

OIL AND GAS INDUSTRY WORKFORCE CHARACTERISTICS AND IMPLICATIONS

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Oil and Gas Industry Workforce: Objectives



- Gain insights on the characteristic, perceptions and intentions of the oil and gas workforce.
- Different characteristics than historic workforce.
- Important to understand workforce intentions and motivations regardless of current market conditions.
- Findings valuable for understanding current and future needs for housing, delivery of public and private goods and services

Workforce Survey Methodology

Stake holder interviews

Online workforce survey

Focus groups

Slowdown presented challenges

Stakeholder Interviews

- Conducted 46 personal interview in 2014
- Instrumental in developing the survey instrument and identifying key issues
- Second round of interviews (additional 22) done in 2015
- Many issues identified in 2014 remained in 2015,
- Industry focus changed dramatically
 - Housing costs
 - Labor Issues, turnover and poaching
 - Concerns regarding QoL
 - Prevalence of rotational schedules and non-resident workforce
 - Employer provided housing and housing subsidies
 - Industry focused on costs and improving efficiencies
 - Voluntary attrition as a result of cut backs
 - Many workers just returned home

Focus Groups

- Dickinson, Ray, Watford City and Killdeer
- Findings not generalizable to the larger population
- Sampling of themes
 - Schools viewed positively
 - Like small town feel
 - Some staying long term others not
 - Communities generally viewed positively
 - Lack QoL amenities and public services, but progress has been made
 - Addition of police presence was viewed very positively
 - Some new residents were made to feel welcome others said they were treated like outsiders...two worlds

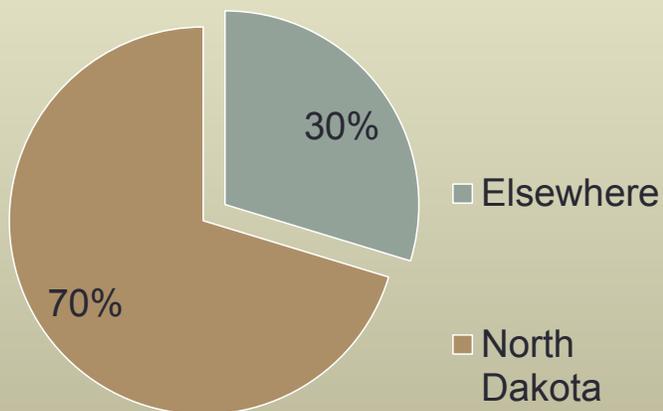
Workforce Survey

- Online questionnaire
- Enlisted the participation of oil and gas industry firms
- Cross section of firms that provided various oil and gas industry activities
- Employers sent an email to their employees with link to the survey
- Considered various methods for reaching workforce before settling on the online questionnaire
 - Mail survey
 - Phone using cell phone billing towers
 - Intercept surveys
 - Safety meetings

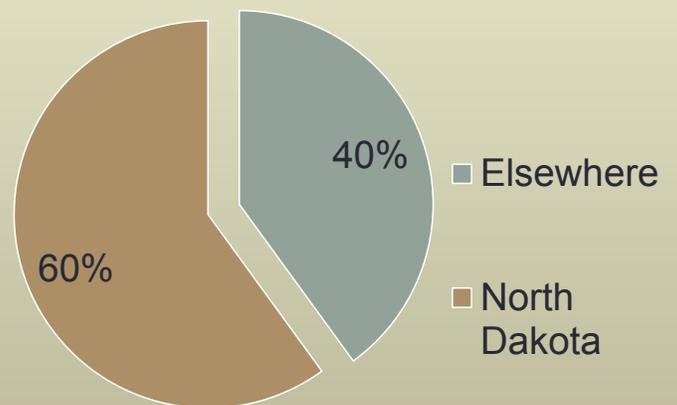
Workforce Survey

- 15 firms representing ~8,100 employees
- ~1,668 Observations

Sample Distribution



Actual Distribution



What best describes your job?

Able to generalize findings to the larger population

Description of Job	Observations	Percent
Field operations, less than 2 years experience	136	8%
Field operations, 2 or more years of experience	481	29%
Infrastructure construction such as roads, pipelines, municipal services, rail	13	1%
Trucking, transportation	181	11%
Professional such as engineering, accounting, management, geology	394	24%
Office, clerical, administrative or support staff	260	16%
Field operations support such as mechanic or equipment maintenance	195	12%
Other	8	0.5%
Total	1,668	100%

What best describes the activities or services related to your job?

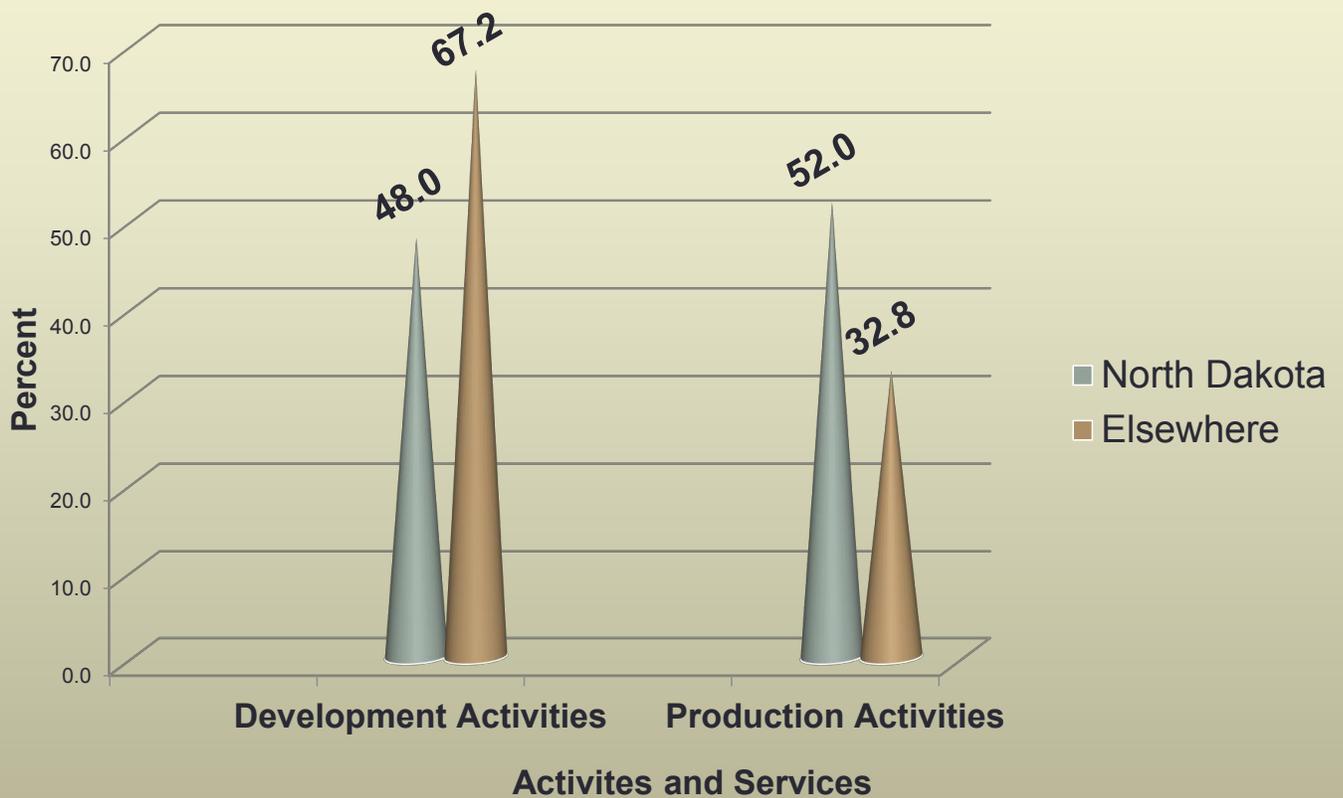
Able to make comparisons by industry activity.

Industry Activity	Response	Percent
Production and operations, including well maintenance and transportation	663	40.0%
Fracing and well completion services	582	35.0%
Drilling, well site preparations, geophysical services	311	19.0%
Other	244	15.0%
Rail and pipeline operations, gas and oil shipments	164	10.0%
Infrastructure construction, such as roads, pipelines, municipal services, rail	148	9.0%
Natural gas processing	83	5.0%
Total	(2,195)	100.0%

Job Description by Residency



Activities and Service Related to Job Description

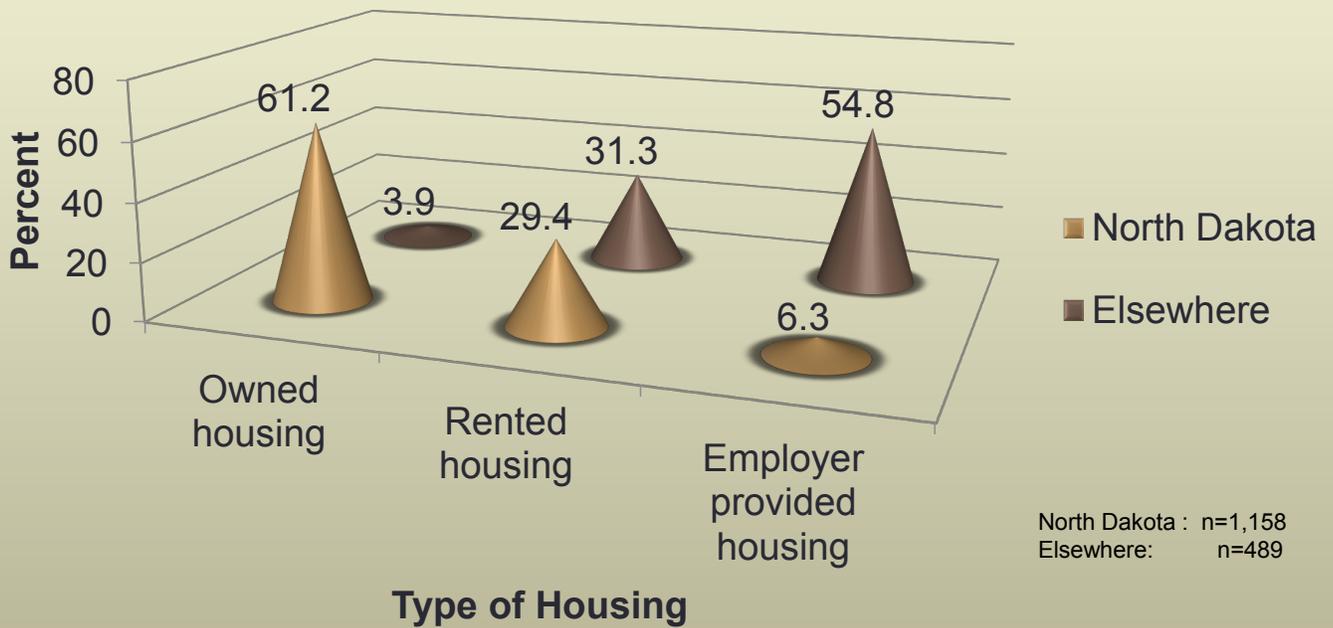


Key take away points

- Non-residents workers:
 - more frequently have job descriptions related to field operations and trucking and transportation
 - more frequently have job descriptions related to development activities
- Residents workers
 - more frequently hold professional, managerial and administrative support positions (slightly over represented in the sample)
 - equal percentage of workers have job descriptions related to development activities as production activities

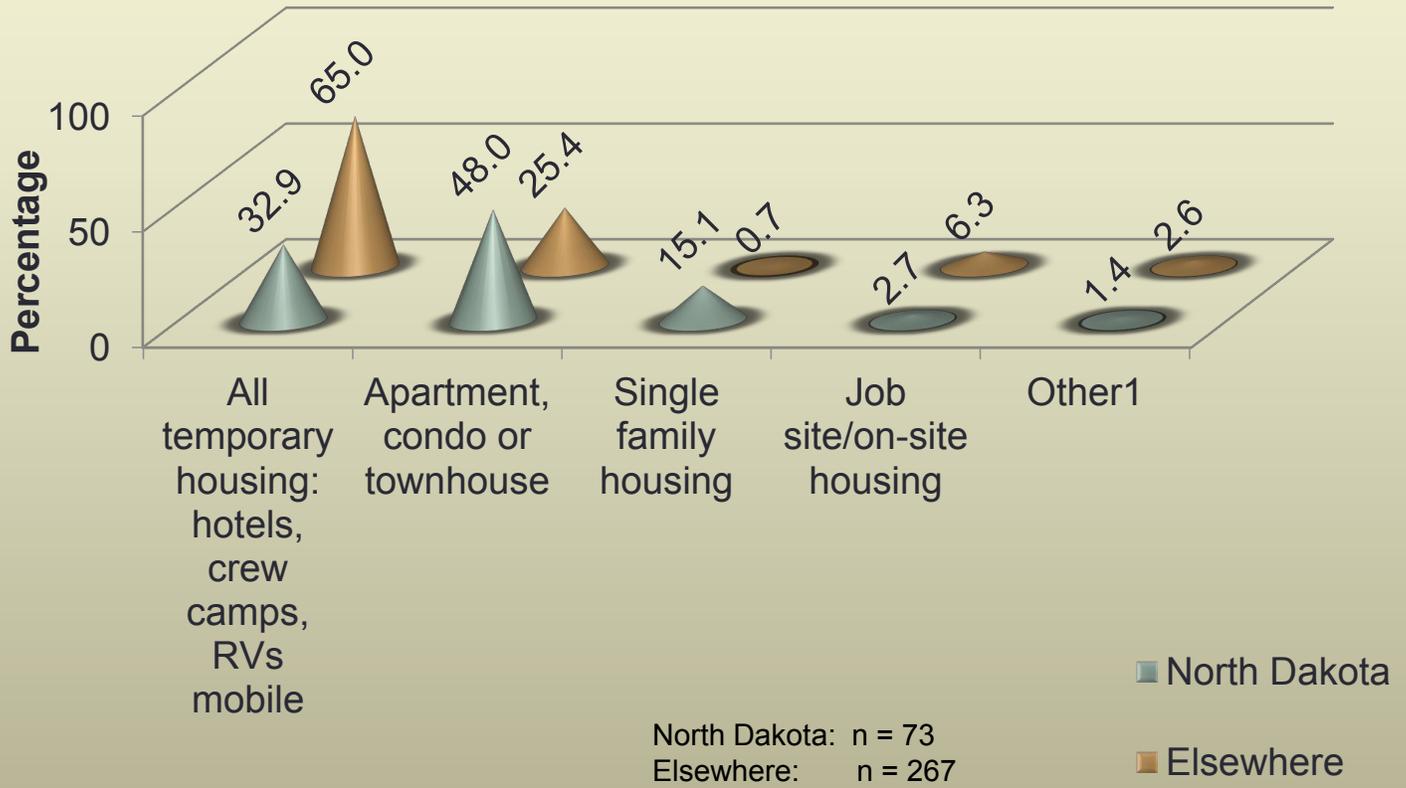
Housing

Type of Housing Used While Working in North Dakota, by Residency

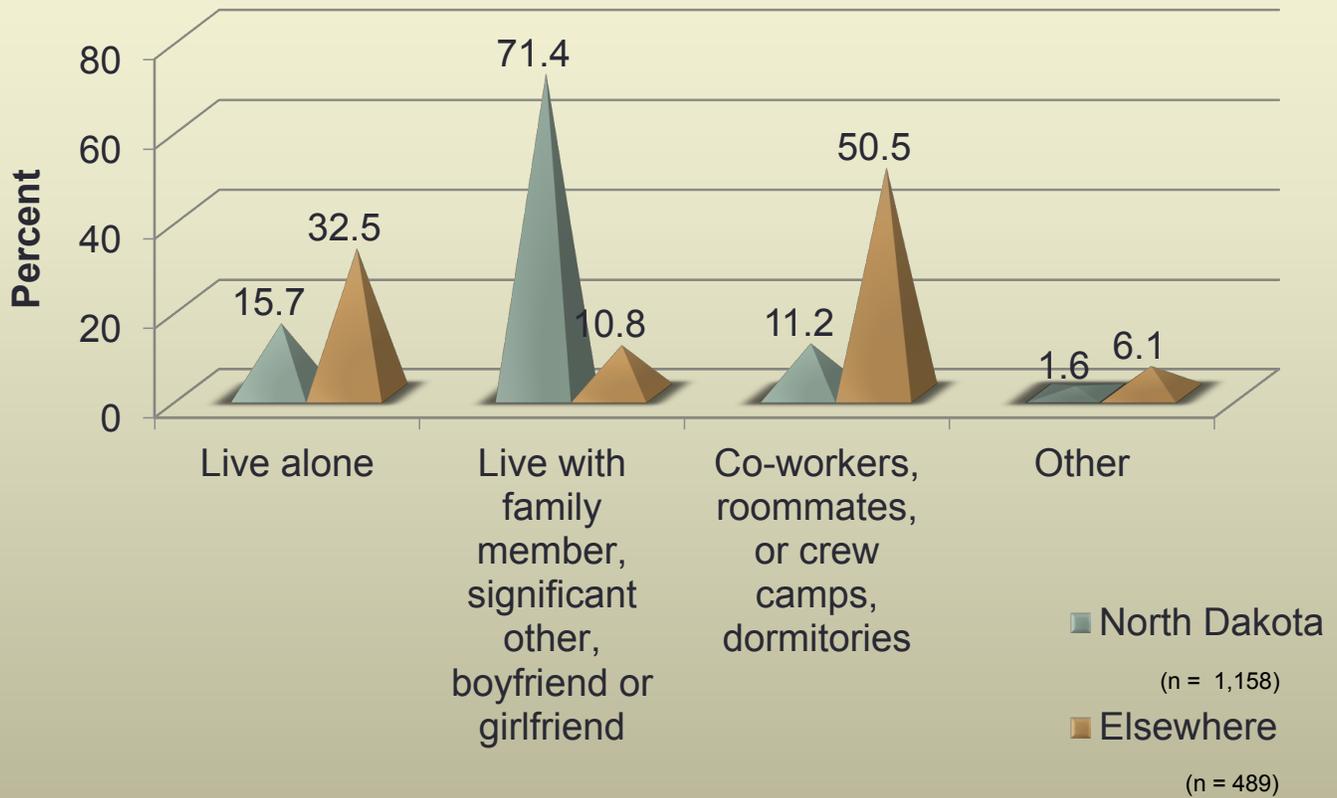


Does not sum to 100 percent because 'other' not included.

Type of Housing Provided by Employer, by Residency



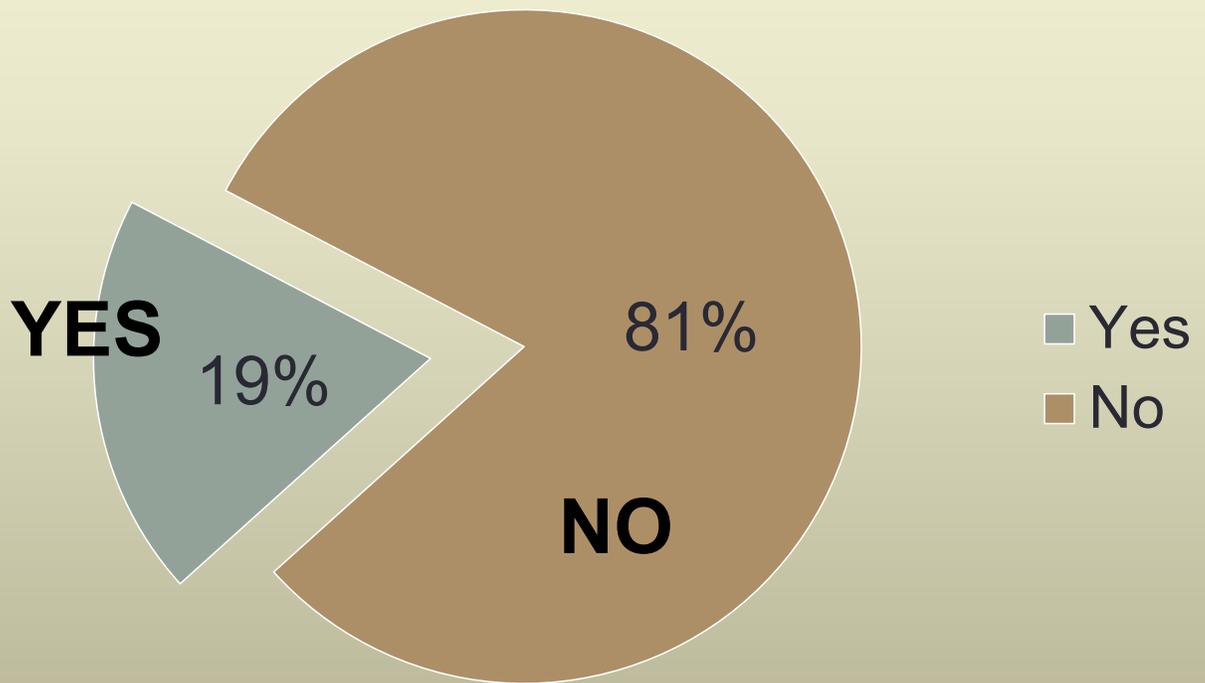
Living Arrangements While Working in North Dakota, by Residency



Key take away points

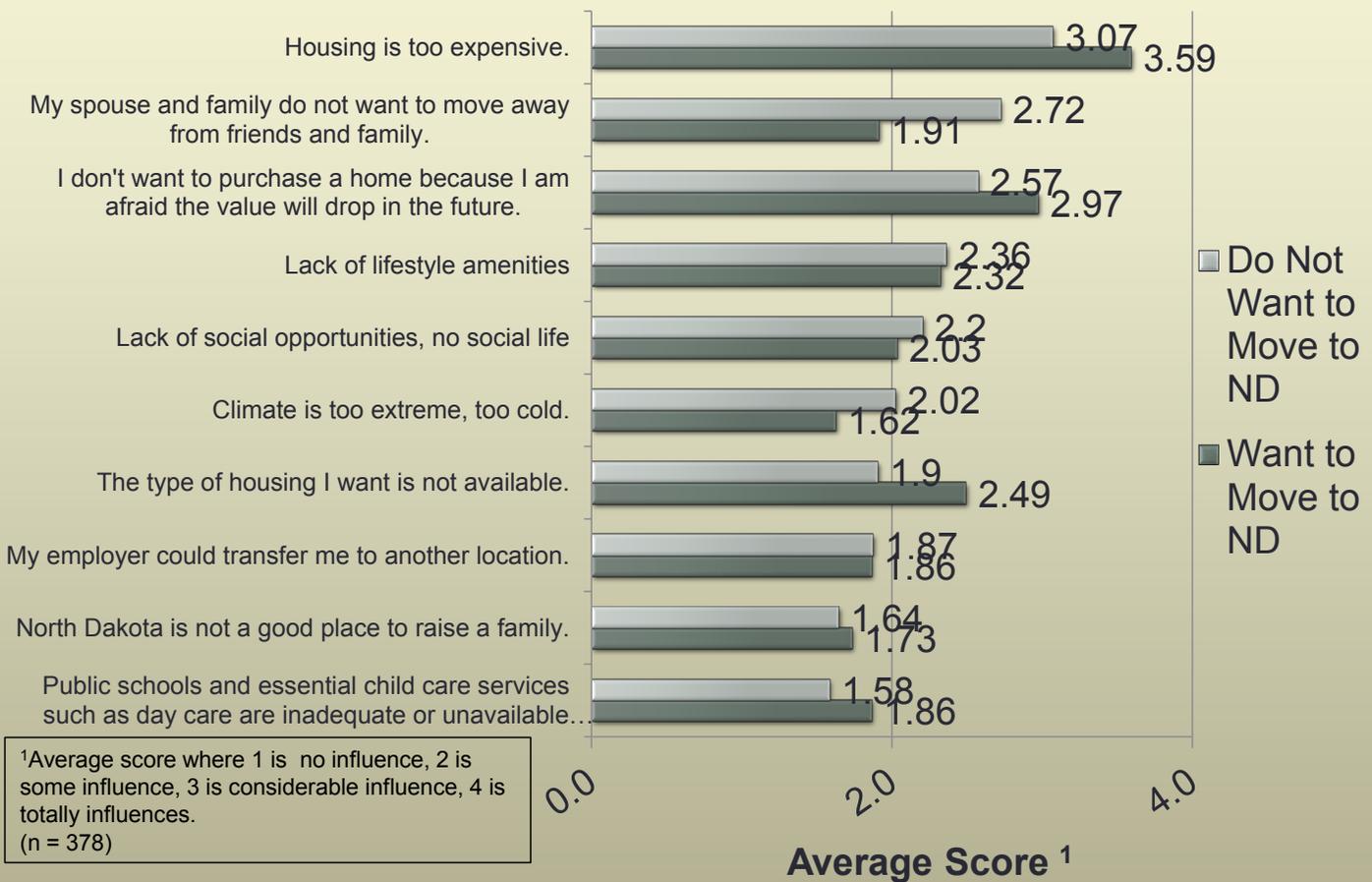
- Resident workers overwhelmingly live in single family homes that they own.
- Residents that live in employer provided housing most frequently live in an apartment.
- Non-resident workers more frequently live in employer provided housing which is most frequently some sort of temporary housing.
- The non-resident workforce predominately lives alone.
- Generally satisfied with the type and condition of housing, but less so with the price (data not shown)

Non-residents: Would you like to move to North Dakota?



n= 486

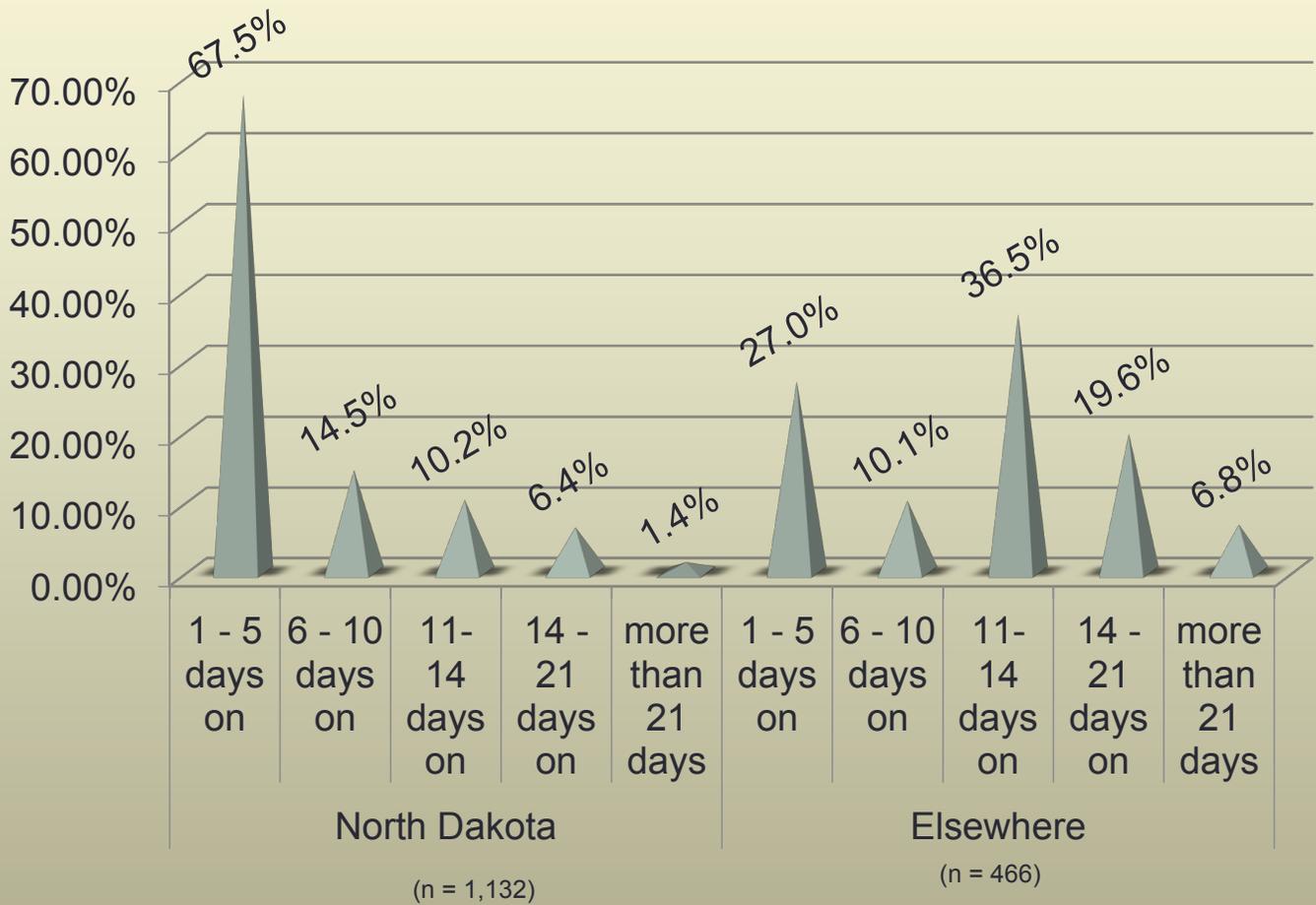
Factors That Influence Respondents That Live Elsewhere Decision to Move to North Dakota



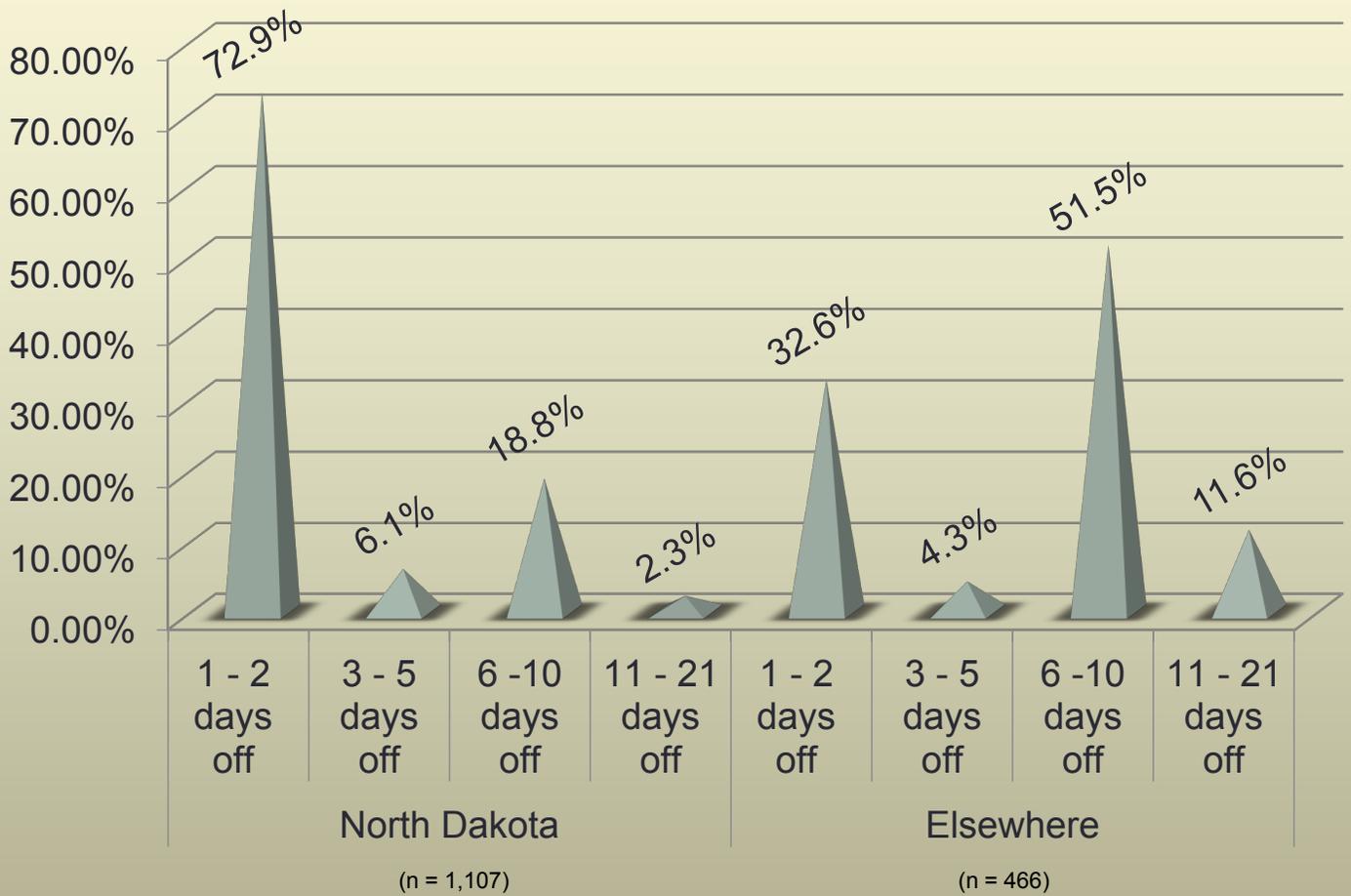
Key take away points

- Housing cost and price risk were most frequently cited as a significant influence for those that *want* to move to North Dakota.
- Housing cost also influences those that that *do not* want to move to North Dakota, but moving away from friends and family was more frequently cited as the factor that has considerable influence.
- The weather or perceptions that ND lacks good schools, or quality of life amenities are much less of a consideration both groups. This is especially relevant for those that would like to move.

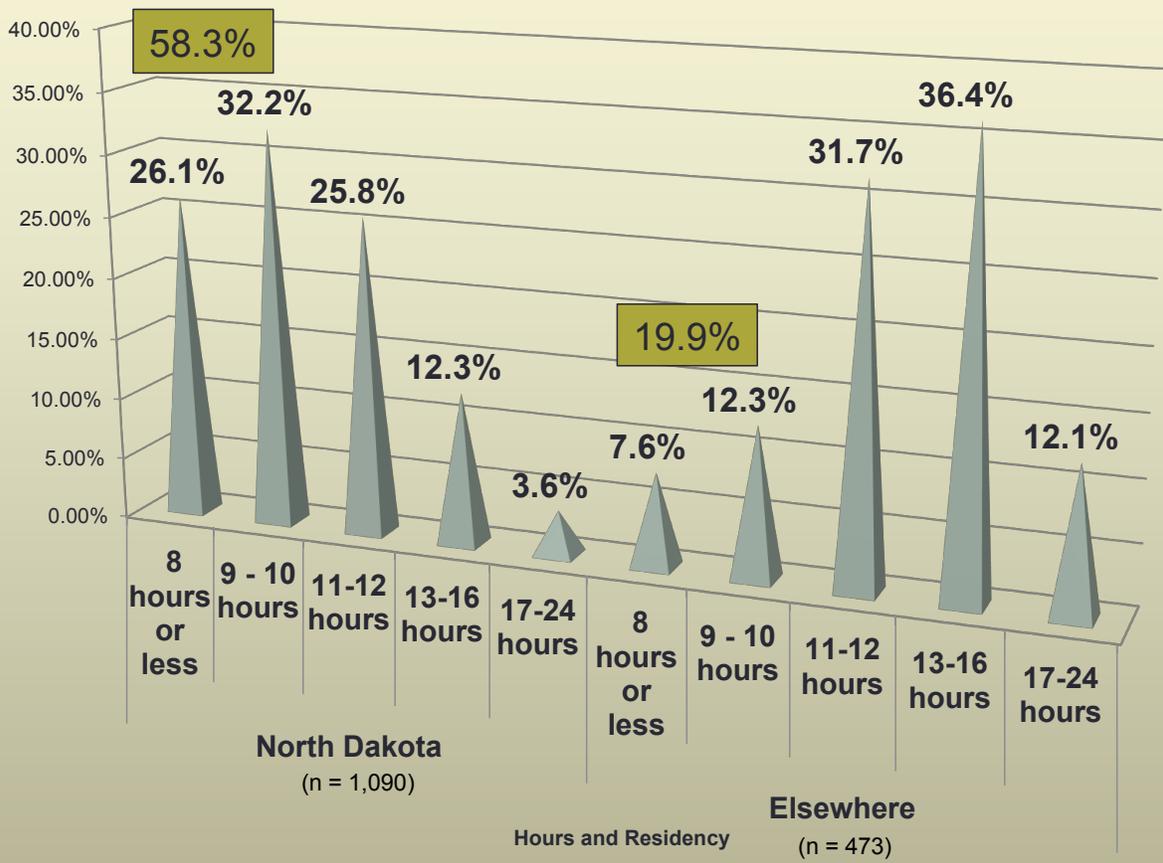
Number of Days "On" by Residency



Number of Days "Off" by Residency



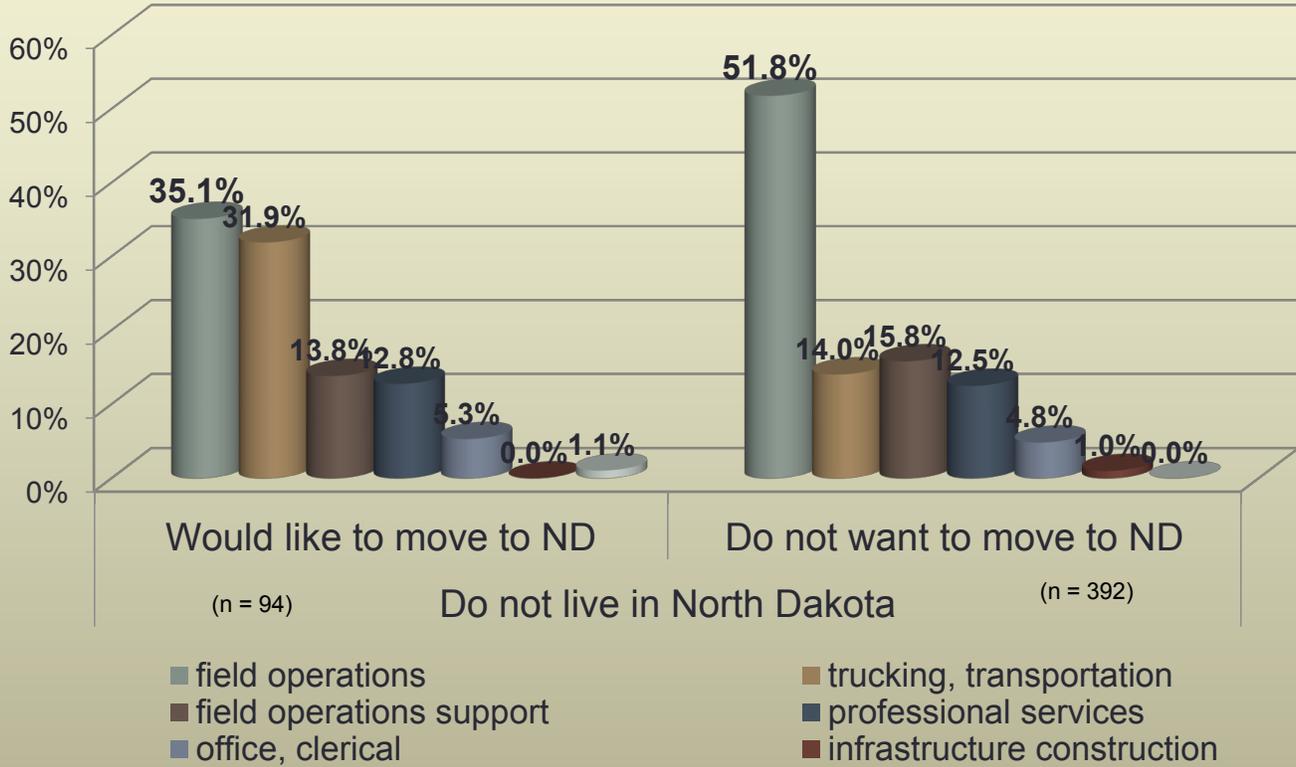
Hours per Shift, by Residency



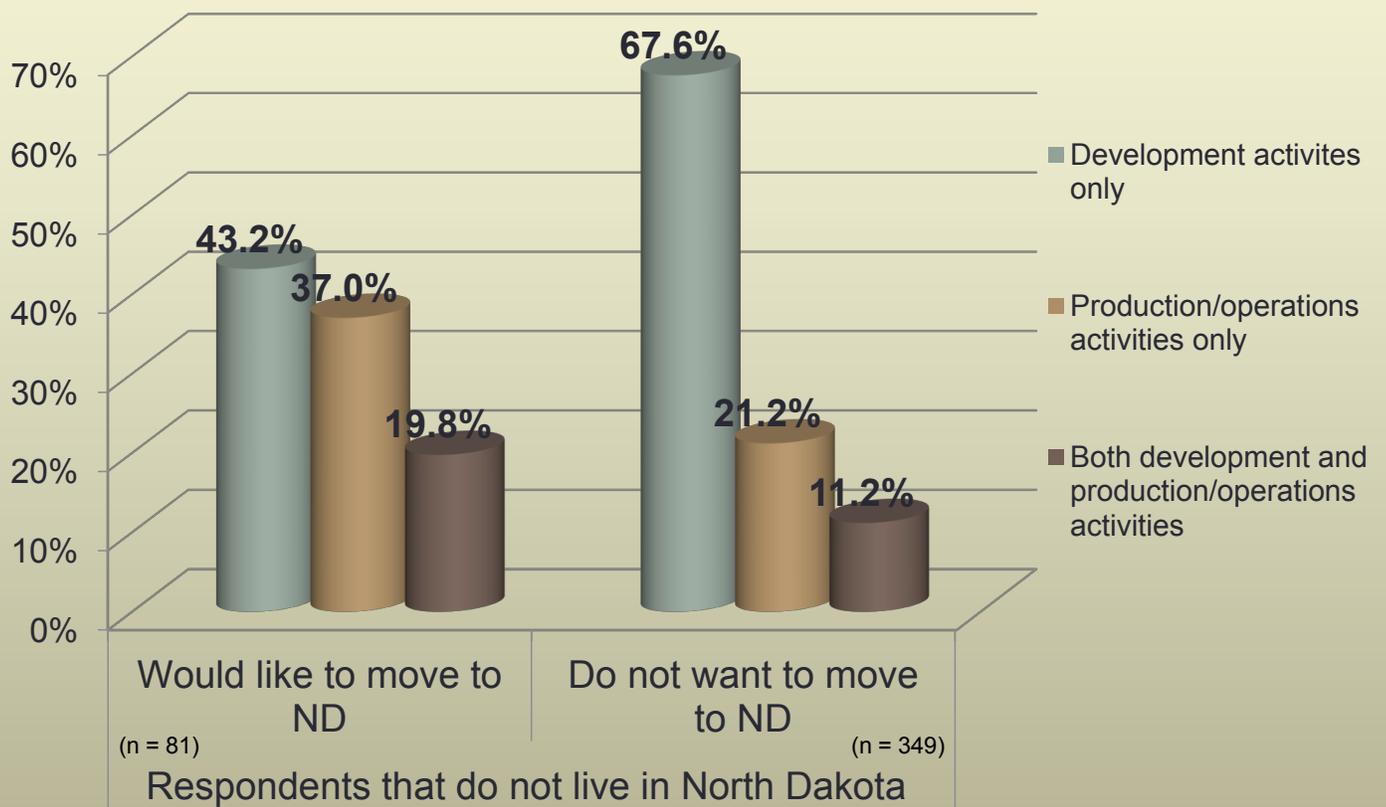
Key take away points

- Non-resident workers have longer work periods 'on' and 'off' and work longer shifts than workers that live in North Dakota
- Longer work periods 'on' and 'off' enable non-resident workers to return home
- That pattern is consistent across all job descriptions (data not shown)
- That pattern is also consistent across industry activities, both development activities and production and operations activities (data not shown)

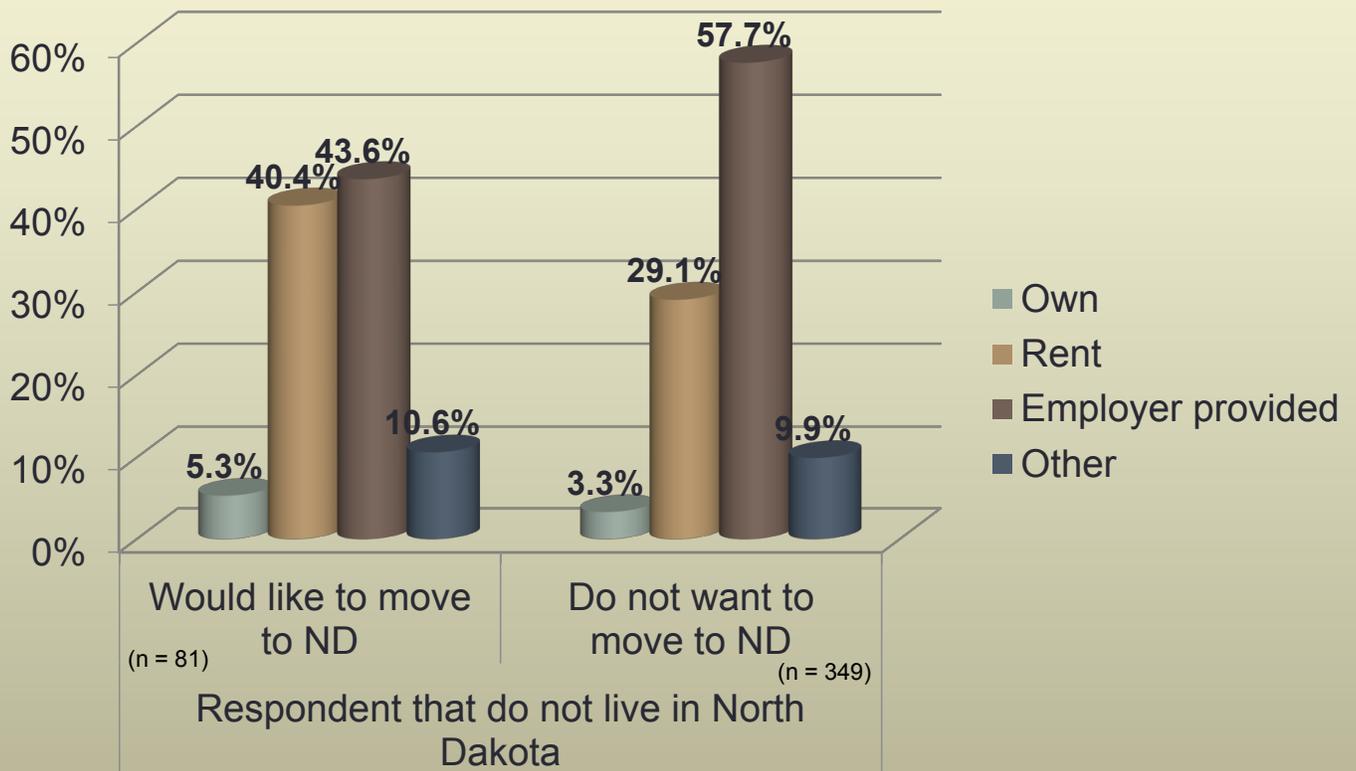
Job Description of Respondents That Do Not Live in North Dakota and Their Intentions to Move to North Dakota



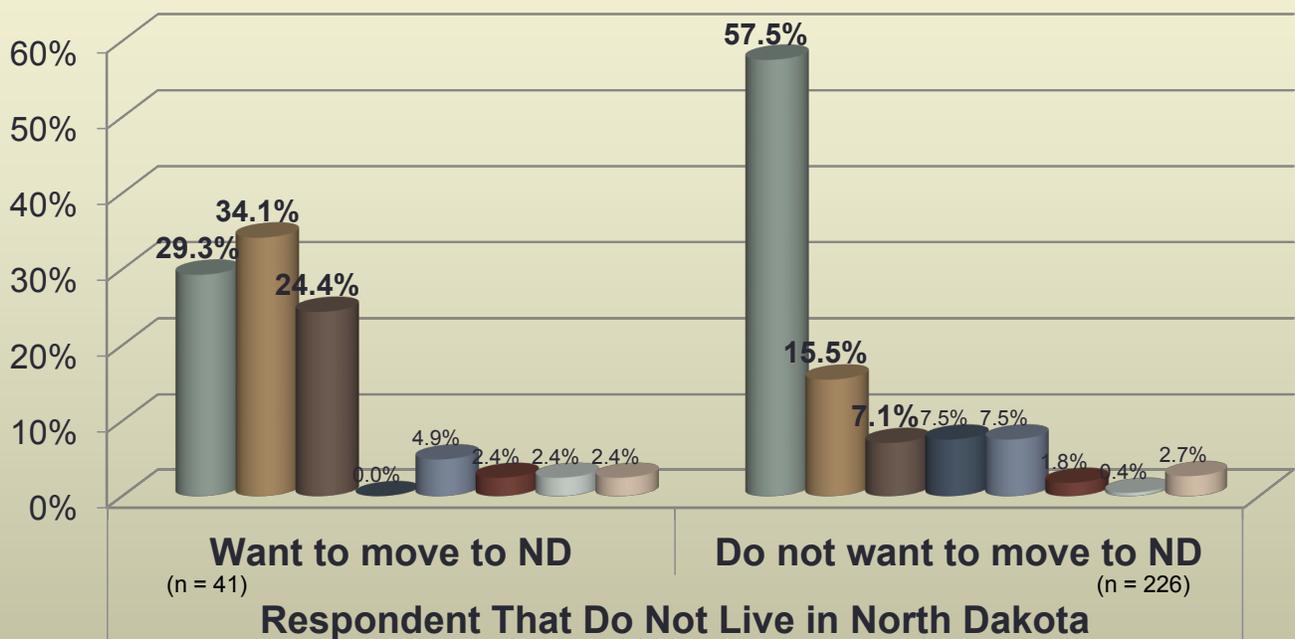
Industry Activity, of Respondent That Do Not Live in North Dakota, by Intentions to Move to North Dakota



Type of Housing Respondents That Do Not Live in North Dakota Use While Working in North Dakota and Intentions to Move to North Dakota



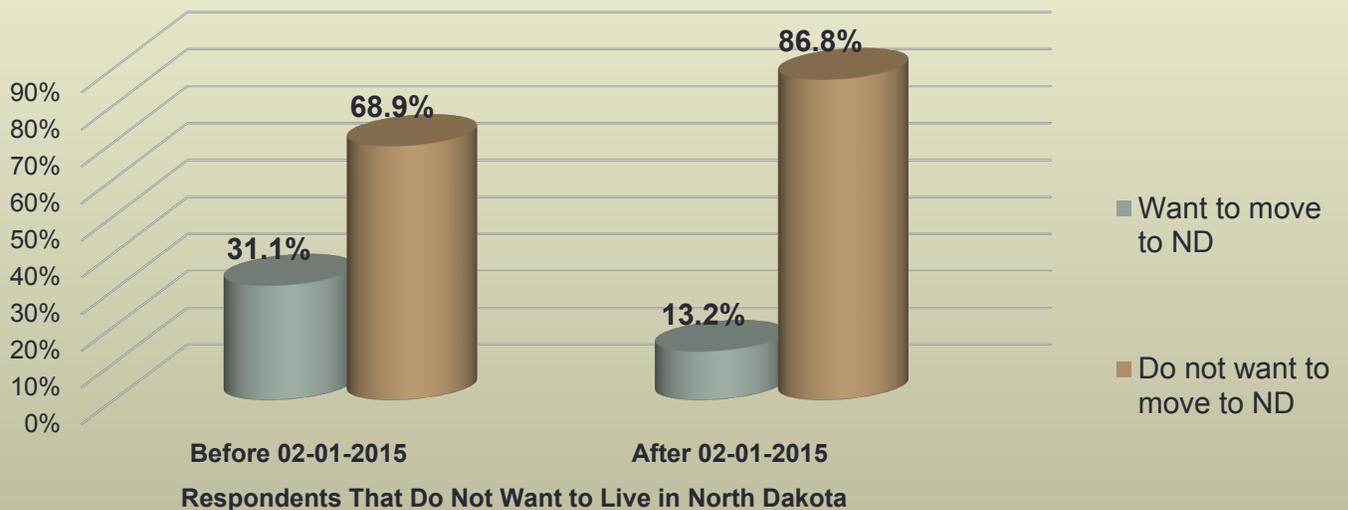
Type of Employer Provided Housing, Respondents That Do Not Live in North Dakota and Their Intension to Move to North Dakota



- Crew Camp
- Apartment
- RV, Camper, Mobil
- Job site housing
- Condo, Townhome
- Hotel

Effects of Industry Slowdown—Results Interpreted with Caution

Respondents That Do Not Live in North Dakota Intentions to Move to North Dakota, by Time Period When Questionnaire Was Completed



Respondents That Do Not Want to Live in North Dakota

Respondents' Residency and Time Period Questionnaire Was Completed

Effects of Industry Slowdown—Results Interpreted with Caution

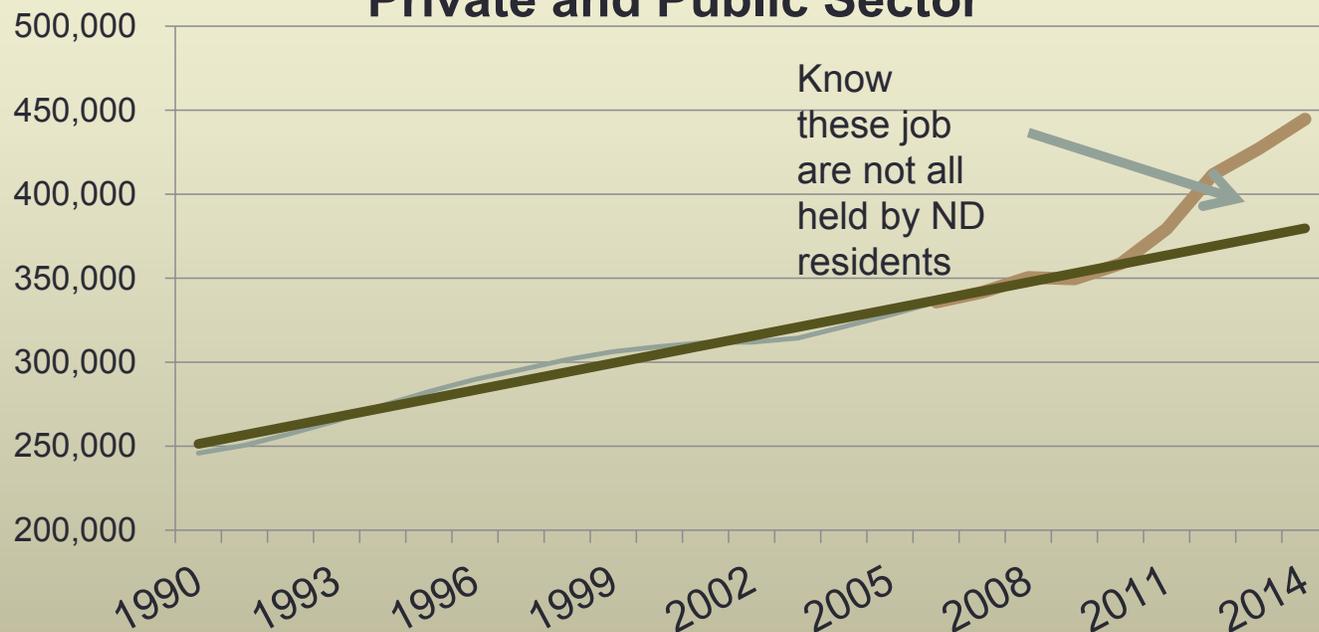
- Small sample size for non-resident workers that want to move to North Dakota
- Could be other factors that influence decision
 - Improving economy elsewhere
 - Personal considerations
 - No controls for motivations
- Appears that change in intentions coincided with downturn in economic conditions

Conclusions

- There are two distinct workforces present in the oil and gas industry.
- They utilize different types of housing and have different characteristics.
- They have different work patterns, work longer periods on and off and work longer shifts. Live alone or in camps or with roommates
- The non-resident workforce is more concentrated in development activities than production and operations activities
- A majority of the non-resident workforce has no intentions of moving to ND
- Study struck a cord with respondents...30 pages of 'other comments'

We have a much larger workforce

All Employment Private and Public Sector



Average annual change from 1990-2008 = 4,900 jobs

Average annual change from 2008-2014 = 15,000 jobs

Source: Quarterly Census of Employment and Workforce, 2014

An example for illustrative purposes.

		Hypothetical reduction in workforce		
		10 %	20 %	30 %
Oil & gas workers added since 2008 (2014 QCEW data)	57,890	52,101	46,312	36,470
Non-resident workforce	x 40%	x 40%	x 40%	x 40%
Do not want to move to ND	<u>x 80%</u>	<u>x 80%</u>	<u>x 80%</u>	<u>x 80%</u>
Potential non-resident workforce present in ND	<u>18,524</u>	<u>16,672</u>	<u>14,819</u>	<u>11,670</u>

Implications for Workforce Issues

- We have two distinct workforces in the oil and gas industry with different characteristics that demand a different mix of housing and goods and services. Spending patterns will be different.
- Long term presence of a commuting workforce is likely.
- We could see surges of non-resident workers that correlate with development activities due to concentration of non-resident workforce with jobs related to development activities.
- There may be continued demand for some temporary housing.
- May see greater prevalence of apartments compared to historic housing mix.
- Issues that prevent workers from moving to North Dakota can be addressed, such as price and price risk. Weather and inaccurate perceptions not significant considerations.

What's next

- Findings are being used to update and create a new model to project employment and population based on various price scenarios.
- Need for further study
- Do not have a good understanding of the commuting workforce.
- A substantial portion of the workforce does not live where they work
- Implications of a very different workforce not well understood
- Findings will be used as input to other efforts
 - Other responses
 - Employment, housing and population projection scenarios
 - Other analysis

Questions?

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