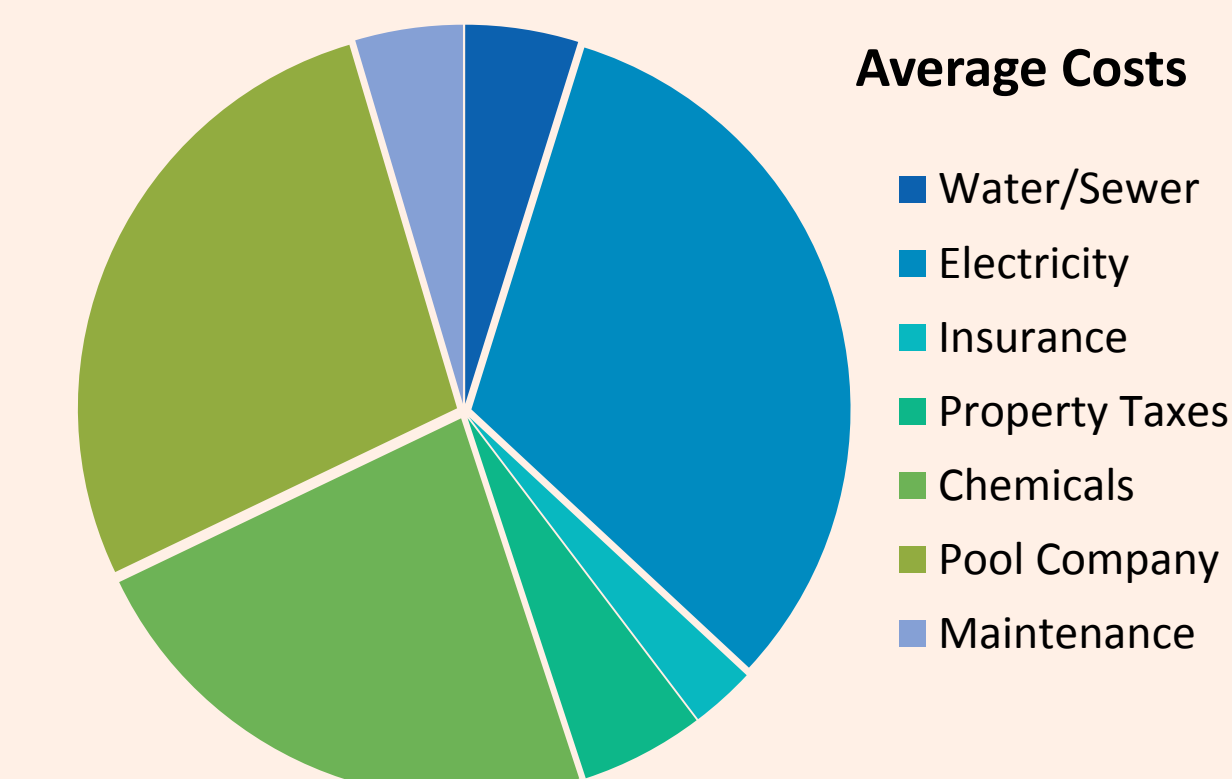
Engineering estimate: 26,313 gals/year + leaks



About two-thirds of the average savings of 30,000 gallons/year is from reduced evaporation, with the other third due to filter backwashing, leaks and periodic emptying for maintenance.

Benefits and Costs of Pool Removal

Seven different costs of maintaining an unused pool were estimated. Typical annual costs of about \$2,100 are dominated by electricity and chemicals, and in some instances, a pool service company. Water is a relatively minor cost, at about 5%. In addition, there are several non-pecuniary benefits.



Non-pecuniary benefits include:

- Improved safety
 - less risk to children and pets
 - no more "attractive nuisance"
- Time freed up from maintaining the pool
- Sense of well-being from consuming less water and energy
- Repurpose land
 - Add landscaping, patio, etc.
 - Get rid of pool fence

Depending on pool parameters and the type of pool removal, the pay-back period for pool removals is generally in the range of 2-3 years. All this suggests a public information campaign on pool removals might conserve significant amounts of water.