



The effect of multi-track year-round academic calendars on property values: Evidence from district imposed school calendar conversions



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ABSTRACT

Multi-track year-round school calendars allow a school to make continual use of its building over a calendar year by rotating students on separate tracks. Homeowners may have a preference or distaste for year-round calendars for a variety of reasons, ranging from perceived academic effects to family home and work life disruptions. If households do favor one school calendar relative to another, they may have to pay an additional amount to move to a house with a different calendar. In this paper, we test this possibility. We exploit a natural experiment setting to examine how multi-track year-round calendars influence Wake County, NC residential housing prices. School assignment zone and school fixed effects are included to control for unobserved neighborhood and school characteristics that might be correlated with year-round calendars and housing prices. Our preferred estimates suggest year-round calendars are associated with a statistically significant price penalty of between one and a half to two percent.

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1. Introduction

The relationship between school quality and residential property values is well documented.¹ The majority of past studies have relied on average test scores as the primary indicator of school quality, but recent research suggests other school attributes might independently impact home values over and above test scores (Cellini, Ferreira, & Rothstein, 2010; Clapp, Nanda, & Ross, 2008; Figlio & Lu-

cas, 2004; Gibbons, Machin, & Silva, 2013). This paper examines whether a school's academic calendar has an impact on residential property values. The use of year-round school calendars in the U.S. has grown substantially over the last couple of decades. According to a recent Congressional Research Report, the number of U.S. public schools operating under a YRS calendar grew by more than 800 percent from just 410 in 1985 to 3700 in the 2011–2012 school year (Skinner, 2014). Under a year-round academic calendar, students attend school the same number of days as a traditional calendar student, but these days are spread more evenly across the calendar year.² In the multi-track model of year-round education (YRS), students are placed into one of several tracks, at least one of which is out of school at any point in the year. Because of this attribute, the YRS calendar allows

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¹ See for example, Oates (1969); Black (1999); Chesire and Sheppard (2004); Kane, Riegg and Staiger (2006); Bayer, Ferreira, and McMillan (2007); Zahirovic-Herbert, and Turnbull (2008); Clapp, Nanda, and Ross (2008); Dhar and Ross (2012); Gibbons, Machin, and Silva (2013). A detailed review of the literature appearing after 1999 is available in Nguyen-Hoang and Yinger (2011). For a review of the literature prior to 1999, see Ross and Yinger (1999).

² The year-round school calendar studied here is distinct from the “extended” year calendar in which students attend more school days.

a school building to operate year round and to accommodate more students than it would under a traditional school calendar. YRS calendars are therefore often viewed as a cost-effective solution for school systems experiencing high levels of growth and overcrowded schools (CDE 2012; Cooper, Valentine, Charlton, & Melson, 2003; Daneshvary & Clau- retie, 2001; Merino, 1983). Despite the increased use of the YRS calendar, there is little evidence on how these calendars are perceived. Homeowners may have a preference or distaste for YRS calendars for a variety of reasons, ranging from perceived academic effects to family home and work life disruptions (discussed further in the next section). If households do favor one school calendar relative to another, they may have to pay an additional amount to move to a house with a different calendar (other things equal), which could have unintended consequences. For example, if YRS calendars are seen as an undesirable attribute and home prices fall, some of the potential cost savings associated with the YRS calendar may be offset by a lowered tax revenue base.

We focus our analysis on Wake County, NC. The Wake County Public School System (WCPSS) has increased its use of YRS calendars over the past decade. This policy change has been widely debated by parent groups. The largest increase in YRS use occurred in 2007 when the school system mandated 22 existing schools convert to YRS calendars and ordered all new schools to open on the YRS calendar. This policy was so controversial that WakeCARES, a Wake County parent's group against the mandatory assignments, challenged its legality. The case eventually made it all the way to the State Supreme Court, which upheld the district's mandate.³ Given the media attention and strong public opinions on the school calendar change, it is evident that parents in this district have strong preferences regarding this specific school attribute.

To estimate the impact of YRS, we exploit temporal variation in school calendars within small geographic school assignment zones, known as nodes, brought about by the WCPSS policy change to identify the impact of YRS. Using a pooled cross-section of Wake County houses that were sold between 2006 and 2010, we use ESRI GIS software to match homes to the base elementary school assignment. To control for unobserved school, neighborhood, and city factors affecting housing prices that do not change over time, we include a set of school, assignment node, and city fixed effects. We also include month and school year fixed effects to control for unobserved trends in county housing prices. The mandatory school calendar changes help mitigate concerns that unobservable time-varying school characteristics might both lead to calendar changes and directly impact home prices. The policy change also helps to disentangle the direct effect due to the calendar change from potential indirect effects due to changes in sorting. As a robustness check, we also estimate the effects using a boundary fixed effects approach similar to that introduced by Black (1999).

Despite the increased use of the YRS calendar in the United States, most of the existing studies have focused only

on the academic impacts of the YRS calendar (Graves, 2010, 2011; McMullen & Rouse, 2012a, 2012b). Others have evaluated the costs and efficiency of the calendar (Daneshvary & Clau- retie, 2001), the ability of the calendar to effectively address overcrowding concerns (McMullen & Rouse, 2012a), and the impact of the YRS calendar on maternal employment (Graves, 2013). To our knowledge there is only one existing study that examines the connection between YRS and property values. Clau- retie and Neill (2000) find YRS reduces the value of homes in Clark County, Nevada by approximately 5 percent. The study controls for a large number of home characteristics, school characteristics and observed zip code level characteristics, however, it is unable to control for more localized unobserved neighborhood characteristics that might be associated with both the placement of the YRS calendar and home values. It is therefore difficult to determine whether the estimated impact is attributable to the school schedule or is instead due to other unobserved school characteristics and unobserved local amenities that are correlated with the calendar change. Our identification strategy addresses this limitation.

A secondary contribution of the paper is to further the growing literature that seeks to move beyond average test scores and explore whether other school attributes are capitalized into home prices. For instance, Brasington and Haurin (2006) shows that both school value-added and initial achievement levels have a positive impact on home values. Clapp et al. (2008) find peer ethnicity to be a more important determinant of property values than test scores. Cellini et al. (2010) and Downes and Zabel (2002) both explore the relationship between school expenditures on home values, finding mixed evidence. Figlio and Lucas (2004) study the impact of state school ratings and find these ratings have a positive impact on home values, even controlling for test scores. More recently, Gibbons et al. (2013) show that both school value-added and school composition are capitalized into home prices. Similar to these studies, we control for a school's average achievement level and ask whether homeowners independently value a school's academic calendar. Aside from providing additional evidence on the extent to which other school attributes may be capitalized into home prices, the focus on the YRS schedule should be of particular interest to policymakers given the increased use of the YRS calendar in the United States in recent years.

We find evidence to suggest households wanting to move to a home with a traditional calendar would have to pay a premium (other things equal). Baseline OLS estimates imply homes that are located within a YRS assignment zone are valued at roughly five and a half percent lower than their traditional calendar counterparts. This result is similar to the 5 percent price differential reported by Clau- retie and Neill (2000). In our preferred fixed effects models the point estimate on YRS decreases in magnitude, suggesting failure to control for unobserved neighborhood and school characteristics leads to point estimates that are overstated. However, we still find evidence of a statistically significant negative impact of YRS on home prices. Across all specifications, fixed effects results imply house prices with YRS calendars are one and a half to two percent lower than their traditional calendar counterparts. These results suggest policymakers should

³ <http://www.wral.com/news/local/story/5063084/> (Accessed April 11, 2013).

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