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**CHANGES IN THE PACIFIC NORTHWEST ORDER'S MILK SHED: 1996 - 2015**

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# CHANGES IN THE PACIFIC NORTHWEST ORDER'S MILK SHED: 1996 - 2015

John Mykrantz <sup>1</sup>

Change is perhaps the only constant. Changes in the character of the milk shed of the Pacific Northwest Order over the last 20 years illustrate this point. <sup>2</sup> Where milk is produced and the size of dairies has changed significantly. Using three perspectives, this article attempts to illustrate some of those changes by looking at producer milk and producer numbers in October of 1996, 2000, 2005, 2010 and 2015. <sup>3</sup>

## General Changes

In October 1996, 1,289 producers delivering a total of 551 million pounds comprised the milk shed of the Pacific Northwest Order. Nearly twenty years later, in October 2015, the number of producers decreased to 577, but the milk delivered to the market increased to 736 million pounds. This dramatic change in the Pacific Northwest can be illustrated a number of ways. The easiest way is through simple statistics as are shown in Table 1. The number of producers, average production, minimums and maximums, and average per day tell one story. While the number of producers declined by 55 percent since 1996, the average production per producer increased from about 427,000 pounds to nearly 1.3 million pounds, or almost 200 percent. Between 1996 and 2010, the market lost about 20 percent of producers every five years. Between 2010 and 2015, the decline of producer numbers slowed, reflecting a 9 percent decrease. Conversely, increases in producer milk were less than 5 percent before 2010, but were about 10 to 15 percent each five year period since 2005. Average production per producer per day increased from almost 14,000 pounds in 1996 to over 41,000 pounds in 2015. And while the size of the smallest farms in the region has not changed substantially, the size of each year's largest farm has grown by over 200 percent. One last simple statistic is a measure of the variability or diversity of dairy farm size in the region, i.e., the coefficient of variation (CV). The CV is calculated as the standard deviation divided by the average (mean). Over the period, the distribution of farm sizes has become somewhat more diverse. Whereas in 1996, the CV was 140 percent, meaning most farms were relatively smaller, by 2015, the CV had increased to 174 percent. The increase suggests the market is now supplied by a relatively more diverse group of both smaller and larger farms, about 24 percent more. One aspect of the changes in the milk shed of the Pacific Northwest Order that may be evident in the simple statistics, but not particularly obvious, is a regulatory change that occurred in April 2006. In April 2006, the Pacific Northwest Order was changed after a hearing and a vote of producers to fully regulate all handlers whose routes exceed 3.0 million pounds and who meet the criteria of a pool distributing plant. A small part of the change between 2005 and 2010 can be attributed to this change in the structure of the Federal order.

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<sup>2</sup> The milk shed includes producers primarily in Oregon and Washington, but also certain counties in Idaho, Northern California, and Utah. Producer-handlers and dairy farms whose milk is not pooled on the order are not included in this data.

<sup>3</sup> Data for October 1996 was used instead of October 1995 because milk historically associated with the order was not pooled due to price relationships in October 1995. Some producers and producer milk not consistently pooled on the order have been excluded from this analysis.

**Table 1: Descriptive Statistics of Producers and Producer Milk: October**

Variable	1996	2000	2005	2010	2015	% Δ 1996-2015
Number of Producers	1,289	1,017	824	633	577	-55%
Total Production	550,667,714	570,477,116	577,594,045	667,198,115	736,259,376	34%
Minimum *	5,000	2,000	1,000	4,000	6,000	20%
Maximum †	7,000,000	8,000,000	10,000,000	17,000,000	22,000,000	214%
Average Per Producer	427,205	560,941	700,964	1,054,025	1,276,013	199%
Average Per Producer Per Day	13,781	18,095	22,612	34,001	41,162	
Standard Deviation of Production	598,585	760,149	1,068,303	1,833,471	2,214,171	270%
Coefficient of Variation ‡	140%	136%	152%	174%	174%	24%

\* Rounded to nearest thousand.

† Rounded to nearest million.

‡ Standard deviation of production divided by average per producer.

## Changes by Region

Another way to illustrate the story of changes in the milk shed of the Pacific Northwest Order relates to how milk production has moved between regions. To tell this story, four regions were defined using the Cascade Mountains and the Oregon-Washington border: 1) Western Washington; 2) Eastern Washington; 3) Western Oregon; and 4) Eastern Oregon. In 1996, the majority of producers and producer milk were located in Western Washington (See Table 2). Over the last twenty years, Western Washington's share of producer milk dropped from about 50 percent to about 24 percent while its share of producers dropped from about 54 percent to a little over 40 percent. At the same time, the shares of producer milk and producers in Eastern Washington increased substantially. Eastern Washington's share of producer milk increased from about 28 percent to almost 50 percent while its share of producers rose from about 16 percent to about 24 percent. Somewhat similarly, Eastern Oregon's share of producer milk increased from about two percent to about 11 percent. One final and perhaps interesting observation is that Western Oregon's share of producer milk has not declined as much as Western Washington's and its share of producers has actually increased.

**Table 2: Producer Milk and Producers by Region: October**

Region *	Producer Milk (Million Pounds)					Number of Producers				
	1996	2000	2005	2010	2015	1996	2000	2005	2010	2015
Western WA	273	257	213	173	175	692	523	384	276	238
Eastern WA	157	186	236	313	361	206	178	156	142	136
Western OR	112	118	118	114	118	369	297	261	200	186
Eastern OR	9	9	10	68	82	22	19	23	15	17

	Percent of Producer Milk					Percent of Producers				
	1996	2000	2005	2010	2015	1996	2000	2005	2010	2015
Western WA	50%	45%	37%	26%	24%	54%	51%	47%	44%	41%
Eastern WA	28%	33%	41%	47%	49%	16%	18%	19%	22%	24%
Western OR	20%	21%	20%	17%	16%	29%	29%	32%	32%	32%
Eastern OR	2%	2%	2%	10%	11%	2%	2%	3%	2%	3%
East	30%	34%	43%	57%	60%	18%	19%	22%	25%	27%
West	70%	66%	57%	43%	40%	82%	81%	78%	75%	73%

\* Western Oregon includes California. Eastern Washington includes certain counties in Idaho and Utah. See also footnote 2.

## Changes by Size-Range of Production

One more way to tell the story of the changes in the milk shed of the Pacific Northwest Order is to look at changes in what share of the market is supplied by small, medium, medium/large, large, and very large dairy farms. Looking at the data through changes in how the market is supplied by different sized dairies reveals some stark changes. For this analysis, farm size is measured in pounds of pooled milk delivered by each producer (See Table 3).<sup>4</sup> The portion of the market supplied by small and medium sized dairies has dropped by 40 percentage points from about 58 percent to 18 percent. The portion supplied by large and very large size farms has increased by about 44 percentage points from about 12 percent to 56 percent. But while the character of market has changed significantly, small and medium size farms still number 385, or 67 percent of the total. The share of the market supplied by medium/large size farms has decreased only slightly from 29 percent to 26 percent, while the relative share of producers more than doubled from 8 percent to 21 percent.

**Table 3: Producer Milk and Producers by Size Range of Production: October**

Size Category	Size-Range *		Producer Milk (Million Pounds)					Number of Producers				
	≥	<	1996	2000	2005	2010	2015	1996	2000	2005	2010	2015
Small		0.25	89	59	44	27	23	681	442	334	210	176
Medium	0.25	1.00	233	210	173	133	110	484	419	328	247	209
Medium/Large	1.00	2.50	160	187	179	186	191	106	125	119	116	119
Large	2.50	5.00	45	78	106	139	164	14	25	33	40	46
Very Large	5.00		23	37	76	183	248	4	6	10	20	27

  

Size Category	≥	<	Percent of Producer Milk					Percent of Producers				
			1996	2000	2005	2010	2015	1996	2000	2005	2010	2015
Small	0.00	0.25	16%	10%	8%	4%	3%	53%	43%	41%	33%	31%
Medium	0.25	1.00	42%	37%	30%	20%	15%	38%	41%	40%	39%	36%
Medium/Large	1.00	2.50	29%	33%	31%	28%	26%	8%	12%	14%	18%	21%
Large	2.50	5.00	8%	14%	18%	21%	22%	1%	2%	4%	6%	8%
Very Large	5.00		4%	6%	13%	27%	34%	0%	1%	1%	3%	5%

\* Million pounds.

## Summary

Over the past 20 years, the character of the milk shed of the Pacific Northwest Order has changed dramatically. Producers have grown larger and shifted from regions west of the Cascade Mountain range to regions east of the Cascades. And while the larger dairy farms have grown yet larger, two thirds of the producers in the milk shed currently produce less than one million pounds per month, and almost a third produce less than 250,000 pounds per month. It will be interesting to see what changes the next five years will bring.

<sup>4</sup> These ranges are for illustration purposes only and are not intended to reflect a specific industry standard or common understanding of dairy farm size. Using an aggregate milk production per cow figure for Oregon and Washington (1,900) calculated from National Agricultural Statistics Service data for October 2015, the production by size-range categories roughly translate as follows: small: 1-130 cows; medium: 130-550 cows; medium/large: 550-1,300 cows; large: 1,300-2,600 cows, and very large: more than 2,600 cows.