

2010 PASTURE LEASING ARRANGEMENTS IN KANSAS

JEN B. SCHLEGEL
And
LEAH J. TSOODLE

February 2011
Staff Paper No. 11-05

Introduction

Pastureland is Kansas' second largest agricultural land use. As a resource, grazing land supports the beef and sheep industries, provides habitat for wildlife, and provides surface water to streams. Within Kansas, pastureland is separated into two classes, tame and native. These are more commonly referred to as improved pasture and rangeland. Tame pasture is primarily introduced grass species that are planted and managed with agronomic practices (seeding, fertilizer, etc.). The major species are smooth brome grass, tall fescue, and bermuda grass. More recently, native species have been planted using similar practices with similar performance characteristics. Native pasture is rangeland that contains grasses native to the region, without improvement through agronomic practices.

The Land Use Value Project in the Department of Agricultural Economics at Kansas State University participates in the collection and dissemination of survey information. The following represents a summary of the most recent survey on pasture lease arrangements in Kansas. This information should be useful to Extension personnel, consultants, lenders, producers, and landowners to better understand the various pasture leasing arrangements that exist in Kansas.

Sources of Pasture Leasing Information

Kansas Agricultural Statistics (KAS) conducts one survey each year in conjunction with the Land Use Value Project in the Department of Agricultural Economics at Kansas State University (KSU). There are four surveys conducted on a rotational basis through this partnership: irrigated leases, non-irrigated leases, pasture leases, and input costs. During 2010, the Pasture Lease Survey was conducted to gather data on the 2009 calendar year. The most recent prior survey, conducted by KAS/KSU, of pasture leasing arrangements was compiled in 2006 with data from 2005.

KAS divides Kansas into nine crop-reporting districts (Figure 1). By design the KAS surveys conducted for the Land Use Value Project tend to be focused toward landowners (i.e., landlords). This is because the purpose of the Land Use Value Project is to calculate landlord net income for different soil types in the KAS crop reporting districts for the Kansas Department of Revenue. Direct comparison between the 2010 and the 2006 survey results is appropriate as they were both performed by KAS/KSU, the sampling procedures and population were the same, and both used comparable formats.

KAS follows the same sampling procedure for all of their surveys conducted jointly with KSU. They draw the sample from their database, which contains landowners, producers, and owner/operators. The sample size is large enough to ensure that a statistically significant number of responses are received from each district. This survey resulted in 789 complete observations on pasture leases (Table 1), an equal number to the 789 observations in the 2006 survey. Survey observations are identified by crop reporting district. Along with pasture rental rates, each survey respondent indicated the type of: a) pasture ownership/rental regime, b) beef enterprise, c) grazing system, d) water source, e) fence construction and repair arrangement, f) weed control cost sharing agreement, and g) fertilizer cost sharing agreement. A copy of the survey is available upon request and additional information pertaining to the survey is available from the Kansas State University Department of Agricultural Economics or from Kansas Agricultural Statistics. Email inquiries can be sent to Jen Schlegel at jenschlegel@agecon.ksu.edu.

Enterprise Classification

The 2010 Pasture Lease Survey provides information about the distribution and characteristics of the structure of Kansas livestock enterprises. There has been little change in the structure of the beef industry in Kansas in the past four years (Tables 2a and 2b). As a general rule, producers in Kansas focus on cow/calf production, with over 55% of the observations falling into this category. An additional 19% of respondents have stocker feeder operations or both cow/calf and stocker feeder operations. A typical producer grazes his pasture all season long as opposed to intensive or rotational grazing. It appears that fewer operators are renting pasture to meet their grazing needs. This might imply that more producers are either purchasing land or have reduced the scale of their operation since 2006 and are only producing on land that they currently own. Additionally, this finding might reflect the trend to a higher percent of hobby ranchers. Finally, it may reflect a sampling bias in favor of landowners.

Cash Rents

The distribution and characteristics of producer leases are addressed within the 2010 Pasture Lease Survey. Table 3 illustrates the distribution of cash rents for both tame and native pasture, by crop reporting district. In general, cash rent increases moving from west to east and from south to north. This pattern is highly correlated with temperature and rainfall patterns. It reflects the fact that, within Kansas, natural forage production increases as rainfall increases and temperature decreases. Increased grass production potential is reflected in rental values.

Generally, tame pasture is valued more by producers than native pasture, as illustrated by the difference in rental value. As an example, in EC-80, on average, tame pasture rents for 11.6% more than native pasture. The difference in rental value between tame and native has changed appreciably since the 2006 survey. For example, in SC-60, the 2006 survey indicated that tame pasture was worth only a 9.7% premium over native. In the 2010 survey the premium was 19.5%. Whereas in NC-40 the pricing ratio is decreasing, here an 8.8% premium in the 2006 survey fell to 1.1% in the 2010 survey. Additional research would be needed to determine if these changes are statistically significant.

Pasture Size and Fence Requirements

The mode pasture size and average feet of fence per acre were calculated by crop reporting district. The 2006 results are provided for comparison purposes. As a general rule, the mode size of native pastures tends to be larger than tame pastures (Table 4a). This reflects the more management intensive nature of tame pasture.

The amount of fence required per acre is a function of pasture size, shape, and number of cross fences. As the pasture size increases, the amount of fence per acre decreases, and as pasture size becomes more irregular, the amount of fence per acre increases. As a result, we would expect smaller pastures to have higher average feet of fence per acre but a larger pasture may still have the higher average if the larger pasture shape is inconsistent. The mode average feet of fence per acre for both native and tame pastures is shown in Table 4b with 2006 data for comparison. The feet of fence shown is 50% of the amount reported in the survey based on the fact that many pastures share boundary fences and a landlord would be responsible for, on average, half the fencing enclosing any given pasture.

Fence Construction

The most prevalent wire for Kansas pasture fencing is barbed wire (Table 5a). In most of Western Kansas, 4 strand fences are typical, while 5 strands are the mode in all other areas. Northern Kansas tends to use a combination of wood and steel fence posts while Southern Kansas trends towards all steel posts. These results, along with typical post spacing, fence life, and cross fencing figures (Table 5b), are fairly consistent with the 2006 survey.

Total and Water Maintenance Costs

For native pasture, total maintenance costs have increased since 2006 with water maintenance costs also increasing (Table 6a). On average, the total annual maintenance costs have risen by approximately 16%, while the average annual cost of maintaining the water supply has increased by approximately 40%. Total maintenance costs tend to be lower in Western Kansas.

For tame pasture, total maintenance costs have increased since 2006 while water maintenance costs have decreased (Table 6b). On average the annual total maintenance cost has risen by approximately 25%, while the average annual cost of maintaining the water supply has decreased by approximately 12%.

Higher total maintenance costs coincide with the higher costs of new fencing. Comparing the 2010 costs of tame and native pasture, we find that costs are higher in tame than native. This is consistent with the 2006 data, and probably a reflection of the higher management intensity associated with tame pasture.

Fertilizer Application

Table 7 summarizes the type and quantity of fertilizer applied on a per acre basis in various parts of the state. As a general rule, the percentage of producers using fertilizer decreased in 2010. For the most part overall fertilizer usage increases in the Eastern portion of the state due to higher rainfall and a larger percentage of more intensively managed tame pasture.

Landlord's Share of Expenses

Due to the nature of livestock production, the vast majority of pastureland is leased on a cash basis. However, it is not unusual for landlords to participate in yearly expenses, especially those that impact the long-term asset value of the land. Tables 8a and 8b provide information on the type and percent of expenses in which landlords participate. As a general rule, landlords provide the materials and labor for the construction of new fences and pay at least a portion of fertilizer costs. The tenant will typically cover labor and materials for all pasture and fence maintenance expenses. In an analysis of the 1998 Pasture Lease Survey, O'Brien (2000) showed that alternative landlord-tenant cost share arrangements for fence repair and replacement, weed control, and fertilizer did not have a significant impact upon pasture rental rates in the statewide model.

Conclusion

The pastureland rental market in Kansas is quite dynamic. Changes in farm policy, commodity prices, and technology obviously will affect farm structure, and rental arrangements. It is not always apparent what the forces are that have been driving current rental changes. Some

possible influences have been discussed and both quantitative and qualitative data provided. However, one of the most powerful influences, the effect of the traditional arrangements present in a region, has not yet been considered. Albright, et al (1996) suggested that traditional arrangements, which have been in place for lengthy time periods, may not be affected by changes in markets, legislation, or farming practices. Other extension specialists contend that, relatively speaking, tradition is changing rapidly.

Related K-State Research and Extension publications pertaining to pasture-land leasing arrangements include the following:

Albright, Martin, Daniel O'Brien, and James Sartwelle. "Crop Lease Arrangement Market Issues and Trends." Kansas State University, Department of Agricultural Economics, Manhattan, Kansas, 1996.

Buller, et al, "Economic Evaluation of Season-Long and Intensive-Early Stocking System." Contribution number 90-274-S from KAES, 1990.

Jones, Rodney, "Summer Grazing of Steers in Western Kansas." Publication Number MF1007, October 2001

Jones, Rodney, "Summer Grazing of Steers in Eastern Kansas." Publication Number MF1008, October 2001

Langemeier, Larry N. "Pasture Rental Arrangements for Your Farm." North Central Regional Publication #149 (NCR 149), revised 1997

O'Brien, D., "Factors Affecting Kansas Pasture Rental Rates." K-State Research and Extension, November 2000

Schlegel, Jen and Leah Tsoodle. "2006 Pasture Leasing Arrangements in Kansas." Kansas State University, Department of Agricultural Economics, Manhattan, Kansas, Paper # 08-01, September 2007.

Tsoodle, Leah, Bill Golden, and Allen Featherstone. "Determinants of Kansas Agricultural Land Values." Selected Paper prepared for presentation at the Southern Agricultural Economics Association Annual Meeting, Mobile, Alabama, February 1-5, 2003.

Figure 1: Kansas Crop Reporting Districts

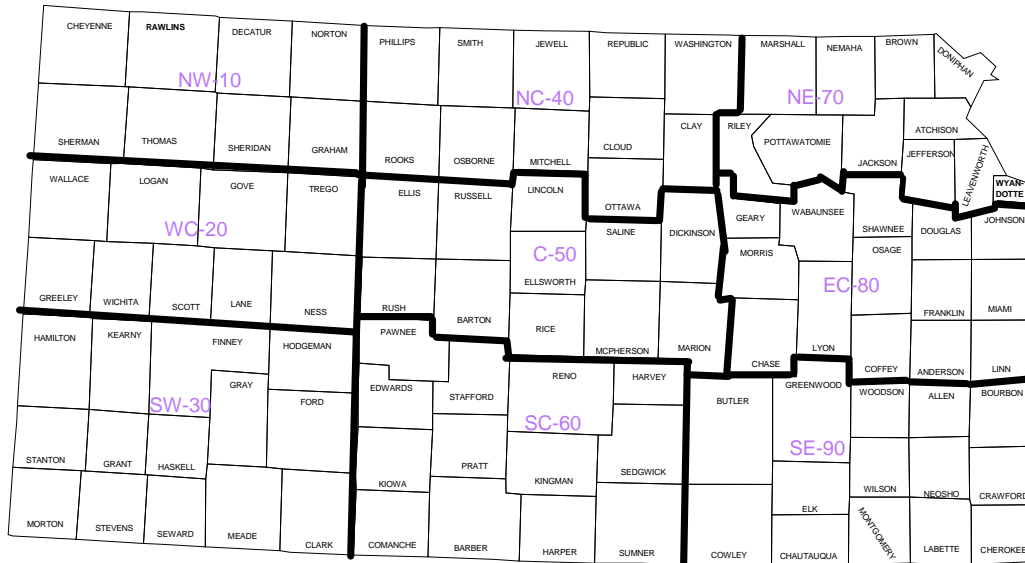


Table 1: 2010 Pasture Survey Summary

District Response Rate

District	Surveys Sent	Responses	Response Rate
Northwest-10	79	22	27.8%
West Central-20	76	25	32.9%
Southwest-30	93	33	35.5%
North Central-40	162	74	45.7%
Central-50	191	112	58.6%
South Central-60	206	138	67.0%
Northeast-70	217	161	74.2%
East Central-80	250	233	93.2%
Southeast-90	279	235	84.2%
State Total	1,553	1,033	66.5%

Table 2a: 2006 Pasture Survey Summary**2006 District Mode Classifications**

All values are the mode unless otherwise stated.

	Pasture Classification	Type of Operation	Grazing Type
NW-10	Rent all Pasture	Cow/Calf	Season-Long
WC-20	Own and Rent Pasture	Cow/Calf	Season-Long
SW-30	Own all Pasture	Cow/Calf	Season-Long
NC-40	Own and Rent Pasture	Cow/Calf	Season-Long
C-50	Own all Pasture	Cow/Calf	Season-Long
SC-60	Own all Pasture	Cow/Calf	Season-Long
NE-70	Own all Pasture	Cow/Calf	Season-Long
EC-80	Own all Pasture	Cow/Calf	Season-Long
SE-90	Own all Pasture	Cow/Calf	Season-Long

Table 2b: 2010 Pasture Survey Summary**2010 District Mode Classifications**

All values are the mode unless otherwise stated.

	Pasture Classification	Type of Operation	Grazing Type
NW-10	Own all Pasture	Cow/Calf	Season-Long
WC-20	Own all Pasture	Cow/Calf	Season-Long
SW-30	Own all Pasture	Cow/Calf	Season-Long
NC-40	Own all Pasture	Cow/Calf	Season-Long
C-50	Own all Pasture	Cow/Calf	Season-Long
SC-60	Own all Pasture	Cow/Calf	Season-Long
NE-70	Own all Pasture	Cow/Calf	Season-Long
EC-80	Own all Pasture	Cow/Calf	Season-Long
SE-90	Own all Pasture	Cow/Calf	Season-Long

Table 3: 2010 Pasture Survey Summary

District Average Cash Rents & Tame/Native Rent Ratio

	<u>NATIVE</u>			<u>TAME</u>			2010	2010	2006
	Average	Minimum	Maximum	Average	Minimum	Maximum	Ratio Ave.	Individual Ratio Ave.	Ratio Ave.
NW-10	\$14.04	\$5.50	\$25.00	\$13.17	\$5.50	\$20.00	93.8%	108.3%	102.6%
WC-20	\$14.00	\$8.50	\$25.00	\$15.00	\$15.00	\$15.00	107.1%	No Responses	102.2%
SW-30	\$12.36	\$5.00	\$25.00	No Responses			No Responses	No Responses	117.8%
NC-40	\$21.31	\$12.00	\$38.00	\$21.55	\$12.00	\$35.00	101.1%	100.6%	108.8%
C-50	\$17.46	\$5.55	\$50.00	\$20.08	\$12.00	\$25.00	115.0%	112.1%	112.1%
SC-60	\$14.91	\$5.00	\$25.00	\$17.82	\$12.00	\$25.00	119.5%	102.0%	109.7%
NE-70	\$25.46	\$10.00	\$50.00	\$25.07	\$10.00	\$50.00	98.5%	106.9%	130.8%
EC-80	\$21.59	\$10.00	\$50.00	\$24.09	\$5.00	\$60.00	111.6%	108.7%	104.6%
SE-90	\$20.90	\$7.00	\$40.00	\$24.28	\$10.00	\$50.00	116.2%	113.4%	116.3%

Table 4a: 2010 Pasture Survey Summary**District Mode Pasture Size**

Intended Use: Will be used as the typical base pasture size; used to determine initial fence costs.

	Native Mode Pasture Size				Tame Mode Pasture Size			
	2010		2006		2010		2006	
	Acres	Responses	Acres	Responses	Acres	Responses	Acres	Responses
NW-10	80	5	80	5-Tie	80	1	40	2
WC-20	160	4-Tie	160	7	No Responses		40	1-Tie
SW-30	80	6-Tie	80	9	80	1	40	4
NC-40	80	13	80	10	40	2	80	1-Tie
C-50	80	21	80	9	40	8	40	1-Tie
SC-60	80	21	80	9	40	7	40	4
NE-70	80	19	80	7	40	19	80	5-Tie
EC-80	40	32	80	11	40	26	40	9-Tie
SE-90	80	35	80	8-Tie	80	24	40	11

Table 4b: 2010 Pasture Survey Summary**Mode Average Feet of Fence per Acre**

Intended Use: Will be used as the typical base fencing requirement; used to determine initial fence costs.

	Native				Tame			
	2010		2006		2010		2006	
	Feet	Responses	Feet	Responses	Feet	Responses	Feet	Responses
NW-10	37.4	3	56.8	3	52.1	1	0.0	0
WC-20	33.3	4	52.1	4	0.0	0	55.6	1
SW-30	62.0	5	48.7	6	66.0	1	52.8	1
NC-40	49.8	7	65.5	22	87.3	3	35.1	5
C-50	47.7	15	49.3	15	75.4	10	61.1	3
SC-60	44.0	17	40.6	15	85.6	6	39.9	11
NE-70	47.8	18	34.1	9	56.1	23	64.9	15
EC-80	57.6	36	57.9	19	54.3	32	90.8	24
SE-90	41.1	24	51.1	22	48.6	20	87.3	17

Table 5a: 2010 Pasture Survey Summary

District Mode Typical Fence Data

All results are the mode. Intended Use: Will be used to determine initial fence cost and annual ownership cost.

2010			2006		2010		2006	
FENCE TYPE	# RESP.		FENCE TYPE	# RESP.	POST TYPE	# RESP.	POST TYPE	# RESP.
NW-10	4-Wire Barb	11	4-Wire Barb	27	Combination Steel & Wood	12	All Treated	20
WC-20	4-Wire Barb	13	4-Wire Barb	18	Combination Steel & Wood	9	All Treated	9
SW-30	5-Wire Barb	9	4-Wire Barb	17	All Steel	11	All Steel	6
NC-40	5-Wire Barb	35	5-Wire Barb	37	Combination Steel & Wood	40	All Hedge	19
C-50	5-Wire Barb	51	5-Wire Barb	49	Combination Steel & Wood	50	All Steel	27
SC-60	5-Wire Barb	63	5-Wire Barb	54	All Steel	47	All Steel	28
NE-70	5-Wire Barb	79	5-Wire Barb	52	Combination Steel & Wood	68	All Steel	20
EC-80	5-Wire Barb	90	5-Wire Barb	70	All Steel	74	All Steel	50
SE-90	5-Wire Barb	125	5-Wire Barb	102	All Steel	112	All Steel	73

Table 5b: 2010 Pasture Survey Summary

District Mode Typical Fence Data

All results are the mode unless otherwise stated.

	2010		2006		2010		2006		2010		2006	
	POST SPACING		POST SPACING		PASTURE SIZE CROSS FENCED		PASTURE SIZE CROSS FENCED		FENCE LIFE		FENCE LIFE	
	(FEET)	# RESP.	(FEET)	# RESP.	(ACRES)	# RESP.	(ACRES)	# RESP.	(YEARS)	# RESP.	(YEARS)	# RESP.
NW-10	16	3	16.5	5	No Pastures	5	320+	5-Tie	20	5	30	5
WC-20	15	6	16.5	10	No Pastures	3	320+	7	30	4	20	5
SW-30	10	4	12	6	No Pastures	4	320+	7	20	5	40	5
NC-40	15	11	15	13	No Pastures	9	No Pastures	21	30	7	30	15
C-50	15	15	10	12	No Pastures	22	No Pastures	20	40	13	50	13
SC-60	12	18	12	16	No Pastures	29	No Pastures	20	20	17	30	10
NE-70	12	31	10	13	No Pastures	21	No Pastures	15	20	17	50	13
EC-80	12	42	12	27	No Pastures	38	No Pastures	18	20	28	20	16-Tie
SE-90	12	51	10	29-Tie	No Pastures	38	No Pastures	30	20	33	20	24

Table 6a: 2010 Pasture Survey Summary

Native District Average Maintenance Costs

Averages are calculated using native pasture acres and represent total annual costs.

	NATIVE					
	2010			2006		
	Average Maintenance Cost (\$/ACRE)	Average Water Cost (\$/ACRE)	Water Source	Average Maintenance Cost (\$/ACRE)	Average Water Cost (\$/ACRE)	Water Source
NW - 10	4.64	1.69	Well	2.07	0.76	Well
WC - 20	8.46	1.28	Well	3.72	0.74	Well
SW - 30	4.61	1.63	Well	3.26	1.35	Well
NC - 40	6.78	1.00	Well	5.19	1.18	Pond
C - 50	7.57	1.45	Well	4.95	1.11	Pond
SC - 60	6.31	1.66	Well	5.45	1.04	Pond
NE - 70	6.59	1.52	Well	11.24	0.45	Pond
EC - 80	8.69	1.17	Well	8.34	1.40	Pond
SE - 90	<u>6.57</u>	<u>1.56</u>	Well	<u>7.68</u>	<u>1.27</u>	Pond
State-wide	6.69	1.44		5.77	1.03	

Table 6b: 2010 Pasture Survey Summary

Tame District Average Maintenance Costs

Averages are calculated using tame pasture acres and represent total annual costs.

	TAME					
	2010			2006		
	Average Maintenance Cost (\$/ACRE)	Average Water Cost (\$/ACRE)	Water Source	Average Maintenance Cost (\$/ACRE)	Average Water Cost (\$/ACRE)	Water Source
NW - 10	4.15	2.13	Well	No Response	No Response	Well
WC - 20	No Response	No Response	Well	No Response	No Response	Well
SW - 30	5.00	No Response	Well	5.31	1.17	Well
NC - 40	12.95	0.50	Well	5.67	1.00	Pond
C - 50	13.45	2.19	Well	10.57	1.36	Pond
SC - 60	9.47	0.73	Well	9.51	2.57	Pond
NE - 70	14.04	1.55	Well	9.61	1.81	Pond
EC - 80	12.81	1.39	Well	9.07	2.32	Pond
SE - 90	<u>9.29</u>	<u>1.96</u>	Well	<u>7.05</u>	<u>1.58</u>	Pond
State-wide	10.15	1.49		8.11	1.69	

Table 7: 2010 Pasture Survey Summary

District Average Fertilizer

All values are the averages of respondents applying fertilizer

District	Producers Using Fertilizer	Nitrogen Pounds Per Acre		Phosphorus Pounds Per Acre		Lime Pounds Per Acre		Potash Pounds Per Acre		Mode of Month Applied	
		2010	2006	2010	2006	2010	2006	2010	2006	2010	2006
NW-10	0.0%	No Response	No Response	No Response	No Response	No Response	No Response	No Response	No Response	No Response	No Response
WC-20	0.0%	No Response	No Response	No Response	No Response	No Response	No Response	No Response	No Response	No Response	No Response
SW-30	3.0%	40.0	100.0	10.0	36.0	No Response	No Response	No Response	No Response	No Response	March
NC-40	2.7%	75.0	70.0	32.5	26.6	No Response	No Response	No Response	No Response	March	March
C-50	3.6%	55.0	68.3	23.8	22.0	No Response	No Response	No Response	No Response	February	February
SC-60	3.6%	67.4	96.2	22.5	33.0	No Response	No Response	No Response	No Response	April	March
NE-70	24.8%	103.4	100.4	40.2	54.2	125.0	227.0	125.0	227.0	March	February/March
EC-80	12.9%	93.1	81.1	53.1	39.3	81.5	33.3	81.5	33.3	March	March
SE-90	12.3%	106.9	81.4	64.2	34.4	40.0	67.9	40.0	67.9	March	March

Table 8a: 2010 Pasture Survey Summary

District Average Landlord Percent of Costs

	Brush & Weed Control Chemicals	Brush & Weed Control Application	Brush & Weed Control Other	Burning	All Other Pasture Costs	Total Pasture Maintenance Costs
NW-10	20.1%	17.4%	4.5%	0.0%	4.5%	14.3%
WC-20	5.2%	2.0%	0.0%	0.0%	0.0%	2.0%
SW-30	23.7%	23.7%	2.5%	0.0%	1.5%	16.2%
NC-40	31.3%	20.5%	2.7%	0.0%	3.4%	18.9%
C-50	20.3%	14.0%	3.2%	0.0%	1.8%	10.6%
SC-60	18.4%	15.1%	2.1%	0.0%	1.3%	13.3%
NE-70	17.8%	14.5%	4.0%	0.0%	3.1%	12.3%
EC-80	14.2%	10.0%	2.1%	0.0%	2.6%	8.6%
SE-90	11.5%	8.3%	0.9%	0.0%	0.8%	5.5%

Table 8b: 2010 Pasture Survey Summary

District Average Landlord Percent of Costs

District	Fence Maintenance Material Costs	Fence Maintenance Labor Costs	Total Fence Maintenance Costs	Fertilizer Costs	New Fence Material Costs	New Fence Labor Costs
NW-10	37.4%	9.1%	19.7%	4.5%	26.0%	10.6%
WC-20	13.4%	7.4%	0.0%	0.0%	12.0%	6.0%
SW-30	33.3%	18.2%	17.2%	12.1%	31.8%	27.3%
NC-40	31.5%	17.3%	20.0%	7.2%	40.5%	26.8%
C-50	29.4%	12.5%	6.3%	7.9%	32.4%	17.3%
SC-60	25.0%	9.1%	12.1%	5.8%	27.3%	13.8%
NE-70	21.3%	14.9%	15.6%	11.2%	21.9%	15.8%
EC-80	14.2%	7.0%	8.1%	6.6%	18.7%	12.5%
SE-90	15.2%	7.7%	7.3%	5.7%	14.0%	9.1%