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Trends in Vacant Single Family Land Values Portland, Oregon 1990 to 2005

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Trends in Vacant Single Family Land Values
Portland, Oregon
1990 to 2005

John L. Hall and Gerard C.S. Mildner

May 2006

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The views, conclusions, and any errors in this report are those of the authors and should not be ascribed to the sponsors or the persons or entities acknowledged.

Introduction

The purpose of this report is to summarize price trends from 1990 to 2005 in vacant land zoned for single family development in the Portland region. While regional housing prices are compiled, tracked, and reported on a regular basis by sources like the Regional Multiple Listing Service (RMLS), information on trends in vacant land sales remains dispersed among independent builders, county assessors, and appraisers. As a consequence, while current and accurate information exists to inform a discussion about regional and local housing policy, relatively limited information exists on which to base discussions of regional and local land polices.

Land is a crucial input in the provision of housing, as a result, the combination of rapid population growth and tight growth management polices in the Portland region would likely lead to land price increases. This report seeks to answer the question, "*How much* have land prices increased in the Portland region since 1990?" This report does not attempt to estimate the price influences of land supply constraints, or the impact of rapid growth in housing demand and population.

In this study, both median and average price levels per acre of land are reported. However, because averages can be more easily influenced by extreme values, either high or low, median values are considered the more reliable measure. The median value measure is also consistent with methods of reporting used in the housing market. Information on vacant land zoned for multi-family development was not included because of insufficient data.

Data, Methods, and Limitations

The lack of a consistent and reliable source for data on residential land sales in a readily accessible format provided the single greatest challenge in conducting this research. As a result this study relied upon multiple data sources to evaluate local market trends. Those sources included Metro's Regional Land Information System (RLIS), a proprietary database from a local appraiser, and ratio studies from county tax assessors' offices in the Portland region. Data collection, methods, and limitations for each data source are discussed below.

Regional Land Information System (RLIS)

Metro maintains a regional information database, known as RLIS, which compiles land, population, and economic data on a quarterly basis. RLIS was developed as a "broad-scale" system for regional planning purposes, and therefore has limited accuracy at the parcel level (Metro website, 2006). To maintain the database, Metro staff collects land sales information from the tax assessors for Clackamas, Multnomah, and Washington Counties in August of each year.

In conjunction with this project, Metro's Data Resource Center (DRC) provided versions of the RLIS database for the period 1996 to 2005. For any given year, the data files

included approximately 45,000 to 65,000 records: However not all of the records were relevant to this analysis. For this project, data were inspected for conformance to the following criteria.

1. Residential zoning.
2. Vacant property.
3. One acre or larger in size.
4. Known sales price.
5. Known date of sale.
6. Sales price representing an "arm's length" transaction.
7. The land transaction is not a duplicate of another record based on sales date, price, and parcel size.

An overarching difficulty in using these data results from the fact that RLIS is not designed for time series analysis. For example, a single transaction is often listed in multiple versions of RLIS over time, while other transactions may only have been listed once. From a practical standpoint, this necessitated combining the records for all years, reorganizing the data by year of sale, and eliminating duplicates. The product of these efforts resulted in roughly 200 valid records per year.

Zell & Associates Database

Craig Zell, of Zell & Associates Real Estate Appraisers, allowed PSU research staff limited access to his proprietary database of land sales in the region. Access to this information was provided with the condition that no individual records be released, and that no information from the database be shared with other parties, including the Homebuilders Association. The information in this database proved invaluable. While RLIS is designed to assist in regional planning efforts, the Zell database reflects physical inspection of properties and independent verification of sales prices for the purposes of valuing individual properties. Further, the data is structured around an assessment of the net buildable acres for included properties, thereby providing a slightly different measure in describing changes in regional land values over time. Net buildable acres reflect the impact of development constraints such as wetlands. The Zell database also provided information about Clark County, Washington, which is not available from Metro.

Similar to the procedure outlined above in extracting relevant data from the RLIS database, the Zell data was inspected for conformance to the criteria listed above. This process resulted in 50 to 100 valid observations annually over the 1994 to 2005 period. As a consequence of this relatively small sample, the results from the Zell database are considered more reliable in describing regional rather than county-level trends. However, because all of these sales have been thoroughly investigated, county level median and averages are included in the findings, and are generally consistent with the trends documented with the RLIS data.

County Tax Assessors Ratio Studies

A third source of data regarding land value trends comes from annual ratio studies prepared by local county tax assessors. The county assessors in Clackamas, Clark, Multnomah, and Washington Counties incorporate recent sales into their calculations of changes in land value for various classes of properties. "Adjustment factors" for neighborhoods, market areas, and classes of properties are calculated annually, and can be interpreted as annual percentage changes in market value of each type of property or area. However, only Clackamas and Washington counties maintain separate classifications for vacant residential land, therefore adjustment factors for vacant residential land are presented for only those two counties. Neighborhood and county-wide adjustment factors were available for Washington County for the period 1998 to 2005. Adjustment factors were available for neighborhoods within Clackamas County from the mid-1990s to 2005, but no county-wide figures are available.

Key Findings

Regional Vacant Residential Land Price Trends

According to our analysis of RLIS database, the median sales price for vacant land zoned for single family residential development in the Portland metropolitan area rose from approximately $31,400 per acre in 1990 to $186,500 per acre in 2005. These estimates reflect gross acreage, including land needed for infrastructure, open space and utilities.

In percentage terms, this represents an increase of 494 percent over a 15 year period. On an annual basis, land prices rose 12.6 percent per year, considerably above the appreciation of home prices or consumer prices during this period. These changes in value are shown in Table 1 and Figure 1 below. Adjusted for inflation, land values in the region increased 297 percent, or 9.6 percent annually, from 1990 to 2005. In other words, general inflation represented under 40 percent of the change in median value over the period.

Table 1

Percent Change in Median Price Per Acre for Vacant Single Family Residential Land 1990 to 2005 Portland Region

Area	Average Annual Change 1990 to 2005	Total Change In Percent 1990 to 2005
Region	12.6%	494%
Clackamas County	12.3%	469%
Multnomah County	14.2%	633%
Washington County	13.9%	607%

Source: Center for Urban Studies, Portland State University, 2006.

Using the data from Zell & Associates, which reflects changes in land value per net buildable acre, the median value of vacant residential land increased from approximately $47,400 per acre in 1994 to $292,700 per acre in 2005. This represents an increase of 517 percent over an 11 year period, or a change of 18 percent annually. These changes in value are shown in Table 2 and Figure 1 below.

Table 2

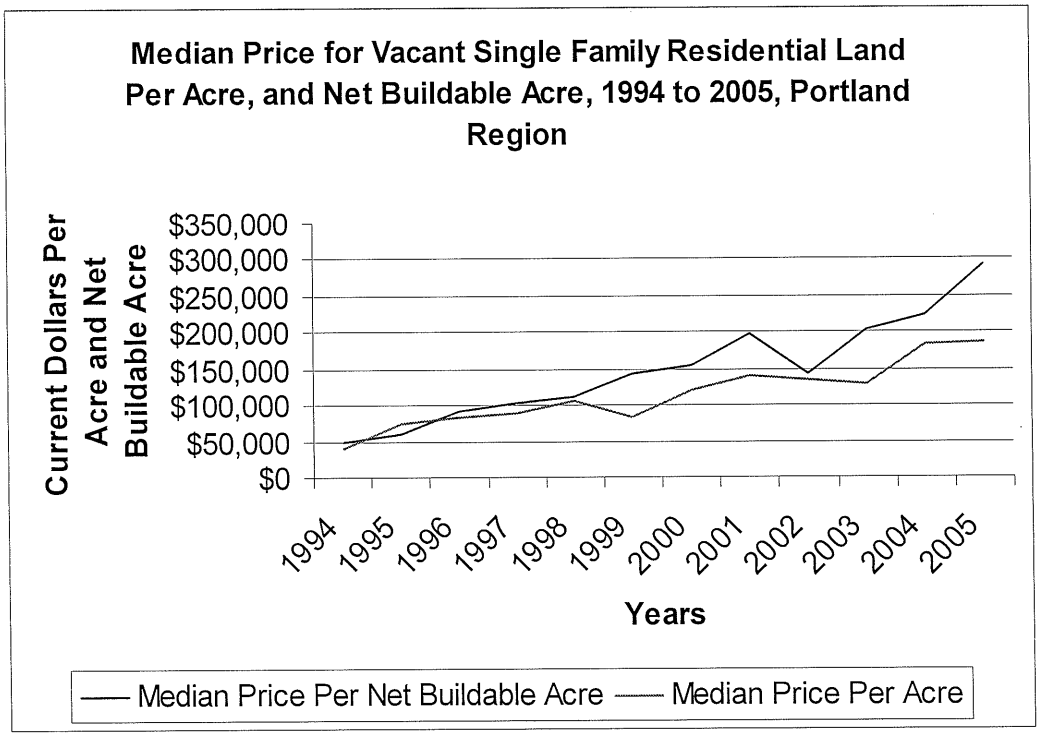
Percent Change in Median Price Per Net Buildable Acre For Vacant Single Family Residential Land 1994 to 2005 Portland Region

Area	Average Annual Change 1994 to 2005	Total Change In Percent 1994 to 2005
Region	18.0%	517%
Clackamas County	14.2%	333%
Clark Co. WA	16.0%	414%
Multnomah County	21.2%	726%
Washington County	21.3%	737%

Source: Center for Urban Studies, Portland State University, 2006.

Adjusted for inflation, the total change in median value, per net buildable acre, from 1994 to 2005 was 397 percent, or 15.7 percent annually. Inflation accounted for less than 30 percent of the change in value, a further indication of the extraordinary increase in land prices during this period.

Figure 1



County-Level Residential Land Price Trends

Trends at the county level, measured in both gross and net buildable acres, reflect these regional trends. Beginning with the data on gross acreage in Table 1, the median price per acre increased by over 600 percent in both Multnomah and Washington counties from 1990 to 2005, or approximately 14 percent annually. In Clackamas County, land value increased 469 percent County over the same period, reflecting a 12.3 percent rate of annual increase. Even after adjusting for inflation, land values in Clackamas County tripled, and values in Multnomah and Washington counties quadrupled over this time period.

Looking at the data in Table 2 on net buildable acreage, the median price per acre increased by over 700 percent in Multnomah and Washington counties from 1994 to 2005 (21 percent annual rate of increase); by over 400 percent in Clark County (16 percent annually); and by 333 percent in Clackamas County (14 percent annually). When adjusted for inflation, values doubled in Clark and Clackamas counties, and increased by over 500 percent in Multnomah and Washington counties. County-level trends in value, as measured in both gross acreage and net buildable acres, are shown in Figures 2 and 3, respectively.

Figure 2

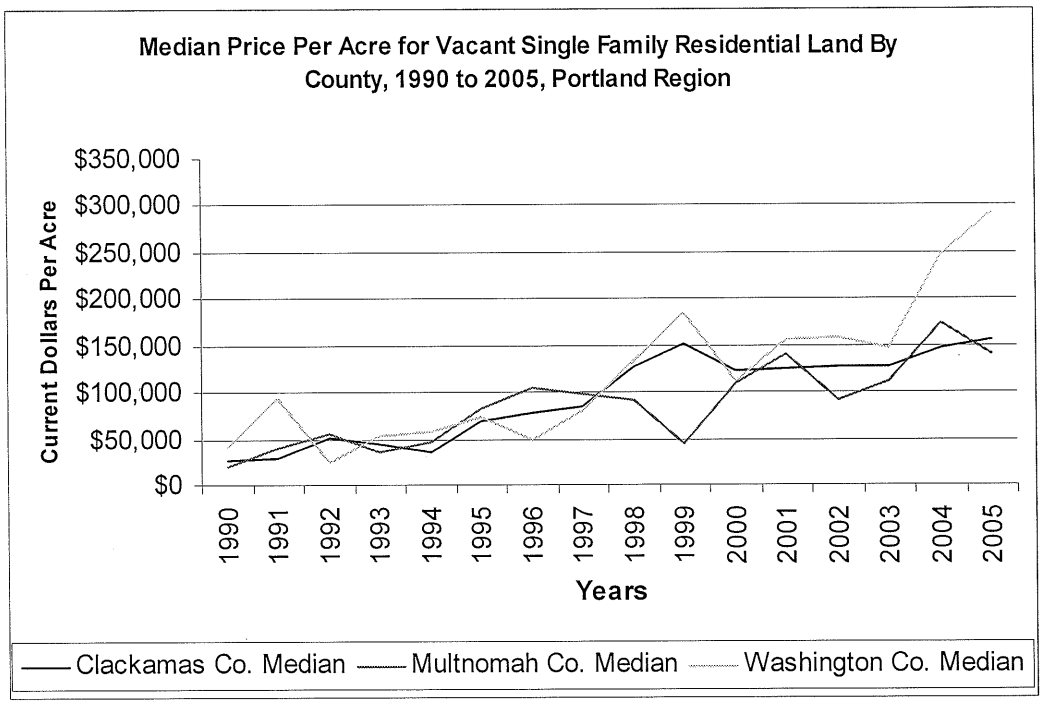
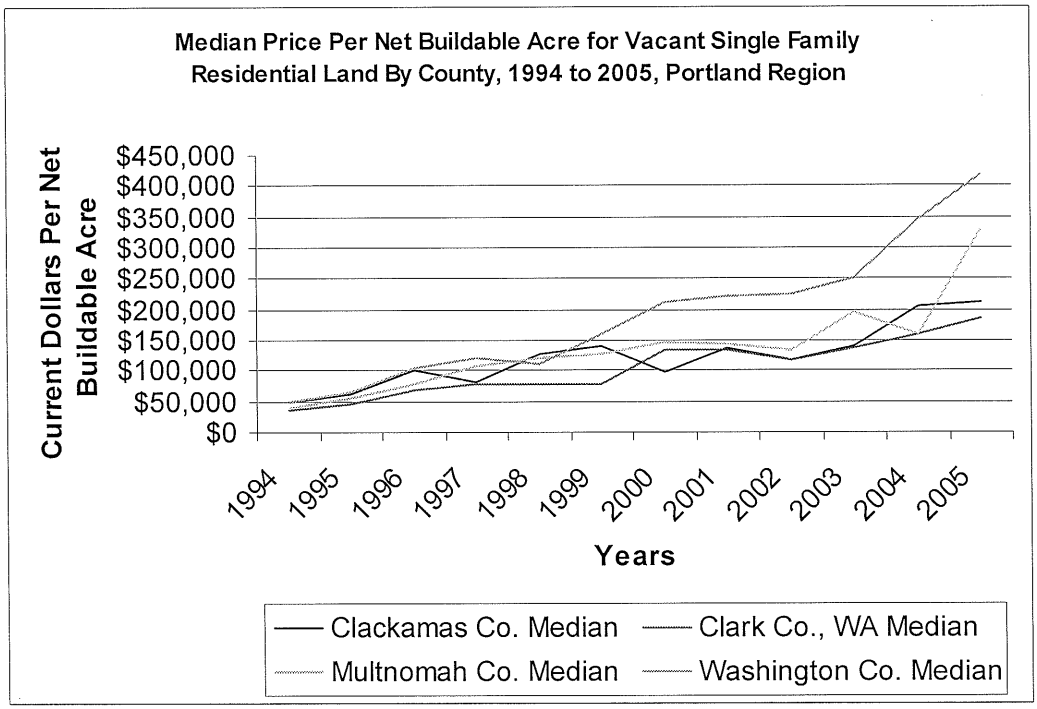


Figure 3



Washington County Vacant Residential Land Adjustment Factors

"Adjustment factors" are developed by county tax assessors to adjust assessed property values based on recent sales. Specifically, an adjustment factor is an average ratio of sales price to last year's assessed value, and can be interpreted as an annual average percent change in land value. The Washington County Department of Assessment and Taxation reports adjustment factors in their annual Ratio Studies. The adjustment factors for vacant land (Class 100) are shown as annual increases in Table 3, column 2, below. In order to account for the influence of inflation, an index was created, shown in column 3, and adjusted using the Consumer Price Index (CPI) to produce the real price increases shown in the last column. As shown in Table 3, based on the county assessors' vacant land class adjustment factors nominal land prices tripled and real land prices doubled for vacant residential land over the period 1990 to 2005.

Table 3				
Vacant Residential Land Price Adjustment Factors				
Nominal and Inflation Adjusted				
1990 to 2005				
Year	Annual Increase	Price Index 1989=100	CPI-U 1982-84=100	Real Price Index 1989=100
1990	6	106	130.5	100.0
1991	17	123	136.2	111.3
1992	8	131	140.5	115.0
1993	20	151	144.5	131.0
1994	20	171	148.4	147.1
1995	15	186	152.6	157.9
1996*	12	198	157.0	165.5
1997	12	210	160.4	174.1
1998	8	218	163.2	179.3
1999	8	226	166.7	183.8
2000	8	234	172.7	185.8
2001	7	241	177.4	188.1
2002	10	251	180.0	195.5
2003	7	258	183.8	198.7
2004	11	269	189.2	204.3
2005	16	285	195.1	214.4
*Estimated				
Source: Department of Assessment and Taxation, Washington County, Oregon, Ratio Studies, 1990 to 2005; Center for Urban Studies, Portland State University, 2006.				

Conclusions

This study has looked changes in land values in the three main Oregon counties in the Portland, Oregon metropolitan region between 1990 and 2005, using a variety of sources. This time period has seen rapid escalation of land prices, and this report has tried to document those changes using a variety of sources.

Using data from the Regional Land Information System (RLIS) database developed by Metro, the median 2005 sales price for vacant residential land is approximately $187,000 per acre, with the most expensive land in the relatively fast growing Washington County, and lower prices in Clackamas County and Multnomah County. According to this source, the average annual rate of increase in land prices in the 1990-2005 period was 14.6 percent per year.

Using proprietary data from the Zell Associates real estate appraisal firm, we estimated the median sales price for vacant residential land at approximately $293,000 per net buildable acre, with the most expensive land in Washington County, followed by land in Multnomah County and Clackamas County. We calculated the annual rate of increase in

vacant single family residential land at 12.6 percent per year for total acreage in 1990 to 2005, and 18.0 percent per year for net buildable acreage for 1994 to 2005.

The differences in these figures represent different data collection techniques, slightly different time periods, and differences in the definition of the observation (total acreage versus net buildable acreage). Because of floodplain, terrain, and infrastructure requirements, net buildable acreage from a given parcel will be much smaller (and more valuable per acre) than its total acreage. Nevertheless, the differences between these growth rates is not as great as the differences between these numbers and zero or between these numbers and the inflation rate during this time period. That is, land prices in the region have been increasingly rapidly, well beyond the rate of inflation.

We also note that consistently in both data sources, average prices rank considerably higher than median prices for vacant land, reflecting the enormous variation in land prices depending upon location, accessibility, and environmental constraints, including topography and floodplain. That is, the sample of land sales includes some very highly valued parcels, which raise the average land price considerably higher - almost twice as high - as the median land price.

Finally, this study took advantage of existing work by County tax assessors in the region and used their estimates of the annual rate of price increase for vacant residential land. The most consistent data series came from the Washington County tax assessor, which estimated the annual average increase in land prices at 11.6 percent per year for the 1989 to 2005 period. We also report findings in the Appendix from the Washington County tax assessor's ratio studies of vacant residential tract land, which reports an even higher rate of increase. Since tract land is a closer approximation of usable or buildable land, these higher rates are probably a closer approximation of the impact of rising land prices on residential development.

This study documented the rapid increase in land prices in the 1990 to 2005 period in the Portland region. However, we did not attempt to document the causes of the increase in land prices, which include rising population pressures, lower interest rates, rising incomes, as well as supply constraints imposed by local and regional governments. Oregon is known as a state with a unique system of regional planning that requires urban growth boundaries imposed surrounding all urban areas of the state, and a number of analysts have argued that these constraints have impacted land prices and housing prices in the region. This report does not take a stand on these issues, but we hope that the data series developed in this report will help improve understanding of these issues.

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Table 1 Percent Change in Median Price Per Acre for Vacant Single Family Residential Land 1990 to 2005 Portland Region		
Area	**Average Annual Change 1990 to 2005**	**Total Change In Percent 1990 to 2005**
Region	12.6%	494%
Clackamas County	12.3%	469%
Multnomah County	14.2%	633%
Washington County	13.9%	607%

Source: Center for Urban Studies, Portland State University, 2006.

Table 2 Percent Change in Median Price Per Net Buildable Acre for Vacant Single Family Residential Land 1994 to 2005 Portland Region		
Area	**Average Annual Change 1994 to 2005**	**Total Change In Percent 1994 to 2005**
Region	18.0%	517%
Clackamas County	14.2%	333%
Clark Co. WA	16.0%	414%
Multnomah County	21.2%	726%
Washington County	21.3%	737%

Source: Center for Urban Studies, Portland State University, 2006.

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Year	**Annual Increase**	**Price Index 1989=100**	**CPI-U 1982-84=100**	**Real Price Index 1989=100**
1990	6	106	130.5	100.0
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2003	7	258	183.8	198.7
2004	11	269	189.2	204.3
2005	16	285	195.1	214.4
*Estimated				
Source: Department of Assessment and Taxation, Washington County, Oregon, Ratio Studies, 1990 to 2005; Center for Urban Studies, Portland State University, 2006.				

Table 4 Percent Change in Average Price Per Acre for Vacant Single Family Residential Land 1990 to 2005 Portland Region		
Area	**Average Annual Change 1990 to 2005**	**Total Change In Percent 1990 to 2005**
Region	14.6%	675%
Clackamas County	13.7%	585%
Multnomah County	11.5%	408%
Washington County	19.2%	1,300%

Source: Center for Urban Studies, Portland State University, 2006.

Table 5 Prices Per Acre for Vacant Single Family Residential Land 2005 Portland Region		
Area	**Median 2005 Sales Price**	**Average 2005 Sales Price**
Region	$186,533	$338,717
Clackamas County	$156,947	$282,072
Multnomah County	$139,998	$161,601
Washington County	$291,877	$673,585

Source: Center for Urban Studies, Portland State University, 2006. Calculated from Metro's Regional Land Inventory System (RLIS).

Table 6
Median Price Per Acre for Vacant Single Family Residential Land
Portland Region, 1990 to 2005

Area	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Region	$31,410	$25,639	$52,272	$39,562	$41,006	$75,728	$82,305	$87,664	$106,998	$83,980	$119,317	$141,808	$133,783	$127,741	$183,252	$186,533
Clackamas	$27,603	$28,107	$50,332	$44,605	$36,516	$68,648	$77,836	$85,194	$127,792	$152,353	$122,058	$125,104	$126,378	$126,222	$147,640	$156,947
Multnomah	$19,097	$39,360	$56,615	$36,350	$46,746	$81,841	$105,414	$97,533	$91,943	$45,461	$109,032	$140,305	$91,959	$110,739	$174,768	$139,998
Washington	$41,248	$93,518	$25,433	$53,725	$58,473	$73,791	$50,084	$80,628	$134,148	$184,980	$110,851	$155,816	$159,316	$147,587	$248,452	$291,877

Source: Center for Urban Studies, Portland State University, 2006. Calculated from Metro's Regional Land Information System (RLIS).

Table 7
Change in Median Price Per Acre for Vacant Single Family Residential Land
Portland Region, 1990 to 2005

Area	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Region	NA	-18.4%	103.9%	-24.3%	3.7%	84.7%	8.7%	6.5%	22.1%	-21.5%	42.1%	18.8%	-5.7%	-4.5%	43.5%	1.8%
Clackamas	NA	1.8%	79.1%	-11.4%	-18.1%	88.0%	13.4%	9.5%	50.0%	19.2%	-19.9%	2.5%	1.0%	-0.1%	17.0%	6.3%
Multnomah	NA	106.1%	43.8%	-35.8%	28.6%	75.1%	28.8%	-7.5%	-5.7%	-50.6%	139.8%	28.7%	-34.5%	20.4%	57.8%	-19.9%
Washington	NA	126.7%	-72.8%	111.2%	8.8%	26.2%	-32.1%	61.0%	66.4%	37.9%	-40.1%	40.6%	2.2%	-7.4%	68.3%	17.5%

Source: Center for Urban Studies, Portland State University, 2006. Calculated from Metro's Regional Land Information System (RLIS).

Table 8
Average Price Per Acre for Vacant Single Family Residential Land
Portland Region, 1990 to 2005

Area	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Region	$43,693	$57,978	$110,000	$82,154	$118,448	$151,264	$160,247	$226,079	$168,321	$180,634	$218,394	$193,630	$178,365	$293,588	$268,030	$338,717
Clack.	$41,209	$88,959	$92,132	$95,581	$100,287	$205,731	$117,163	$144,821	$183,623	$326,804	$314,463	$185,849	$208,674	$217,765	$202,069	$282,072
Mult.	$31,799	$56,165	$123,195	$71,958	$134,332	$130,636	$204,537	$293,431	$127,071	$119,456	$180,303	$203,688	$139,675	$286,235	$258,650	$161,601
Wash.	$48,109	$179,948	$62,967	$87,509	$65,170	$70,438	$257,807	$108,919	$242,135	$200,658	$112,381	$194,012	$197,465	$377,560	$385,747	$673,585

Source: Center for Urban Studies, Portland State University, 2006. Calculated from Metro's Regional Land Information System (RLIS).

Table 9
Change in Average Price Per Acre for Vacant Single Family Residential Land
Portland Region, 1990 to 2005

Area	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Regional Change	NA	32.7%	89.7%	-25.3%	44.2%	27.7%	5.9%	41.1%	-25.5%	7.3%	20.9%	-11.3%	-7.9%	64.6%	-8.7%	26.4%
Clackamas	NA	115.9%	3.6%	3.7%	4.9%	105.1%	-43.1%	23.6%	26.8%	78.0%	-3.8%	-40.9%	12.3%	4.4%	-7.2%	39.6%
Multnomah	NA	76.6%	119.3%	-41.6%	86.7%	-2.8%	56.6%	43.5%	-56.7%	-6.0%	50.9%	13.0%	-31.4%	104.9%	-9.6%	-37.5%
Washington	NA	274.0%	-65.0%	39.0%	-25.5%	8.1%	266.0%	-57.8%	122.3%	-17.1%	-44.0%	72.6%	1.8%	91.2%	2.2%	74.6%

Source: Center for Urban Studies, Portland State University, 2006. Calculated from Metro's Regional Land Information System (RLIS).

Table 10 Percent Change in Average Price Per Net Buildable Acre for Vacant Single Family Residential Land 1994 to 2005 Portland Region		
Area	**Average Annual Change 1994 to 2005**	**Total Change In Percent 1994 to 2005**
Region	15.7%	397%
Clackamas County	12.5%	266%
Clark Co. WA	22.8%	301%
Multnomah County	7.2%	114%
Washington County	21.0%	711%

Source: Center for Urban Studies, Portland State University, 2006.

Table 11 Price Per Net Buildable Acre for Vacant Single Family Residential Land 2005 Portland Region		
Area	**Median 2005 Sales Price**	**Average 2005 Sales Price**
Region	$292,724	$320,449
Clackamas County	$213,264	$219,652
Clark Co. WA	$185,484	$206,340
Multnomah County	$317,738	$329,240
Washington County	$418,806	$460,455

Source: Center for Urban Studies, Portland State University, 2006. Calculated from proprietary database from Zell & Associates appraisers.

Table 12
Median Price Per Net Buildable Acre for Vacant Single Family Residential Land
1994 to 2005

Area	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Region	$47,412	$61,083	$92,606	$102,483	$110,733	$142,977	$154,706	$197,370	$143,873	$203,000	$225,000	$292,724
Clackamas	$49,208	$62,194	$100,000	$80,385	$125,711	$141,401	$97,377	$138,570	$118,696	$140,334	$204,340	$213,264
Clark Co., WA	$36,111	$46,979	$70,074	$79,537	$79,498	$79,411	$132,159	$132,814	$115,942	$136,758	$158,823	$185,484
Multnomah	$39,873	$54,818	$78,125	$107,562	$119,602	$128,770	$145,187	$141,871	$135,190	$195,540	$158,858	$329,240
Washington	$50,020	$65,705	$103,163	$119,088	$109,961	$160,436	$210,543	$221,236	$226,005	$250,671	$344,037	$418,806

Source: Center for Urban Studies, Portland State University, 2006. Calculated from proprietary database of Zell & Associates appraisers.

Table 13
Change in Median Price Per Net Buildable Acre for Vacant Single Family Residential Land
1994 to 2005

Area	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Regional Change	NA	28.8%	51.6%	10.7%	8.1%	29.1%	8.2%	27.6%	-27.1%	41.1%	10.8%	30.1%
Clackamas Co.	NA	26.4%	60.8%	-19.6%	56.4%	12.5%	-31.1%	42.3%	-14.3%	18.2%	45.6%	4.4%
Clark Co., WA	NA	30.1%	49.2%	13.5%	0.0%	-0.1%	66.4%	0.5%	-12.7%	18.0%	16.1%	16.8%
Multnomah Co.	NA	37.5%	42.5%	37.7%	11.2%	7.7%	12.7%	-2.3%	-4.7%	44.6%	-18.8%	107.3%
Washington Co.	NA	31.4%	57.0%	15.4%	-7.7%	45.9%	31.2%	5.1%	2.2%	10.9%	37.2%	21.7%

Source: Center for Urban Studies, Portland State University, 2006. Calculated from proprietary database of Zell & Associates appraisers.

Table 14
Average Price Per Net Buildable Acre for Vacant Single Family Residential Land
1994 to 2005

Area	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Regional Average	$64,511	$71,783	$111,927	$125,713	$148,351	$183,909	$161,662	$216,545	$181,845	$237,028	$246,852	$320,449
Clackamas Co.	$60,034	$71,750	$152,736	$155,428	$190,448	$188,456	$88,426	$161,379	$155,194	$173,574	$199,186	$219,652
Clark Co., WA	$51,524	$50,004	$66,336	$79,085	$94,716	$76,683	$135,422	$150,886	$138,036	$136,355	$163,938	$206,340
Multnomah Co.	$148,550	$56,472	$88,008	$119,924	$195,958	$156,993	$150,647	$128,119	$178,722	$183,656	$161,793	$317,738
Washington Co.	$56,767	$81,383	$104,966	$129,736	$141,290	$160,740	$206,238	$283,890	$261,730	$300,947	$352,158	$460,455

Source: Center for Urban Studies, Portland State University, 2006. Calculated from proprietary database of Zell & Associates appraisers.

Table 15
Change in Average Price Per Net Buildable Acre for Vacant Single Family Residential Land
1994 to 2005

Area	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Regional Change	NA	11.3%	55.9%	12.3%	18.0%	24.0%	-12.1%	33.9%	-16.0%	30.3%	4.1%	29.8%
Clackamas Co.	NA	19.5%	112.9%	1.8%	22.5%	-1.0%	-53.1%	82.5%	-3.8%	11.8%	14.8%	10.3%
Clark Co., WA	NA	-3.0%	32.7%	19.2%	19.8%	-19.0%	76.6%	11.4%	-8.5%	-1.2%	20.2%	25.9%
Multnomah Co.	NA	-62.0%	55.8%	36.3%	63.4%	-19.9%	-4.0%	-15.0%	39.5%	2.8%	-11.9%	96.4%
Washington Co.	NA	43.4%	29.0%	23.6%	8.9%	13.8%	28.3%	37.7%	-7.8%	15.0%	17.0%	30.8%

Source: Center for Urban Studies, Portland State University, 2006. Calculated from proprietary database of Zell & Associates appraisers.

Table 16
CLACKAMAS COUNTY DEPARTMENT OF ASSESSMENT AND TAXATION
SUMMARY OF FINAL RATIO STUDY MARKET ADJUSTMENTS
by YEAR FOR VACANT LAND BY NEIGHBORHOOD
Adjustments indicated are percentage change.

N.HOOD CODE	NEIGHBORHOOD NAME	1992 ADJ	1993 ADJ	1994 ADJ	1995 ADJ	1996 ADJ	1997 ADJ	1998 ADJ	1999 ADJ	2000 ADJ	2001 ADJ	2002 ADJ	2003 ADJ	2004 ADJ	2005* ADJ
11011	CITY OF MILWAUKIE	-3	12	14	10	10	19	10	8	5	4	6	5	5	10
11021	MILWAUKIE NEWER SUBDIVISIONS	-3	12	14	10	12	11	14	5	5	4	6	5	5	10
11031	WAVERLY/GARTHWICK	16	4	8	11	10	3	5	8	5	4	-1	6	20	12
11051	OVERLAND PARK	-3	12	14	10	10	5	4	8	5	4	6	5	5	10
11061	HAPPY VALLEY NEWER SUBDIVISIONS	N/A	N/A	N/A	N/A	5	12	-3	6	2	4	0	6	10	8
11071	SUNNYSIDE SUBDIVISIONS	5	3	2	12	10	2	8	1	2	4	2	6	11	8
11081	HAPPY VALLEY	N/A	N/A	N/A	N/A	0	9	10	10	2	4	0	6	10	8
11111	WILLAMETTE RIVER NORTH	N/A	N/A	N/A	0	0	2	8	1	-5	3	1	1	14	5
13031	HOLCOMB AREA	N/A	3	15	19	12	12	10	10	3	3	5	4	2	12
13041	OREGON CITY OLDER	N/A	5	15	9	20	12	10	10	3	3	5	4	2	12
13051	OREGON CITY BLUFF PROPERTY	N/A	0	7	5	10	11	10	10	0	3	5	4	2	12
13061	OREGON CITY NEWER	N/A	0	20	11	4	11	10	10	3	3	5	4	2	12
13071	OREGON CITY NEWER SUBDIVISIONS	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2	3	5	4	2	12
13081	OREGON CITY RURAL	N/A	4	11	12	22	15	2	9	2	0	4	4	9	11
13141	CARUS	N/A	8	22	10	22	15	2	9	2	0	1	4	9	11
12081	REDLAND	16	8	11	16	37	15	8	16	0	0	4	4	9	11
14011	GLADSTONE OLD TOWN	N/A	N/A	N/A	N/A	5	11	3	10	3	4	3	3	5	12
14021	GLADSTONE NEWER	N/A	N/A	N/A	N/A	0	11	3	10	3	4	3	3	5	10
13021	JENNINGS LODGE	N/A	N/A	N/A	N/A	8	3	3	10	3	3	5	3	5	10
	Lake Oswego Neighborhoods														
14221	RIVERWOOD	N/A	N/A	N/A	0	1	0	11	10	5	3	1	5	8	12
14231	GLENMORRIE	N/A	N/A	N/A	0	1	12	11	10	5	3	4	5	8	12
14241	MARYLHURST	N/A	N/A	0	4	6	0	-5	10	5	3	4	5	8	12
14251	SKYLANDS	N/A	N/A	N/A	N/A	0	1	12	11	14	10	4	5	8	12
14271	HALLINAN	N/A	N/A	N/A	0	1	12	11	10	5	3	4	5	8	12
14291	SOUTH LAKE OSWEGO RURAL	N/A	N/A	N/A	0	1	11	1	9	5	3	4	5	8	12
14351	LAKE OSWEGO SOUTH SIDE OLDER	N/A	N/A	N/A	0	1	12	11	10	5	3	4	5	8	12
14371	MAIN LAKE FRONTAGE	N/A	N/A	N/A	0	0	11	-3	15	2	10	-1	9	2	12
14391	PALISADES TERRACE	N/A	N/A	N/A	0	1	12	11	10	5	3	4	5	8	12
14411	THE GREEN	N/A	N/A	N/A	0	1	12	11	10	5	3	4	5	8	12
14431	BRYANT WOODS/INDIAN CREEK	N/A	N/A	N/A	0	1	12	11	10	5	3	4	5	8	12
14471	LAKE GROVE NEWER	N/A	N/A	N/A	0	1	12	11	10	5	3	4	5	8	12
14491	LAKE GROVE OLDER	N/A	N/A	0	0	1	12	11	10	5	3	4	5	8	12
14551	CANAL FRONTAGE	N/A	N/A	N/A	0	4	10	5	5	16	3	1	10	8	6
14571	WESTRIDGE/UPPER PALISADES	N/A	N/A	N/A	0	1	12	11	10	5	3	4	5	8	12
14591	RIVER RUN	N/A	N/A	N/A	0	1	12	11	10	5	3	4	5	8	12
14611	PALISADES HEIGHTS	N/A	N/A	N/A	0	1	12	11	10	5	3	4	5	8	12
14631	SOUTH SHORE	N/A	N/A	N/A	0	1	12	11	10	5	3	4	5	8	12
14651	LOWER PALISADES	N/A	N/A	N/A	0	1	12	11	10	5	3	4	5	8	12
14661	LAKE OSWEGO TOWNHOUSES	N/A	N/A	N/A	10	1	12	11	10	5	3	4	5	8	12
14671	MOUNTAIN PARK	N/A	N/A	0	10	1	12	11	10	5	3	4	5	8	12
14681	ROW HOUSES	N/A	N/A	0	0	1	12	11	10	5	3	4	5	8	12
14691	OLD DOWNTOWN (FIRST EDITION)	N/A	N/A	0	12	1	12	11	10	5	3	4	5	8	12
14711	DUNTHORPE	N/A	N/A	5	6	1	12	11	10	5	3	4	5	8	12
14751	LAKE GROVE MEDIUM PRICE	N/A	N/A	0	0	1	12	11	10	5	3	4	5	8	12
14771	LAKE GROVE HIGH PRICE	N/A	N/A	5	5	1	12	11	10	5	3	4	5	8	12
14791	GOODALL ROAD	N/A	N/A	5	8	1	12	11	10	5	3	4	5	8	12
14811	WEMBLEY PARK	N/A	N/A	0	4	1	12	11	10	5	3	4	5	8	12
14831	VILLAGE ON THE LAKE	N/A	N/A	0	12	1	12	11	10	5	3	4	5	8	12
14851	IRON MOUNTAIN	N/A	N/A	0	10	1	12	11	10	5	3	4	5	8	12
14871	GOLF COURSE FRONTAGE	N/A	N/A	0	5	1	12	11	-3	5	3	4	5	8	12
14891	SUNNINGDALE & CUMBERLAND	N/A	N/A	0	0	1	12	11	10	5	3	4	5	8	12
14911	FOREST MEADOWS AND RED FOX	N/A	N/A	0	10	1	12	11	10	5	3	4	5	8	12
14931	LAKEWOOD BAY	N/A	N/A	N/A	0	5	9	3	9	3	4	8	6	10	14
14951	WEST BAY	N/A	N/A	N/A	0	0	0	2	9	20	4	8	6	19	20
15251	OAK GROVE	N/A	N/A	N/A	N/A	0	11	10	11	-3	4	6	3	5	10
15271	NORTH CLACKAMAS	N/A	N/A	N/A	N/A	0	11	10	11	-3	4	6	3	5	10
15431	CLACKAMAS/CARVER	N/A	N/A	N/A	N/A	10	12	6	9	-3	4	6	3	5	10
15451	CARVER/DAMASCUS NEW SUBDIVISIONS	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-3	4	6	3	5	10
15741	CITY OF WILSONVILLE NEWER SUBDIVISIONS	N/A	N/A	N/A	0	0	10	-1	4	5	3	4	5	8	12
15751	CITY OF WILSONVILLE	N/A	N/A	N/A	0	0	10	-1	0	5	3	4	5	8	12
13121	CHARBONNEAU SINGLE FAMILY	N/A	N/A	0	10	4	3	-1	8	-6	4	2	6	4	12
13131	CHARBONNEAU TOWN HOUSES	N/A	N/A	0	4	9	9	0	2	-6	4	3	9	3	12
15831	WEST LINN/WILLAMETTE OLD TOWN	N/A	N/A	N/A	0	10	11	1	5	6	-3	5	4	6	12
15701	BARRINGTON HEIGHTS	N/A	N/A	N/A	6	10	11	3	-2	4	8	9	3	5	12
15771	WEST LINN/WILSONVILLE RURAL	N/A	N/A	N/A	0	0	11	1	9	11	6	4	4	6	12
15881	RURAL ESTATES	N/A	N/A	N/A	0	3	11	1	12	11	6	6	2	0	5
15841	CALAROGA/CEDAR OAKS	N/A	N/A	N/A	0	9	11	16	6	6	-3	5	4	6	12
15851	WILLAMETTE NEWER	N/A	N/A	N/A	-1	10	11	2	6	6	-3	5	4	6	12
15861	WEST LINN NEWER	N/A	N/A	N/A	0	4	10	1	10	6	-3	5	4	6	12
15871	WEST LINN/LAKE OSWEGO RURAL	N/A	N/A	N/A	0	0	11	1	9	11	6	4	4	6	12
15891	CITY OF TUALATIN	N/A	N/A	N/A	-8	3	3	0	6	-3	0	4	5	8	12

*Preliminary

Table 17
WASHINGTON COUNTY DEPARTMENT OF ASSESSMENT AND TAXATION
SUMMARY OF FINAL RATIO STUDY MARKET ADJUSTMENTS
by YEAR FOR VACANT LAND BY NEIGHBORHOOD
Adjustments indicated are percentage change.

N.HOOD CODE		NEIGHBORHOOD NAME	1990 ADJ	1991 ADJ	1992 ADJ	1993 ADJ	1994 ADJ	1995 ADJ	1996 ADJ	1997 ADJ	1998 ADJ	1999 ADJ	2000 ADJ	2001 ADJ	2002 ADJ	2003 ADJ	2004 ADJ	2005* ADJ
		(Current neighborhood definitions)																
		Aloha						6	10	9	6	16	9	7	5	2	11	16
		Beaverton						0	4	12	9	8	8	7	10	2	10	16
		Forest Grove						8	14	11	8	8	8	7	10	1	9	10
		Hillsboro						13	6	11	8	12	8	7	8	12	12	19
		N. of Sunset Hwy.						9	6	10	7	4	8	7	7	6	12	18
		Tigard						17	5	8	5	4	8	7	5	8	14	18
		Tualatin						28	5	9	6	11	8	7	8	8	14	18
		County-Wide Average						N/A	N/A	12	8	8	8	7	10	7	11	16
		(Neighborhood definitions prior to 1995)																
		Sunset Corridor	6	20	8	17	6											
		Beaverton	6	20	8	15	10											
		Catlin Crest/Raleigh Hills	6	20	8	2	18											
		South Murray (SW Beaverton)	6	20	8	7	0											
		SW Aloha	6	20	8	11	10											
		West Aloha/E. Hillsboro	6	20	8	N/A	10											
		NE Hillsboro	6	20	8	N/A	22											
		Tigard	6	20	8	8	15											
		Bull Mountain	6	20	8	-2	-2											
		Cornell Rd./Waterhouse	6	20	8	N/A	2											
		Forest Frove/Gaston	6	20	8	N/A	14											

*Preliminary

Table 18
WASHINGTON COUNTY DEPARTMENT OF ASSESSMENT AND TAXATION
SUMMARY OF FINAL RATIO STUDY MARKET ADJUSTMENTS
by YEAR FOR VACANT TRACT LAND BY NEIGHBORHOOD
Adjustments indicated are percentage change.

N.HOOD CODE		NEIGHBORHOOD NAME	1999 ADJ	2000 ADJ	2001 ADJ	2002 ADJ	2003 ADJ	2004 ADJ	2005* ADJ
		Aloha	N/A	16	12	17	14	13	15
		Beaverton	N/A	20	0	17	14	13	22
		Forest Grove	N/A	4	5	0	7	25	22
		Hillsboro	N/A	16	5	17	3	9	16
		Sunset Highway Area	N/A	16	15	3	20	20	16
		Tigard	N/A	25	5	17	14	14	19
		Tualatin	N/A	14	10	17	9	9	21
		Cornelius	N/A	20	5	N/A	N/A	N/A	N/A
		County-Wide Average	10	16	8	10	11	13	22
		2001 and 2002 county-wide averages estimated by Center for Urban Studies, Portland State University							

*Preliminary

Appendix B

Figures

List of Figures

Figure 1

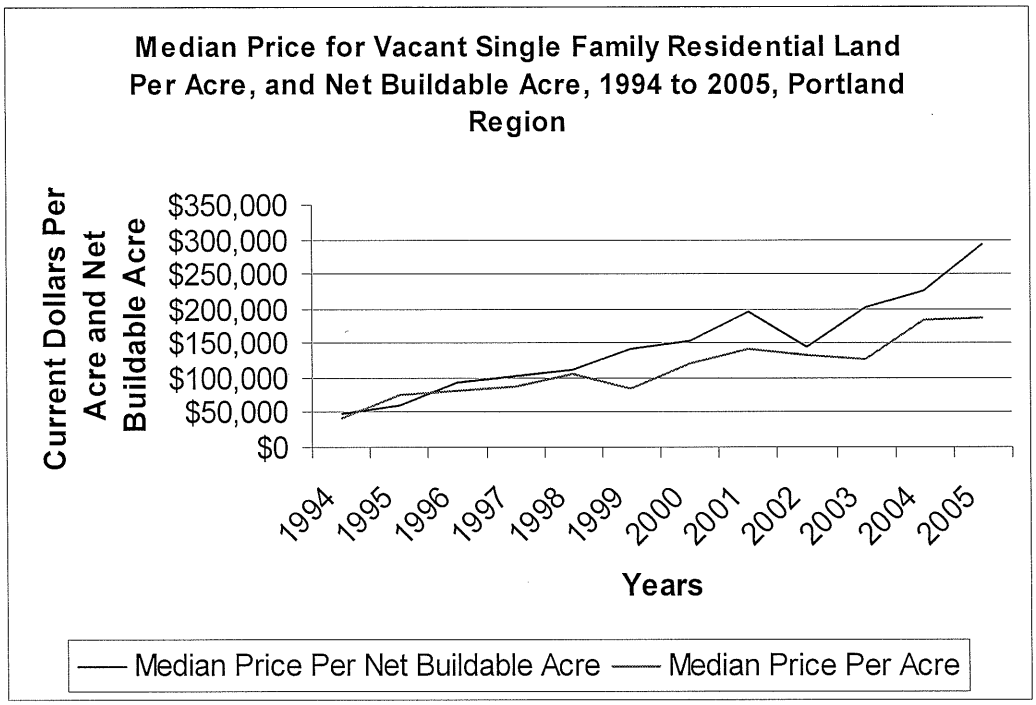

Figure 2

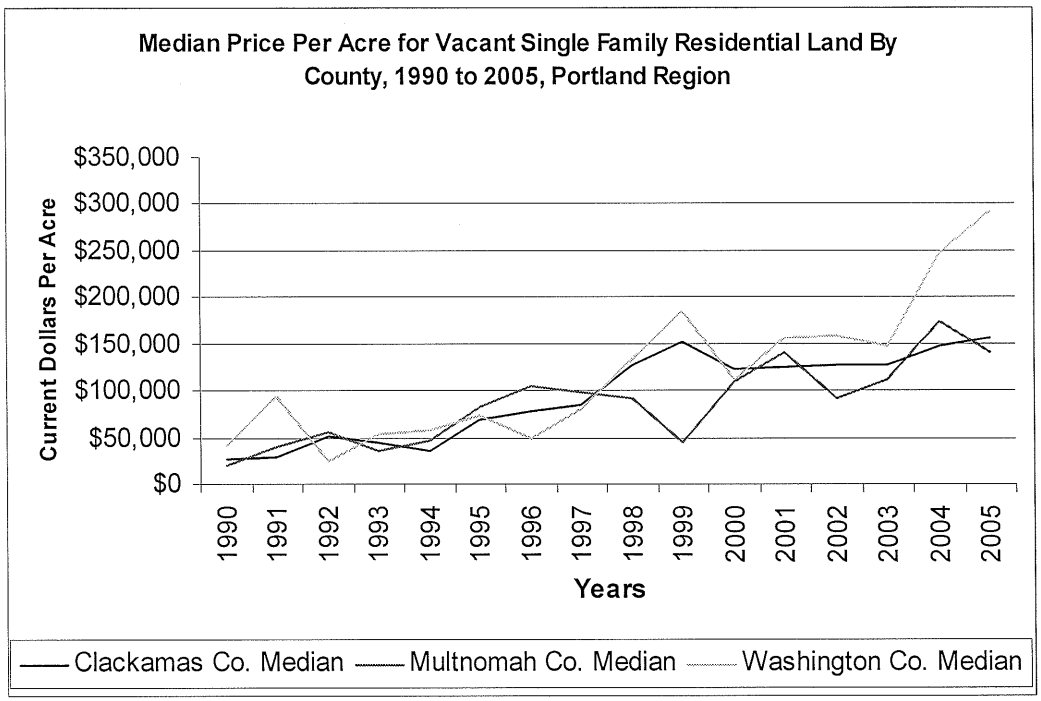

Figure 3

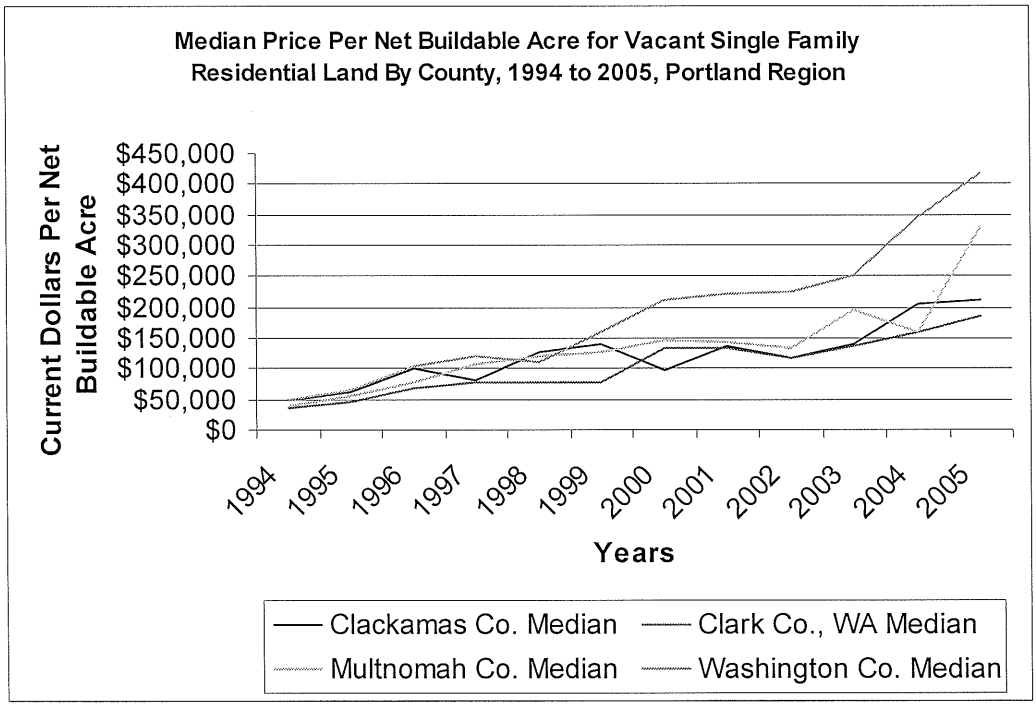

Figure 4

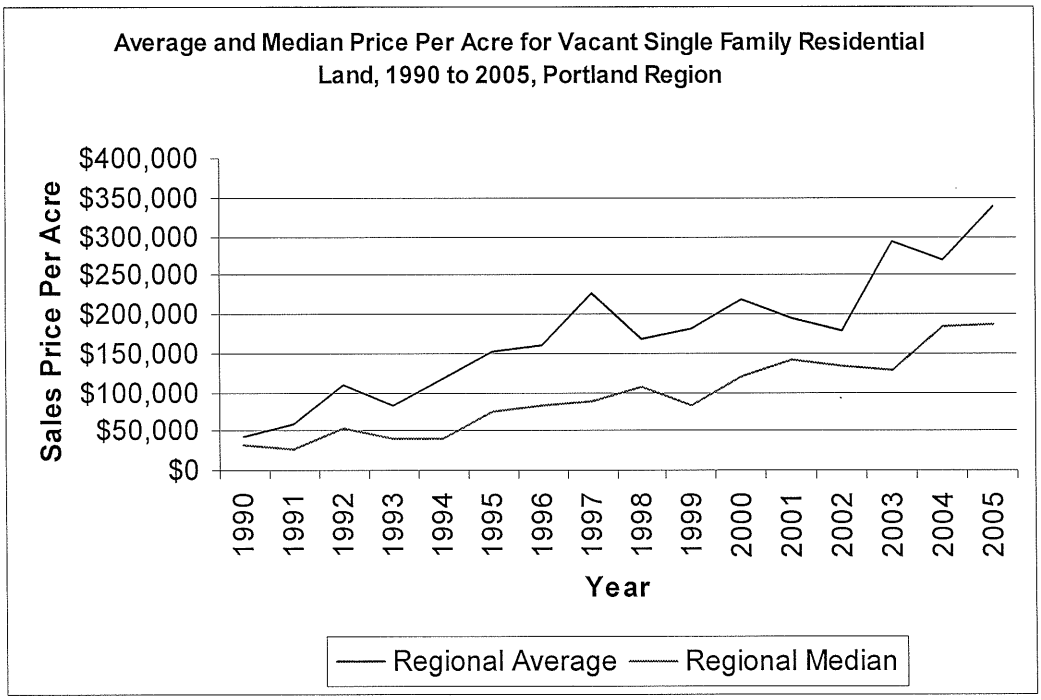

Figure 5

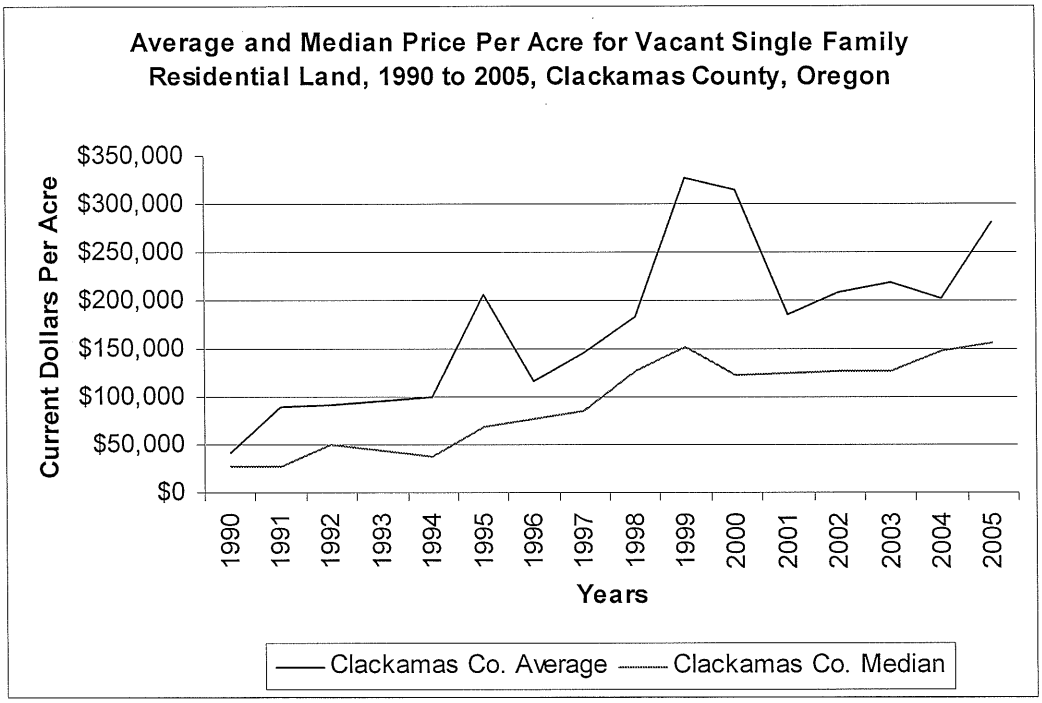

Figure 6

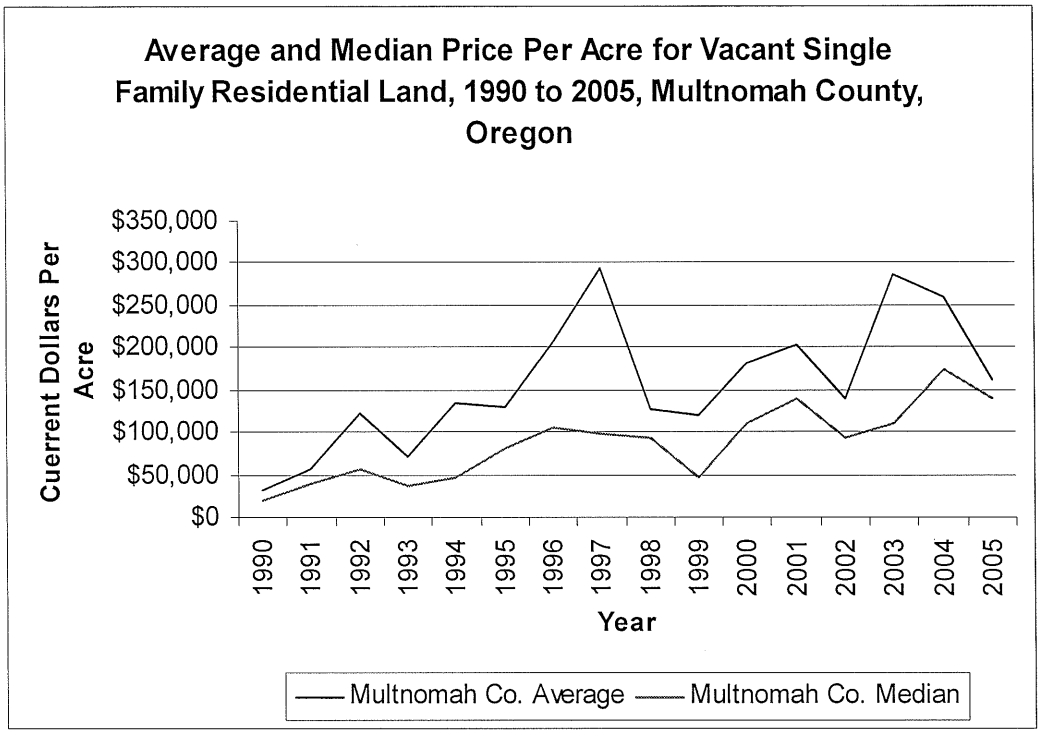

Figure 7

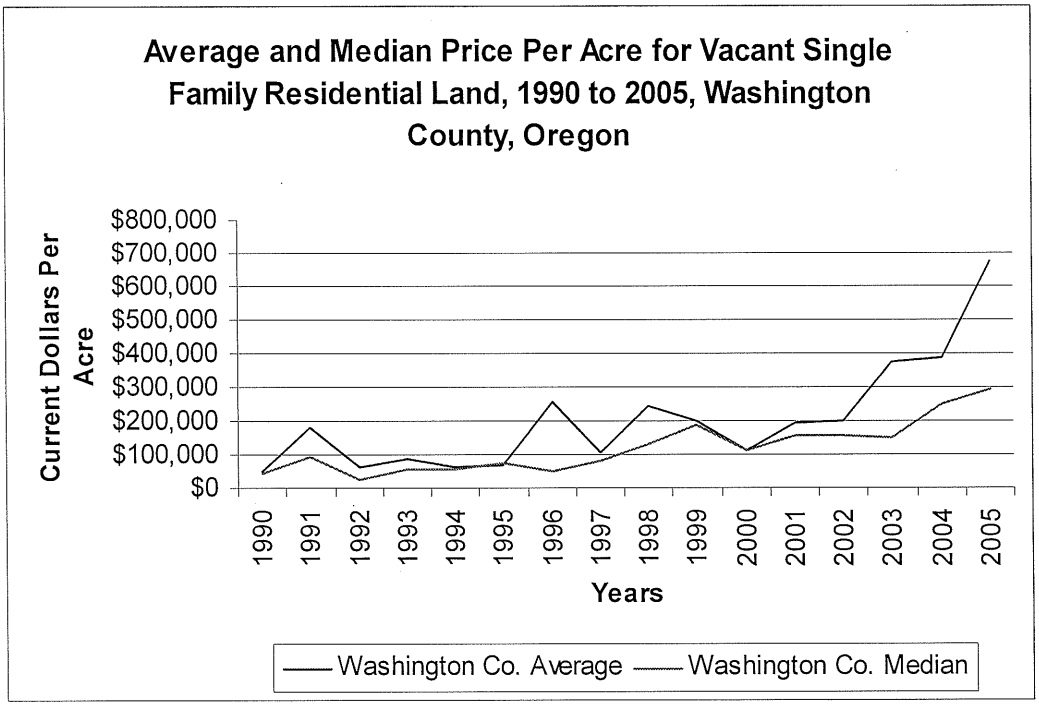

Figure 8

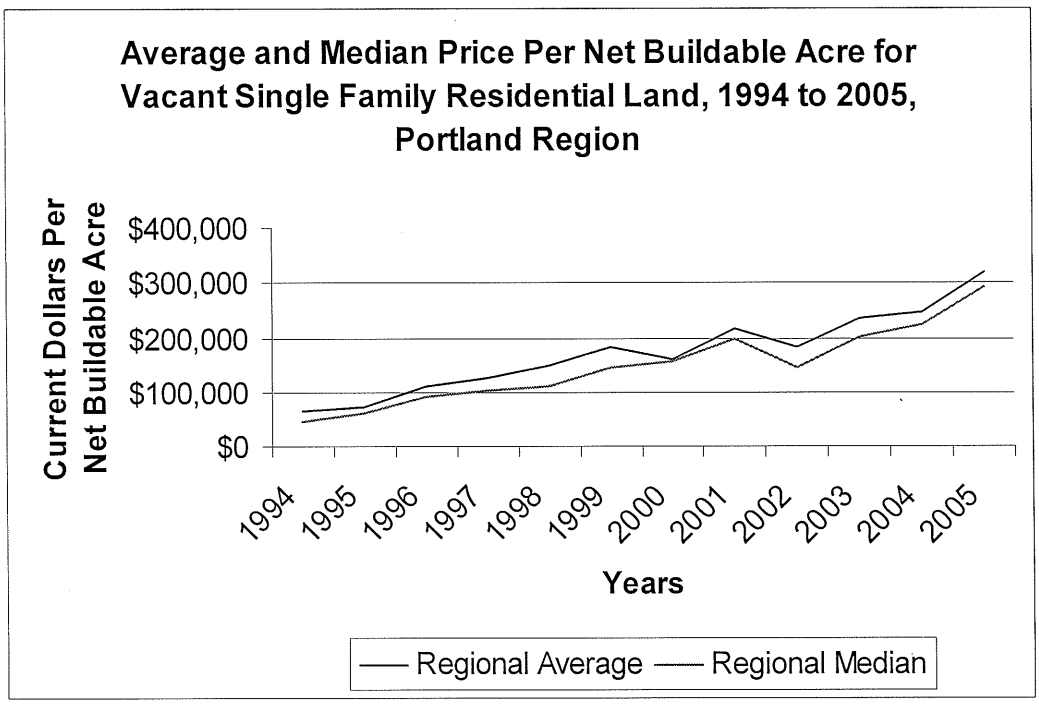

Figure 9

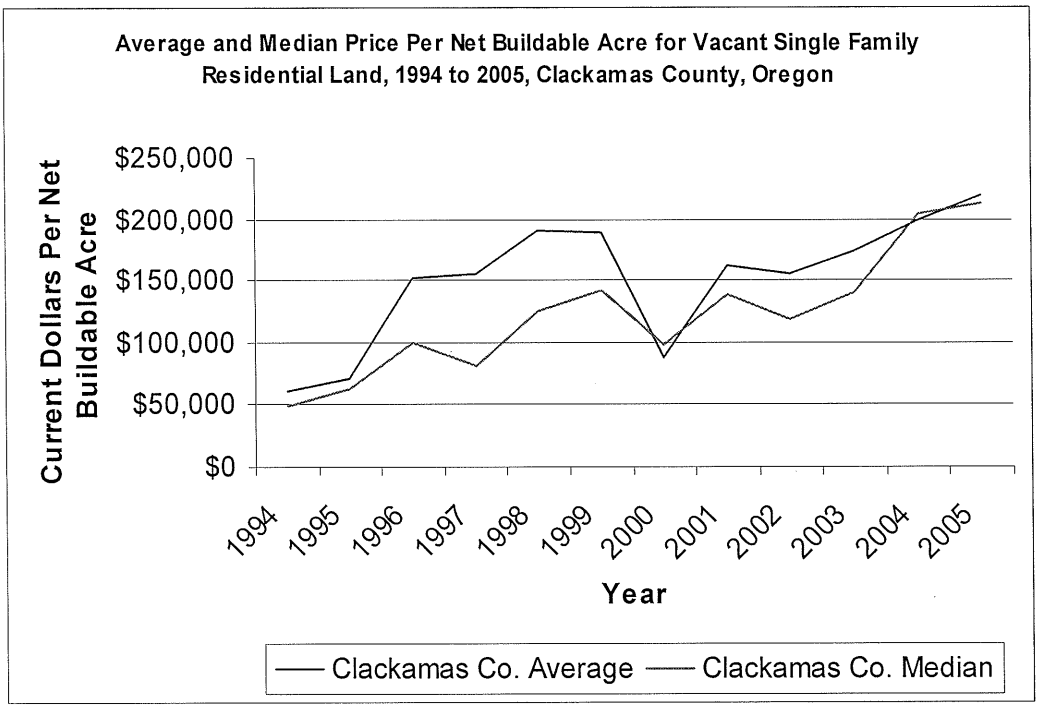

Figure 10

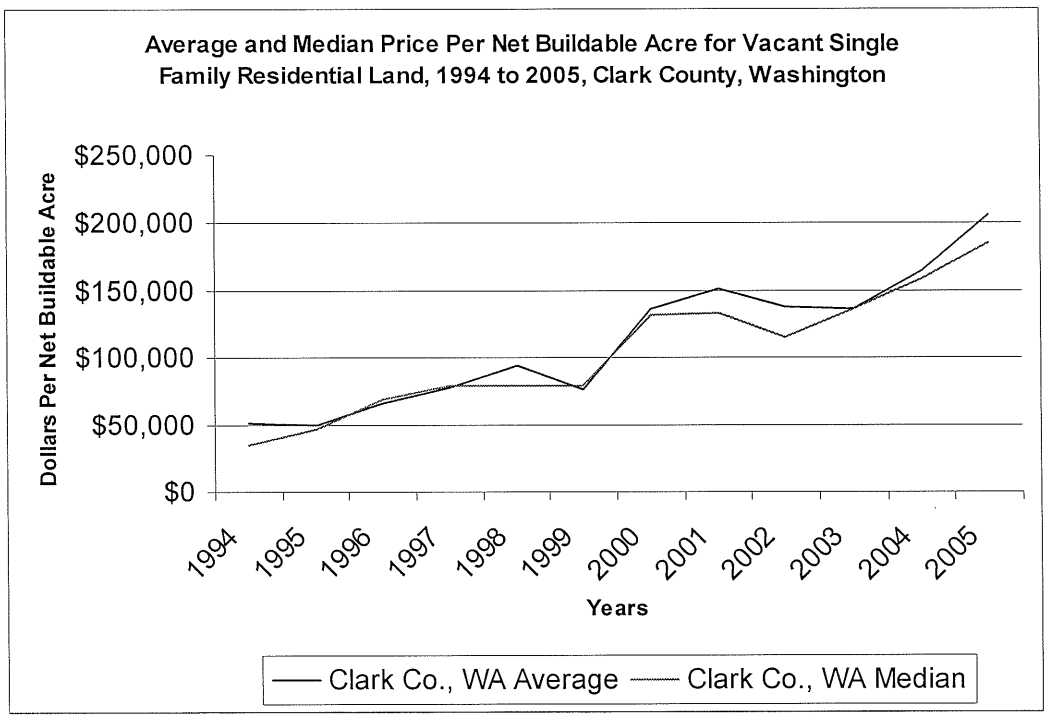

Figure 11

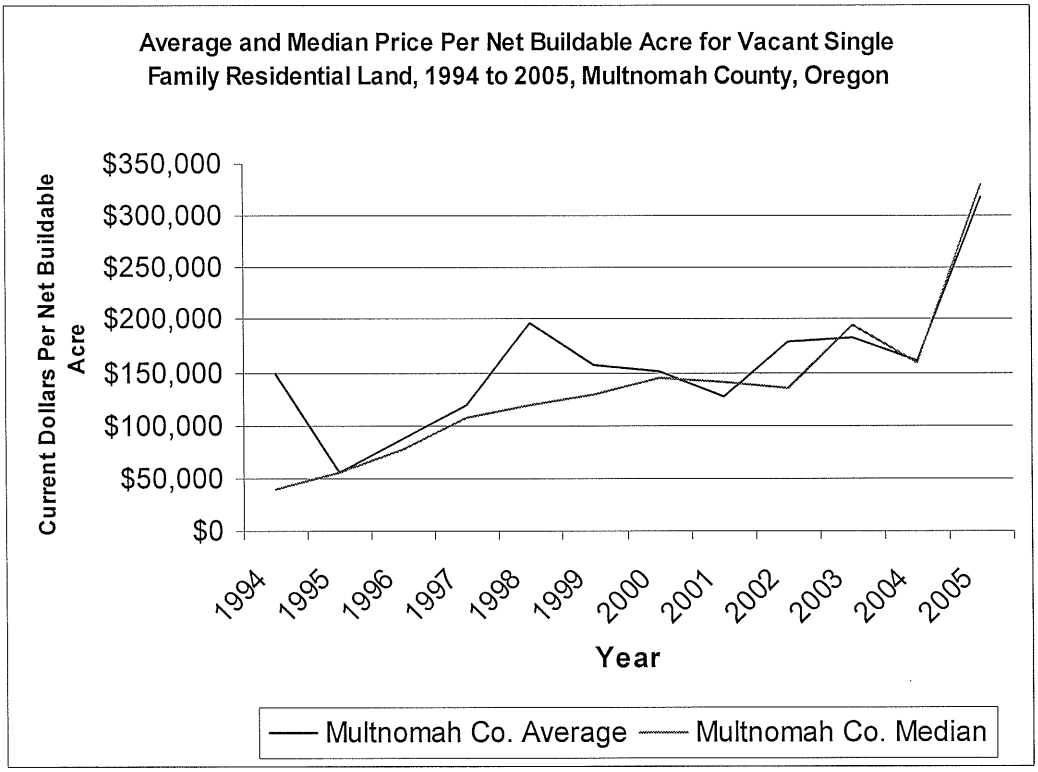

Figure 12