Research paper

Master-planned in exurbia: Examining the drivers and impacts of master-planned communities at the urban fringe

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HIGHLIGHTS

- Focus groups were utilized to explore community preferences and satisfaction.
- Natural amenities were a primary motivating force to move to this exurban area.
- Development of a master-planned community may impact natural and built environments.
- Moving services to a planned community can adversely impact those not living there.
- Resident perceptions of a planned community can harm the area's social cohesion.

ARTICLE INFO

ABSTRACT

Smart growth strategies of infill and compact growth in existing suburban cities will most likely not be sufficient to absorb a new US household growth in the future. To meet housing demands and preferences, master-planned communities will continue to be built in outlying exurban areas. However, little is known about the impacts these communities may have on the surrounding physical, built and social environment in the exurban landscape. In this paper, we provide a review of the literature of what is known about the drivers behind the development of master-planned communities and the physical, built and social impacts of these developments on the surrounding exurban landscape. We then provide a case study of an exurban area outside of Seattle, Washington containing a large master-planned community. Through focus group interviews, we explore residential motivations to move to the area, and the benefits and challenges of living in an exurban landscape with a newly built master-planned community. Using qualitative data analyses, we find that residents are drawn to this exurban area for the abundance of natural amenities and outdoor recreation opportunities. However, the new master-planned community development presents many benefits and challenges for those living in the area; particularly the residential perceptions of impacts that the development has had on the surrounding natural and built environment. These real and perceived impacts of the master-planned community development has compounded and magnified the impacts to the social environment throughout the entire exurban community. Implications for planners and suggestions for future research are given.

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1. Introduction

Many planners and demographers recognize that smart growth strategies of infill and compact growth in existing urban and sub-urban cities will not be sufficient to support future US population growth and changing household configurations (Nelson, 2009). Building large scale communities in outlying areas surrounding major cities may help to absorb this growing population and can be tailored to meet changing consumer preferences for smaller homes and walkable neighborhoods with urban services (Logan, Stephanie, & Shyam, 2007; Nelson, 2006, 2009). Master-planned communities are large-scale, usually phased development projects that are planned and developed by the private sector which integrate housing with value-added retail, services, and amenities such as parks, open spaces and golf courses (Gwyther, 2005; Minnery & Bajracharya, 1999) to accommodate these changing consumer preferences.

Master-planned communities may encompass a variety of forms and elements including: conservation developments which integrate design principles to conserve a large percentage of the parcel as permanent open space and protect native habitats (Arendt,

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1996; Milder & Clark, 2011); new urbanism, which promotes a pedestrian-oriented community by shrinking the private space and enlarging the public space in the community (Talen, 1999) through incorporating community features such as town centers, retail shops and parks within walking distance from residential homes (Dietrick & Ellis, 2004); and gated communities which provide a community design that heavily protects both the private and communal spaces from those not residing in the community (Blakely & Snyder, 1998). However it should be noted that other master-planned communities may not incorporate any of these design elements, which adds to the complexity of defining a master-planned community. For the purpose of this article, we define master-planned communities as large-scaled developments which use planning and phased construction techniques to create a holistic design in terms of layout, esthetics and functionality of the community.

In an effort to make sense of this wide diversity of designs and layouts of master-planned communities, Forsyth and Crewe (2009) created a typology of master-planned communities based on the primary design goal for the development, for example: social interactions (creating a sense of community, socio-economic diversity and/or social exclusivity); architecture ideals; technology infrastructure; and environmental footprint. This typology contributes greatly to our knowledge of the historic roots and current criticisms of different master-planned community designs. Yet, little attention is given to the impacts master-planned communities can have on the surrounding natural, built and social environment; particularly in an exurban area. Exurban areas are usually described as the areas located at the urban fringe between 10 and 70 miles from the metropolitan edge (Daniels, 1999; Nelson, 1992; Sharp & Adua, 2009) with low residential densities, ranging between 5 and 40 acres per unit (Irwin, Cho, & Bockstael, 2007; Theobald, 2001).

The large spatial demands to incorporate a variety of community amenities and services, requires that most master-planned communities to be built on greenfield sites, which are more abundantly found in exurban areas (Heid, 2004). Understanding the scale and scope of potential impacts master-planned communities may have in the exurban zone and to differentiate those impacts from other large-scale residential developments that are not master-planned will be our primary objectives for this paper. The following section reviews the current literature regarding factors leading to the development of master-planned communities and their physical, built and social impacts to the surrounding exurban landscape. We will then provide a brief case study of a master-planned community in the exurban area of Seattle, Washington to illustrate gaps in the literature and where further research is needed.

2. Literature review

2.1. Drivers of master-planned communities

Developer motivation to build master-planned communities is driven by simple supply and demand economics. On the supply side, home builders are finding it increasingly difficult to find "ready-to-build" lots (e.g. platted and "hooked-up") in suburban areas (Greco, 2007). While at the same time, declines in natural resource and agricultural economies in nearby rural and exurban areas are primed for development due to lower land prices for large tracts of un-platted land (i.e. land has not been subdivided into parcel lots, blocks and streets) and lower infrastructure costs, including permits and taxes (Mohamed, 2009). These larger tracts of land, often under single ownership, are well suited for master-planned communities because they can allow for large housing and amenity developments to be planned and integrated together in the building of the community. The master-plan for the community

may include conserving a significant amount of open space; often seen as a key concession in gaining approval from local and regional governments for the development (Milder & Clark, 2011). However, not all land developed or surrounding a master-planned community may be rich in natural amenities. Agricultural lands can be a prime target for master-planned community development and lack surrounding natural amenities, though oftentimes developers will plan and construct natural amenities in the form of parks and open spaces *within* the community (Heid, 2004) as possibly a way to compensate for lack of surrounding natural amenities.

The economic advantage of developing a master-planned community over individual home lots is one of economies-of-scale. The economic risks of building individual homes can be distributed out by offering a variety of housing options, including condos, apartments and multi-use housing at a variety of price-points, a noteworthy observation especially in this period of lowered housing sales (Atkinson-Palombo, 2010). Those developers that have the capital to take on such a massive project have become extremely skilled at working with local municipalities for approval of master-planned communities, a process which can take many years (Greco, 2007; McKenzie, 2003). Often times, local governments will negotiate with developers to include a large percentage of open space, new municipal services such as schools, community parks, and libraries in the master plan for the community as conditions for approval for the development (Heid, 2004). Some local governments have found this model of redistributing municipal services to private developers so appealing that they now require *all* new residential homes be built within a master-planned community framework (McKenzie, 2003, 2006). Conversely, this mandate also creates an uncertain space between public and private governance and can limit one's choice to live outside the purview of a Homeowner's Association (HOA) governance regime which manages the majority, but not all master-planned community developments (McKenzie, 2006).

Developers of master-planned communities are usually more than willing to provide these services and amenities because it is these amenities that provide the primary motivation for residents to choose to live in a master-planned community (Heid, 2004). Some residents in master-planned communities are willing to trade housing features for community amenities such as pools, community centers, parks, walkways, and "gatedness;" *and* they are willing to pay more, in terms of housing price, for these community amenities (Plaut, 2011). Many economists believe that these preferences for the natural and built amenities found in master-planned communities will outlast the downturned housing market (Cho, Kim, & Roberts, 2011) confirming reports that homes in master-planned communities are continuing to rise in median value (Robert Charles Lesser & Co, 2008).

Evidence of strong preferences for natural amenity features in choosing a residential location can also be found in residential location discrete economic models that examine all types of housing configurations. These studies have shown that natural amenities like forests and water features near a residential location, can have a positive effect of residential choice (Earnhart, 2002; Hand, Thacher, McCollum, & Berrens, 2008) and close proximity to these natural amenities can have a positive effect on house prices over time (Cho, Kim, Roberts, & Jung, 2009; Neumann, Boyle, & Bell, 2009). One study found that residents are willing to trade the negative utility of a longer commute for positive factors, such as nearby natural amenities and outdoor recreation opportunities (Chen, Chen, & Timmermans, 2008)—features that are frequently found within or near a master-planned community.

Beyond natural amenities and community services, sense of community is often touted as another "amenity" feature that is desired by residents who move to master-planned communities. Developers have become very apt at creating a "symbolic

community" with community boundaries, roadways and place-markers (Goodman & Douglas, 2010; Gwyther, 2005); although their impact on housing location choice has been questioned (Walters & Rosenblatt, 2008). Other master-planned communities have incorporated some aspects of new urbanism design, which places an emphasis on creating a sense of community through a pedestrian-center layout (Talen, 1999). And finally, HOAs can help to solve neighborhood disputes and provide social functions for the community (McKenzie, 2003), although they may facilitate an insular atmosphere within the master-planned community by seg-regating residents within the community from those outside by offering community only functions and events (McKenzie, 2006).

This review of developer motivations to build master-planned communities has shown that developers have worked hard to accommodate the needs and preferences of future residents of their developments by providing a collection of natural, built and social amenities within the community. Yet little is known about the impacts these developments can have on the existing exur-ban region. Next, we review the state of literature regarding the environmental, built and social impacts of master-planned com-munities.

2.2. Impacts of master-planned communities

2.2.1. Natural environment

Impacts of residential development on the natural environment are numerous and master-planned communities are no exception. However, deciphering impacts due to *any* large residential develop-ment and those due to master-planned community development is difficult. Generally speaking for all large residential developments, as the density of housing and other impervious surfaces increase, native animal and plant species decrease while human adaptive or generalist species increase (Odell & Knight, 2001). Nutrient and biogeochemical cycles are also effected as natural land cover is removed or fragmented causing an increase of pollutants or altering ecological processes (Hansen & DeFries, 2007).

Beyond these generalities, there are very few studies that have tried to quantify both the effects of residential density and pat-tern on the natural environment, such as the unique density and layout of master-planned communities. These studies focus primarily on communities identified as "conservation develop-ments" or "conservation-oriented master-planned communities" (Milder & Clark, 2011). One such study found that higher residential densities—which are common feature in master-planned commu-nity developments—can have overlapping zones of disturbance to the landscape, which can lower overall disturbances to wildlife and encroachment of non-native plant species in exurban areas (Leinwand, Theobald, Mitchell, & Knight, 2011). Additionally, clus-tered housing can also provide a modicum of watershed protection, bird migratory stopovers, and places to increase human–wildlife interaction and education (Perlman & Milder, 2005).

Other studies, however, have found that clustered housing can impact the natural spaces surrounding the development because of the edges between the development and the natural spaces increase non-native vegetation and human/domestic animal dis-turbances (Lenth, Knight, & Gilgert, 2006). One study suggested that increasing the size of the open space retained in a development, creating contiguous open space tracts, requiring native landscap-ing, and minimizing road and trail densities could lessen the impact of large-scaled residential developments, such as master-planned communities, on the surrounding natural landscape (Lenth et al., 2006). Although these design suggestions have not been empiri-cally tested for their impact on wildlife, native plant populations, or for other environmental impacts such as water runoff and qual-ity. Together these studies show that master-planned communities which are large in scale and retain pockets of open space may have

a unique effect on the natural environment different from just a simply large-scaled, evenly dispersed residential community that may not include internal pockets of open space. Understanding how master-planned community design and residential density can influence the surrounding natural environment is warranted to facilitate new design principles that might lessen development impacts.

2.2.2. Built environment

The effects that master-planned communities can have on the built environment have not been fully investigated; however, there is substantial research regarding built environment impacts of large-scaled residential growth in suburban and exurban areas. These studies primarily focus on transportation impacts of the increased vehicle miles traveled (VMT) (Cervero & Wu, 1998; Ewing & Cervero, 2010) of residential development beyond the urban fringe. These studies have found VMT to be most strongly related to the accessibility of destinations, particularly employment locations with more transportation energy being consumed in low-density suburban neighborhoods than in urban compact neighborhoods (Hankey and Marchall, 2010). In other words, residents in exurban areas traveled more miles to job locations than other residential locations. However, what is not known is whether residents living in compact neighborhoods in exurban areas, such as those found in master-planned communities are altering their travel behavior for work and non-work based trips.

Large-scaled residential developments in suburban and exur-ban areas have also been studied for their spillover effects. Recent studies provide some evidence that large residential exurban devel-opments increase the probability of more land subdivision and development nearby (Wilson & Song, 2011), thus potentially adding to more traffic congestion and demand for municipal services. However, annexation of land that results in higher population density, such as a master-planned community, can also lower per-capita spending (Edwards & Xiao, 2009) and may help limit more land consumptive exurban residential development in the future (Newburn & Berck, 2011); although residents in these rapidly developing areas may be less satisfied with municipal services provided (Zolnik, 2011). Understanding how a master-planned community can impact and alter municipal service demand and satisfaction for *all* community residents—both inside and outside a master-planned community—is an area of research that demands more attention and investigation.

2.2.3. Social environment

Social impacts—especially sense of community and resident satisfaction—of master-planned communities have had the atten-tion of many planners and social scientists, primarily due to the new urbanism pedestrian scale design concepts that are included in many master-planned communities. New urbanism principles, which many, but by no means all, master-planned communities have adopted, historically claimed that by providing a pedestrian oriented environment and a multitude of public spaces (parks, trails, town squares and community facilities) will increase the sense of community and quality of life of community residents. However, empirical research linking new urbanism design fea-tures to a sense of community has had mixed results. Studies have shown that residents in new urbanist neighborhoods walk more than their counterparts in suburban neighborhoods (Lund, 2002, 2003; Rodriguez, Khattak, & Evenson, 2006) and this increased level of walking has been associated with more neighbor interactions (Kim & Kaplan, 2004; Lund, 2002) which, in a few studies, has fur-ther been related to underlining dimensions of sense of community, such as community attachment and identity (Kim & Kaplan, 2004; Leyden, 2003; Pendola & Gen, 2008; Wood, Frank, & Giles-Corti, 2010). However, other studies have failed to find any such link

between new urbanism design and sense of community (Brown & Cropper, 2001; Nasar, 2003; du Toit, Cerin, Leslie, & Owen, 2007) or aspects of social capital, such as trust (Mason, 2010). Furthermore, case studies in Australia found that residents had a strong place attachment to the master-planned provided by the visual cues within the development (e.g. signage, landscaping, town center and development-sponsored community events); though these outward signs of "community" did not translate into a deeper sense of community such as social reciprocity and civic participation in community events (Rosenblatt, Cheshire, & Lawrence, 2009).

Though sense of community is a large topic of discussion and research *within* master-planned communities, little research has been carried out to understand the social impacts *between* the master-planned community and those "original" residents living outside of the new development. However, there are many studies that have focused on the social/cultural impacts of in-migration in rural (Smith & Krannich, 2000; Yung & Belsky, 2007) and exurban areas (Nielsen-Pincus et al., 2010; Walker & Fortmann, 2003). These studies have found that community relations can be strained by an influx of even a handful of new residents, who may view the community, the surrounding landscape, and attitudes toward natural resource management differently from existing community members. Understanding how a master-planned community can potentially reconfigure an exurban community center—both geographically and metaphorically—is an important area of investigation little explored by social scientists or planners.

In a social impact assessment completed prior the building of a large master-planned community called Snoqualmie Ridge, Pivo (1992) outlines the potential economic and social impacts of annexing a large section of rural forestland for the development of master-planned community. Impacts noted in this assessment included: changes to community character and social segregation between residents of the new and old community; declining support for the local timber industry; weakening of the local retail business community; and loss of scenic resources. Ten years later, another study found that residents of Snoqualmie Ridge had less experiential knowledge with town's rural character and a higher visual preference for suburban residential design, but were also more concerned about future growth than those living outside of the Snoqualmie Ridge development (Tilt, Kearney, & Bradley, 2007). Snoqualmie Ridge, located in the City of Snoqualmie; Washington is now almost fully built and provides us with a unique case study to examine both the drivers and impacts of a master-planned community in an exurban environment.

3. Methods

3.1. Study site: Snoqualmie Valley, Washington

Nestled in the Cascade foothills approximately twenty-five miles east of Seattle, Washington, is the Snoqualmie Valley (Fig. 1). The valley is the ancestral home of the Snoqualmie people, one of the Salish tribes. The valley has long been easily accessible to Seattle; first by the Snoqualmie River, then by the Yellowstone Trail at the turn of the 20th century. Since the 1960s, the Snoqualmie Valley has been accessed by state route 202 and interstate highway, I-90. Washington State enacted growth management legislation in 1990 which requires comprehensive plans for cities and counties with population of 50,000 or more (Washington State, 1990, chap. 36). Snoqualmie Valley is included in King County's comprehensive land use plan and is located outside of the primary urban growth area that contains Seattle and the surrounding suburbs. Land use in the valley is currently designated for agriculture, timber or low-density residential use. Small urban growth boundaries contain the cities

of Snoqualmie and North Bend allowing for higher residential densities and small retail and industrial land uses (King County, 2010).

The natural beauty of the Snoqualmie Valley received national attention in the 1990s when it was featured in the popular television series, "Twin Peaks." Snoqualmie Falls and the inspiring backdrop of Mt. Si and other surrounding peaks in the Cascade foothills continue to draw visitors and residents to the area. The quality of the natural amenities offered in Snoqualmie Valley may not be typical of the locations for many master-planned communities; although the top five best-selling master planned communities in 2011 did include a diversity of natural amenities from lakes, to preserved woodlands/bayous and mountain areas (Robert Charles Lesser & Co, 2012).

Snoqualmie Falls creates a clear demarcation between the eastern or upper valley above the falls and the lower, western valley below the falls. The lower valley is characterized by broad flat agricultural lands that have been historically used for dairy and hops farming. This lower valley includes the small towns of Carnation and Duvall and the small unincorporated community of Fall City. The upper valley holds the two largest cities in the Snoqualmie Valley: North Bend and Snoqualmie. Historically these two towns were important suppliers of timber for Seattle. In the 19th century, Weyerhaeuser Corporation became the predominant landowner and producer of wood products for the area. Both communities contain historical main streets and residential areas that were primarily built during the first part of the 20th century when the timber industry in the valley was growing rapidly. The latter part of the 20th century, the City of Snoqualmie grew modestly in population while three miles upriver, North Bend grew more quickly, with new jobs in retail, distribution, and transportation. Nintendo opened a distribution facility in the 1990s, creating 400 new jobs and doubling the population.

In the late 1980s, the Weyerhaeuser Company began the process of converting a large portion of their land holdings just southwest of the City of Snoqualmie from timber production into a master-planned community under their subsidiary, Weyerhaeuser Real Estate Company, which was later sold to Quadrant Homes. The city planning commission and the city council adopted an amendment to their local comprehensive plan that laid the groundwork for the City of Snoqualmie to formally annex the 1344 acre forested parcel in 1988. The parcel is located on a top of a hill just south of Snoqualmie Falls, 3 miles from the historic Snoqualmie downtown and is close I-90 freeway.

Annexation approval of the parcel by King County brought important concessions for the proposed master-planned community: the community was reduced from the proposed 3700 homes to 2600; and stipulations to include affordable housing, open space, new public facilities (fire department, police station, etc.) in the new development. Once annexed, the City of Snoqualmie worked with the developers to create a final plan for the development. The final plan, approved by the city council in 1995, preserved 45% of the total land area as open space, trails, golf courses and parks and included design plans for a compact, pedestrian-friendly, mixed-use residential community (residential densities range from two to seven dwelling units per acre) with business (135 acres) and retail (10 acres) areas (Weyerhaeuser Real Estate Company, 1995). Many city services including the library, the police station, and fire station, were to be relocated from the historic Snoqualmie main street area to Snoqualmie Ridge in new buildings provided by the developer.

The first houses in Snoqualmie Ridge were completed in 1998 and currently the development is building the last houses of phase II construction, which includes the affordable housing development and business park. Recent Census population figures shows that Snoqualmie Ridge master-planned community has increased its population by more than 300% in the last 10 years, while other
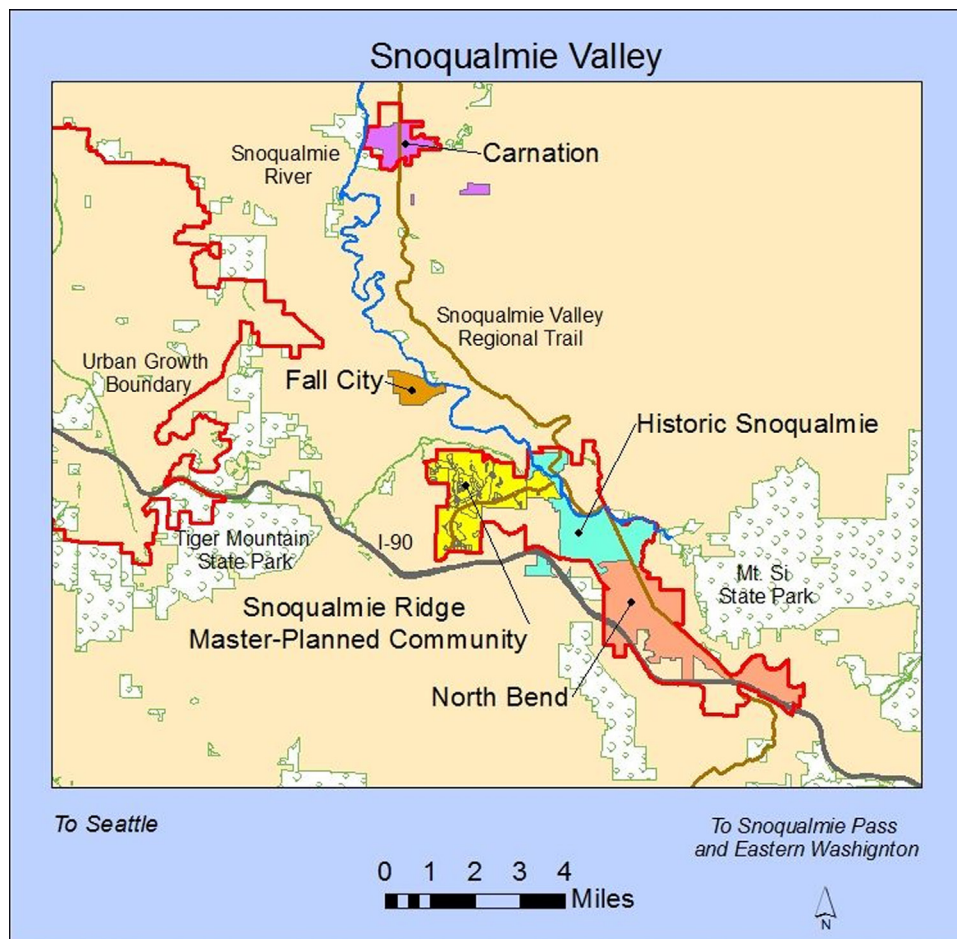
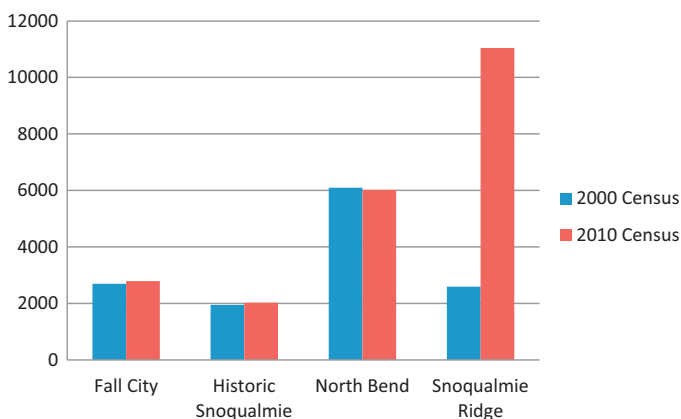**Fig. 1.** Map of Snoqualmie Valley, Washington (tiff file).

communities in the valley experience much more modest rates of growth (U.S. Census, 2010) (Table 1). During that time, retail and service jobs in Snoqualmie Ridge have also increased by 87% and in North Bend by over 100% (due to the development of a large regional outlet mall), while Historic Snoqualmie retail and service jobs increased by a more modest 33% (PSRC, 2011).

Table 1
Population of Snoqualmie Valley.[a]

[a] Population data taken from the Census Tract level to show discrete differences between the older historic town of Snoqualmie and the new master-planned community of Snoqualmie Ridge.

3.2. Study methods

3.2.1. Focus group and mapping activity methods

To more fully understand the drivers of this population growth in Snoqualmie Ridge and throughout the valley, we conducted two focus groups in January 2011. A focus group is a qualitative data gathering technique in which a group of people, (typically between 6 and 16 members), are interviewed in a discussion setting. A trained moderator guides group members through a series of questions and exercises around a particular topic (Morgan, 1997). Our purpose for conducting these focus groups was to understand resident motivations for moving to the Snoqualmie Valley and the benefits and challenges of living in the valley. All participants were informed of focus group procedures beforehand and gave informed consent to the researchers. Focus group participants completed a short demographic survey and then were guided through a series of questions about the reasons for moving to or continuing to live in the Snoqualmie Valley, the benefits and the challenges of living in the Snoqualmie Valley, and the trade-offs they experience in making this choice. In addition, the interview included a participatory mapping activity, where respondents were given a worksheet to record their five favorite outdoor places to visit and the activities that they do in these places. After completing this worksheet, participants were then given five coded stickers to place on maps of the Snoqualmie Valley and King County to indicate the approximate location of their five most frequently visited outdoor places. The two focus group sessions were audio recorded and transcribed shortly after the interviews.

Table 2
Demographics for Snoqualmie Valley Residents (SVR)[a] and Snoqualmie focus group (FG) participants.

City or community	% Female		% White		% College graduate		Median income	$35,000–$74,999	$75,000–$100,000	>$100,000
	SVR	FG	SVR	FG	SVR	FG	SVR	FG	FG	FG
Fall City	46%	100%	95%	100%	17%	0%	$92,760	0%	50%	50%
North Bend	48%	33%	92%	100%	25%	67%	$82,790	50%	50%	–
Historic Snoqualmie	46%	29%	85%	100%	23%	29%	$92,994	0%	50%	50%
Snoqualmie Ridge	48%	64%	84%	90%	46%	33%	$116,494	0%	10%	90%

[a] Snoqualmie Valley Residents figures are taken from the 2005–2009 American Community Survey estimate at the Census Tract Level.

3.2.2. Focus group analysis

Using an iterative approach, participant responses given to each question were coded for emerging themes using an axial coding technique (Strauss & Corbin, 1998). Throughout the two focus group sessions, major themes of discussion were kept on a flip chart for all participants to see. Focus group participants were invited to verbally comment on the notes and themes. After the focus group sessions, each author independently read the transcribed focus group interviews with an eye for patterns, themes and categories and independently developed a coding scheme. Subsequent discussions and review of the transcripts created the final themes discussed here. In addition, the most frequented outdoor places identified during the mapping activity were tabulated and grouped together by type of activity and location.

3.2.3. Newspaper content analysis

Shortly after our focus group interviews, *Seattle Times* published a story focusing on Snoqualmie as the fastest growing city in Washington State according the 2010 Census. The article also discussed the impacts of the Snoqualmie Ridge master-planned community on the town (Broom, 2011). We conducted a content analysis of the 56 online comments generated from this article and weave this dialog into description of the drivers and impacts of the Snoqualmie Ridge master-planned community. Content analysis is an exploratory technique for examining information in written or symbolic form by creating a thematic system for classifying the information (Neuman, 2003).

4. Results

A total of twenty-six people participated in one of the two 90-min focus group sessions. The first focus group session (14 participants) was primarily composed of residents living in North Bend (43%), historic Snoqualmie (29%), Snoqualmie Ridge (21%), and Fall City (7%). The second session (12 participants) primarily

consisted of residents of the Snoqualmie Ridge (67%), but drew others from historic Snoqualmie (25%), and Fall City (8%). Our focus group participants were equally divided between male and female, of Caucasian descent, with a median age of 50 years (Table 2). While our participant sample in this case study is small, the demographic profile of the focus group participants is comparable to the communities in Snoqualmie Valley.

4.1. Drivers of living in Snoqualmie Valley

The first question the focus group participants were asked was: "What are all the reasons people decide to move to or live in your community?" Because 'community' or neighborhood can be interpreted by people in a variety of ways (Lovejoy, Handy, & Mokhtarian, 2010) we asked participants to think of 'community' as a 1–2 mile radius around their home. Participants voiced different reasons for moving to their community, while the group facilitator wrote these factors on a flip chart in full view. After the group determined that all reasons had been exhausted, we aggregated this list into 10–12 key reasons for moving to the Snoqualmie Valley. Each participant was given five stickers and instructed to vote for the factor(s) most important to them. The exercise allowed them to place all stickers on one factor or distribute among several.

The most important factor in moving to the Snoqualmie Valley was the natural and scenic beauty of the area, closely followed by outdoor recreation access, which could arguably be tied to scenic amenities (Table 3). The following quote from one focus group participant encapsulates the general feeling of why focus group participants moved to the Snoqualmie Valley:

> "Yeah, we moved out here from the New Jersey area and North Carolina and we were in Bellevue and every time we'd come to take family to see the falls. . . you would get off I-90 and you would be driving over the parkway and it's like, 'this is so gorgeous, why don't we live here?' And, I finally told my wife, 'why not?' And, then

Table 3
Top factors for moving to Snoqualmie Valley as determined and rated by focus group participants.[a]

Factors	Focus group 1	Focus group 2	Example quotes
Natural beauty and scenery	19%	17%	*I need to be by the mountains, trees. So I moved up here. I wanted to be close to the mountains and the trees. . .I could live anywhere as long as it is close to the mountains, has trees. (FG2)*
Access to outdoor recreation	16%	17%	*But the move to here, we actually had a mountain vacation home that we actually sold because we don't need it anymore this neighborhood is a "stay-cation." My daughter can hike from the house. I can actually commute to work. . .I can actually bike via the Snoqualmie Valley trail without being on the road. (FG2)*
Access to I-90 (commute access)	10%	15%	*I was working in Seattle and when we started looking for a house, we decided that we were not going to travel the 520 corridor and 405 [was] not a good choice. The commute from I-90 is great and if you have a carpool buddy, even better. (FG2)*
Access to local shops and services	6%	15%	*I wanted a walkable community, I don't like driving. It's starting to be where I don't see well at night. I can walk over to the grocery store. I can walk to the restaurants. (FG2)*
Sense of community	17%	0%	*I feel very much a sense of community. I've gotten involved in a big way in the community and gotten to know a lot of people and these are my people; I fit in here. (FG1)*
Safety	4%	10%	*I was a single mom and he [son] was in 5th grade. I needed to be in a safe community. I could live anywhere as long as it is safe. (FG2)*

[a] Percentage of votes is calculated by total votes, rather than total participants. Each participant received 5 sticker dots to vote for the factors most important to them in moving to the Snoqualmie Valley. Only those factors that received at least 10% of the total votes for at least one focus group are shown here.

it just dawned on us, it's 30 minutes from the city and 30 minutes from snowboarding." (FG2)

Easy access to urban amenities and employment centers was listed as the third most important reason, though it was more often noted by Focus Group 2 (Table 3), which included a higher proportion of Snoqualmie Ridge residents. Other factors mentioned by focus group participants as important reasons to move to Snoqualmie Valley included: sense of community, walkability, and safety. It should be noted that, only participants from the first focus group, which included more residents outside of Snoqualmie Ridge mentioned "sense of community" as being an important factor that first drew them to the valley (Table 3).

4.2. Outdoor places

Table 3 illustrates that focus group participants not only wanted to live in an area with high natural scenic quality, but also wanted to be able to easily access outdoor recreation opportunities from their homes. Results from the mapping activity confirm that the majority of participants visited places within the Snoqualmie Valley for outdoor recreation, followed by public lands (county, state and national forest primarily) and the Snoqualmie Valley Regional Trail. This trail is directly accessible from the Snoqualmie Ridge via community trail linkages then runs through other towns in the valley, including Fall City, historic Snoqualmie and North Bend. Snoqualmie Valley Regional Trail is a conduit to many other recreation areas including national forest, wilderness area, and state and county public lands (Fig. 1).

Pivo's social assessment prior to the building of Snoqualmie Ridge states that residents in historic Snoqualmie valued natural amenities and recreation opportunities and our mapping activity revealed that participation in outdoor recreation activities is still an important to those living in Snoqualmie Valley. The majority of focus group participants participated in hiking and mountain biking activities and favored less developed sites, such as trails, rivers and lakes and wilderness areas. One participant described the importance of being able to access 'real trails' from his/her home:

"I was going to live in the middle of nowhere, which I have come to love very deeply; I might as well be able to go hiking every day. So I trail run or hike every... Access to real trails, not just city parks or groomed stuff but true wilderness." (FG1)

Another participant further expands on the type of outdoor experiences s/he seeks, which echoed sentiments of several group members:

For me, it still comes down to the wilderness and the recreational, the outdoor recreational opportunities of every caliber and every sport and I don't think there is a sport alive that I can't do within 15 minutes of my house. (FG1)

4.2.1. Benefits and challenges of living in Snoqualmie Valley

After discussing the reasons behind moving to the Snoqualmie Valley, focus group participants described the benefits and challenges of living in the valley. Table 4 shows the main benefits and challenges discussed by the two focus groups grouped in themes and sub-themes.

4.3. Natural environment

Focus group participants living both within and outside Snoqualmie Ridge master-planned community mentioned the environmental impacts that they had witnessed since the building of the community *(sub-theme: Environmental impacts)*. Concerns of flooding were paramount among these participants who gave

anecdotal evidence of increased flooding since the building of the community on the mountain ridge:

"It's very poorly planned and I mean you add all that concrete, and you add those houses, and take every tree away the flooding is just going to roll downhill and just now rolls all the way down to the lower valley and it will eventually destroy it.... This, destruction and poorly planning of the resources of the land I think is a really huge problem out here."(FG1)

Though there has been no study investigating whether a causal relationship exists between recent flooding events in the valley and the building of the master-planned community, focus group participants—including those in Snoqualmie Ridge—acknowledged the perceived environmental impacts of the development and these built and environmental challenges. Besides concerns over increased flooding in the lower valley, participants also mentioned deforestation and wildlife encounters as current environmental challenges of living in the valley. Conflict was apparent in the focus group sessions between the valley participants and the Snoqualmie Ridge participants when discussing the perceived environmental impacts of the development; with those living outside of the Snoqualmie Ridge development blaming participants who lived in Snoqualmie Ridge for the flooding.

4.4. Benefits and challenges: built environment

Discussion of the benefits and challenges of accessing goods and services close to home within Snoqualmie Valley dominated the *Built Environment* theme. Participants discussed how the size and scale of communities in the valley allowed for some participants to easily walk to stores and community services. For example, one new Snoqualmie Ridge resident remarked:

I did quite a bit of research around [what] builds community and what brings people together, specifically in terms of physical layout. And those qualities were sidewalks and local small parks and retail that you could walk to and infrastructure . . . and the way the houses were on the lots. And the planned community here was actually designed with those qualities that naturally bring people together rather than isolate them. . . (FG1)

However, since the building of Snoqualmie Ridge, many municipal services, such as the library and police station have relocated from historic Snoqualmie up to the Ridge development as part of the conditional of approval of Snoqualmie Ridge master plan. This relocation left some Snoqualmie Valley focus group participants, particularly those living in historic Snoqualmie, without services within walking distance from their homes. Pivo's social impact assessment prior to building Snoqualmie ridge foresaw that new chain-business in Snoqualmie Ridge could drive out locally owned shops in Historic Snoqualmie and called this a "worst-case scenario" (Pivo, 1992, p. 12); however this study did not take into account how moving key municipal services could also impact the character of the historic Snoqualmie As one focus group participant from historic Snoqualmie stated:

I used to have a library I could walk to, I used to have a fire department, and those services went up to the Ridge. . . I've noticed one thing is that since I've lost services, I drive more. I try to support the local stores when I can, but it's easier for me to stop in Issaquah on my way home from Seattle then come here (Snoqualmie Ridge). . . (FG1)

The sub-theme of *Community Design* (Table 4) was particularly focused on Snoqualmie Ridge, it is indicative of the larger challenge of community growth and development in an exurban area.

Table 4
Benefits and challenges: themes and sub-themes.

Theme	Sub-theme	Benefit	Key quote	Challenge	Key quote
Natural environment	*Environmental impacts*	Total comments = 1 FG1 = 0 FG2 = 1	*Imagine if everyone of us had an acre there would be a lot more clear cutting here and even less habitat for wildlife. (FG2)*	Total comments = 6 FG1 = 4 FG2 = 2	*No matter how you slice and dice it, they took about 50 acres of just forest and now it's 170,000 sq. feet of concrete. And there's just no place for the water to go but down (FG1)*
Built environment	*Access local goods and services*	Total comments = 7 FG1 = 1 FG2 = 6	*After I moved here, what I have discovered, especially recently is that is it's possible to go long periods of time living here without using your car. (FG2)*	Total comments = 6 FG1 = 4 FG2 = 2	*I just noticed there seems to be a big economic challenge and I notice that here on the ridge and in North Bend and downtown Snoqualmie a lot of small businesses are closing, or struggling (FG1)*
	Access to I-90	Total comments = 4 FG1 = 2 FG2 = 2	*Cascades . . .another plus for I-90; it goes the other way too (FG1)*	Total comments = 4 FG1 = 0 FG2 = 4	*And the public transit runs the morning and the evening commute routes but the in middle of the day, they don't go. (FG2)*
	Community design	Total comments = 5 FG1 = 0 FG2 = 5	*We looked around at a lot of houses around in unincorporated King County and you would find a nice house but then you look at the rest of the neighborhood and you would be looking at a RV at the rest of your life because that's where they park it across the street. We like the fact that people can't do that here at Snoqualmie Ridge here. . .. (FG2)*	Total comments = 1 FG1 = 0 FG2 = 1	*Being that this is a planned community is a challenge, there's all these covenants and all these plans. . .. and they [residents] wanted to bring up a big box department store. . . the economy the way it is, it is even more of a struggle [to implement design plans] (FG2)*
Social environment	*Community support and integration*	Total comments= 6 FG1 = 6 FG2 = 0	*I just like how it's so networked, there's so many. . .there's three small deep historical cultural groups and it's kind of like no matter where you go, who you touch base with someone knows somebody else. . ..(FG1)*	Total comments = 8 FG1 = 7 FG2 = 1	*We are still four separate communities fighting against each other: "we want this, we want that" rather than coming together as valley and not everyone supporting that sense of community as a whole that's a huge challenge. . .(FG1)*
	Community involvement and services	Total comments = 10 FG1 = 5 FG2 = 5	*We're able to participate in all levels of government here. You can volunteer for the parks board, the arts commission, the library board. It's very easy to be an active member of the community. (FG2)*	Total comments = 3 FG1 = 3 FG2 = 0	*As much as I love it here, we are sadly looking at moving because of the schools. . .There's a lot of people especially down in the lower valley who don't [support the schools. . .] (FG1)*
Future growth	*No benefit comments*	Total comments = 6 FG1 = 4 FG2 = 2	*I think the biggest challenge is the infrastructure, because we developed and then we build more to pay for what you developed and then we need to build some more to pay for that. . .It's this kind of domino effect. . .(FG1)*		

This theme illustrates Snoqualmie Ridge focus group participants' discussion of the rules and regulations regarding the size, scale and design of retail shops in the community. The majority of these participants felt that these additional rules and regulations helped protect the esthetic design of the community, but worry that too many rules may scare off retail services.

4.5. Benefits and challenges: social environment

Our discussion of benefits and challenges of living within Snoqualmie Valley was dominated by concepts found in the *Social Environment* theme (Table 4). One benefit of living in the valley mentioned by focus group participants was the many volunteer opportunities available throughout the community. Focus group participants also praised community services such as the local pool and the Residential Owners Association (ROA) for Snoqualmie Ridge. However, on the other hand, some focus group participants were worried about the long-term investment in some of these community services, particularly the schools and who should pay for these services. Pivo's assessment had predicted more support for environmental protection in the community with the building of Snoqualmie Ridge (Pivo, 1992) and in the most recent election, a maintenance and operations levy for public safety, streets and parks was approved in the City of Snoqualmie (King County, 2012). However this assessment failed to take into account the rising percentage of young families in Snoqualmie Ridge and their public education needs. After a heated debate between the city of Snoqualmie and the school district, the city tripled the impact fee rates on new homes within the city limits to help fund the local school district's capital facilities plan to mitigate for the growing student population; the city of North Bend also passed a similar resolution (McCall, 2012).

The second sub-theme, *Community Support and Integration* (Table 4) includes concepts related to supporting one another and creating and sustaining networks throughout the valley. Focus group participants told anecdotes of lost packages being retrieved by "friends of friends" and learning of common associations when meeting a new person in the community illustrating the benefits of living in a closely networked and supportive community.

However focus group participants also discussed the many challenges of maintaining network ties as the community with the development of Snoqualmie Ridge. Valley residents are struggling with how to maintain a cohesive sense of who they are as "Snoqualmie Valley Residents" in the wake of this development. Many focus group participants especially from the first focus group which included more of mix of residents from historic Snoqualmie, North Bend and Snoqualmie Ridge development, expressed deep concern over how to function together as a community and spoke of one community or another as being to blame for problems such as flooding or limited tax dollars for growing schools in the valley. The social impact assessment carried out prior to the building of Snoqualmie Ridge also predicted change in the social character of the valley, particularly changes to levels of trust, friendship and cooperation (Pivo, 1992). One focus group participant summarized this conflict by stating:

> "The problem is, again, the people who are buying on the Ridge had nothing to do with the planning that mitigation and nothing to do with any of it. . . .We can't blame the people who buy the homes; yeah, we just can't blame them. It's the city councils, and the county councils that make the planning decisions." (FG1)

Comments from residents in the Seattle Times article about the rapid growth of Snoqualmie City reiterated some of the challenges this community faces. One resident called the current situation "*Stepford Ridge v. Snoqualmie Mayberry Valley.*" Another stated that "*It's a very divided community. I wish we were too* [two] *cities, but*

unfortunately we have to go with what the Ridgies want and the destruction . . . to our rural way of life" (Broom, 2011).

4.5.1. Benefits and challenges—future growth

Despite the pointing of fingers between valley residents and Snoqualmie Ridge residents, there was a general feeling in the focus groups interviews that forming a strong community was important to help protect the valley from further change. Focus group participants from both groups voiced some concern over more growth occurring in the valley. Recently, The City of North Bend lifted a 2-year building moratorium, ushering in the potential for new residential development. As one participant stated:

> ". . .We are as far east as you can go and there's nothing till you get over the mountains. Everyone is wanting that to be the farthest away but still get close. . .we all want that sense of small community. When there's this growth that's happening, you know those homes in North Bend, we all have this fear of our sense of community is going to be lost that we are going to turn into another Issaquah [suburb of Seattle]. There's nowhere else to go that's farther that's still within that reach[of the city] and it's that fear of growth—how do we change and still keep our lives, our living?" (FG1)

5. Discussion

From our case study of the Snoqualmie Valley, one can see the many benefits and challenges that a master-planned development may have on the surrounding area. However, previous studies on master-planned communities have largely ignored their regional impact. While our case study is small and limited in scope, it does provide further indications of the regional impacts—both positive and negative—that master-planned communities can have in exurban areas. We found through our analysis that the perceived impact of master-planned communities to natural and built environments compound the impacts to the social environment of the community. For example, the cause of the flooding in the historic Snoqualmie and lower valley is unknown and if it was due to the building of the Snoqualmie Ridge development, it could have been just as easily caused by another large-scale development (or deforestation, for that matter) on the plateau. Nevertheless, the recent floods were added to long list of other build and social impacts that were more directly related to the building of the master-planned community by residents living outside of Snoqualmie Ridge.

The large influx of residents in master-planned communities creates a social divide between those living in the master-planned community and those in the surrounding exurban environment. We see this social wedge develop in the Snoqualmie Valley as residents living outside the master-planned community experience the many impacts associated with the development such as increased population, relocation of municipal services and a transformation of the natural environment. However amidst this current atmosphere of finger pointing between those within the master-planned community and those outside, there is a real concern over how future residential growth with further impact the valley. These concerns over the future development and growth of the Snoqualmie Valley could represent an opportunity to mend the cultural rift between the communities and help city planners and officials steer the direction of governance and civility in the larger community.

The population growth in Snoqualmie Valley must be also viewed through the lens of larger regional implications to the natural and built environments. Increased outdoor recreation opportunities via easy and efficient public lands access was a primary driver in choosing moving to an exurban area in this case study and other studies have shown that residential growth near public lands is occurring at a higher rate (Hammer, Stewart,

Hawbaker, & Radeloff, 2009). This rapid growth rate may impact the conservation goals for nearby public lands (Radeloff et al., 2010) due to the increased recreation which can accelerate soil compaction, wildlife harassment and other impacts (Monz, Cole, Leung, & Marion, 2010). What is not known is how master-planned communities with direct trail linkages to regional trails or public lands—as in the case of Snoqualmie Ridge—are contributing to increased recreation use of these public lands and possibly accelerating impacts to these areas. In other words, do master-planned communities differ in their scope of impact on public lands as opposed to other large exurban residential communities without trail linkages to nearby public lands? Understanding how residents of master-planned communities are accessing and using public lands is needed to facilitate appropriate public lands management goals.

Master-planned communities could also be examined more closely for their effects on the built environment. Master-Planned communities that are constructed with new urbanist oriented design allow residents to walk to nearby shops and services, increasing their opportunity to interact with neighbors (Dietrick & Ellis, 2004) and improving their physical heath through increased physical activity (Rodriguez et al., 2006). However, this study illustrated that a master-planned community also has the potential to facilitate a *less* pedestrian accessible environment for those residing outside the development when key municipal services are relocated away from the original town center. By directly studying exurban communities at risk of losing municipal services and commercial retail to new master-planned communities, we may be able to better ascertain the impacts that moving these services can have on both the physical health and sense of community of those residing outside of the new master-planned community.

Lessons learned from this case study suggest that by not fully integrating the master-planned community design with the existing built and natural environment, developers and planners run the risk of creating two distinct communities that argue about environmental impacts from the development and compete for community services which can inhibit social interactions and sense of community. Community leaders and planners, working with developers of other master-planned communities, may want to more fully consider the types of physical and built environmental impacts that the new master-planned community could have on the surrounding exurban landscape, well before the first residents move in. Most of the social impacts foreseen by Pivo's social assessment of Snoqualmie Ridge have come to pass. Unfortunately, key mitigation measures, such as only having one town center—rather than splitting municipal services and retail between the historic and new communities—were largely ignored by the city and the developers (Pivo, 1992). Had the community leaders decided to implement these mitigation measures the impacts felt throughout the valley may have been lessen.

6. Conclusions

Master-planned communities continue to rise in popularity, even in an economically depressed housing market. The majority of these new planned communities will be built on greenfield sites in exurban areas because of the space requirements for these developments and the abundance natural amenities and outdoor recreation opportunities offered in these localities. However, as our case study of the Snoqualmie Valley illustrates, master-planned communities built in exurban areas near public lands may have large impacts on a region's natural, built and social environment that many be due to the uniqueness in the design and configuration of a master-planned community. The master-planned community of Snoqualmie Ridge was perceived by focus group participants as changing the social

environment of the valley due to a variety of real and perceived environmental and built impacts such as deforestation, increased flooding, and the relocation of municipal services. Though this case study is limited in size and scope, it provides an essential framework and justification to further explore the natural, built and social impacts that master-planned communities can create in exurban landscape.

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