

Understanding Associations Between Serious Mental Illness and Hepatitis C among Veterans: A National Multivariate Analysis

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REPORTED PREVALENCE OF HCV AMONG INDIVIDUALS WITH SMI

| Study Author | Year | HCV(%) |
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| Pirl | 2005 | 18.0 |
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| General Population | 1999 | 1.8 |
| V.A. Population | 2005 | 5.4 |

HCV PREVALENCE STUDIES AMONG INDIVIDUALS WITH SMI

- ***Variance in Estimates:***
 - Small Sample Sizes
 - Differences in Sampling Frame
 - Use of Convenience Samples
- ***No Comparison Groups:***
 - Unable to account for mediating or moderating factors

RESEARCH GOAL

To determine the prevalence of Hepatitis C among a national population of veterans with SMI as compared to a non-SMI control group.

METHODS

- **Design:** Cross-sectional study
- **Study Population:** National population of veterans with a diagnosis of SMI from the National Psychosis Registry in Fiscal Year 2002

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- **Comparison Group:** Random sample of veterans without a diagnosis of SMI in Fiscal Year 2002

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- **Inclusion Criteria:** Those who received at least 3 health care encounters at Veteran Affairs facilities during the fiscal year 2002.

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- **Predictor Variable:**

Diagnosis of SMI using the following ICD-9 codes for schizophrenia (295.0-4, 295.6-9), and bipolar disorder (296.0-1; 296.4-8)

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Diagnosis of SMI using the following ICD-9 codes for schizophrenia (295.0-4, 295.6-9), and bipolar disorder (296.0-1; 296.4-8)

- **Outcome Variable:**

Diagnosis of Hepatitis C using ICD-9 codes 070.41, 070.44, 070.51, and 070.54.

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- **Covariates:**

- Substance Use

- ICD-9 Codes for alcohol, cocaine, opioid type, cannabis, and combinations of drugs

- Marital Status

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- Demographic Characteristics, Region, Locale, Homelessness, Service Connection

ANALYSIS

- Bivariate and multivariate logistic regression, outcome diagnosis of Hepatitis C

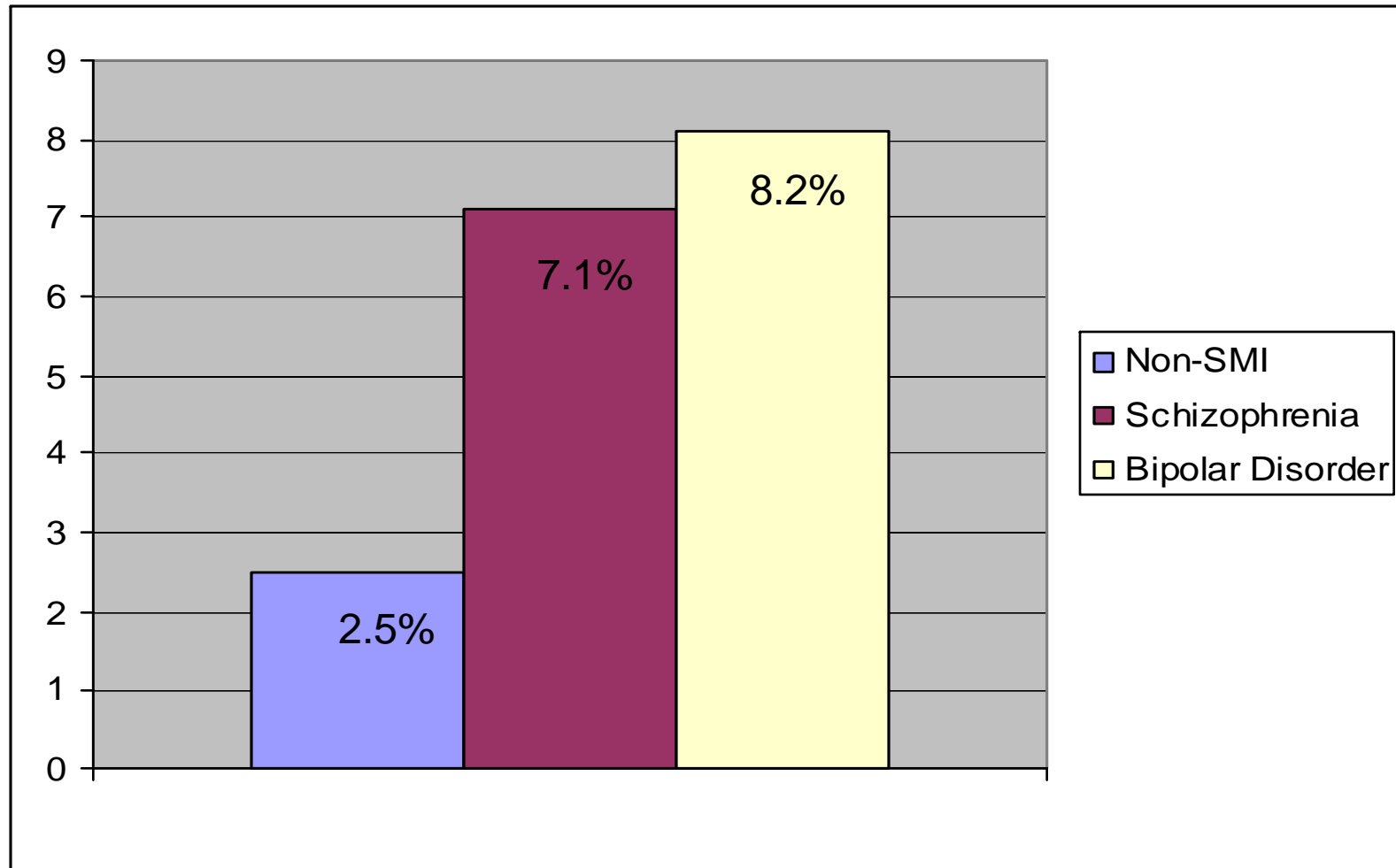
RESULTS

SAMPLE CHARACTERISTICS

| | Schizophrenia N=89,189 | Bipolar D/O N=65,983 | Non-SMI N=67,965 |
|----------------|---------------------------|-------------------------|---------------------|
| Age (SD) * | 55.1(11.9) | 53.3 (12.4) | 63.9 (13.9) |
| Male (%) * | 94.8 | 88.7 | 72.6 |
| Black (%) * | 27.6 | 11.4 | 10.2 |
| Homeless (%) * | 12.9 | 15.0 | 2.0 |
| Urban (%) * | 81.6 | 79.1 | 72.6 |
| Sub. Use (%) * | 24.8 | 32.7 | 6.2 |
| Married (%) * | 25.2 | 37.3 | 61.7 |

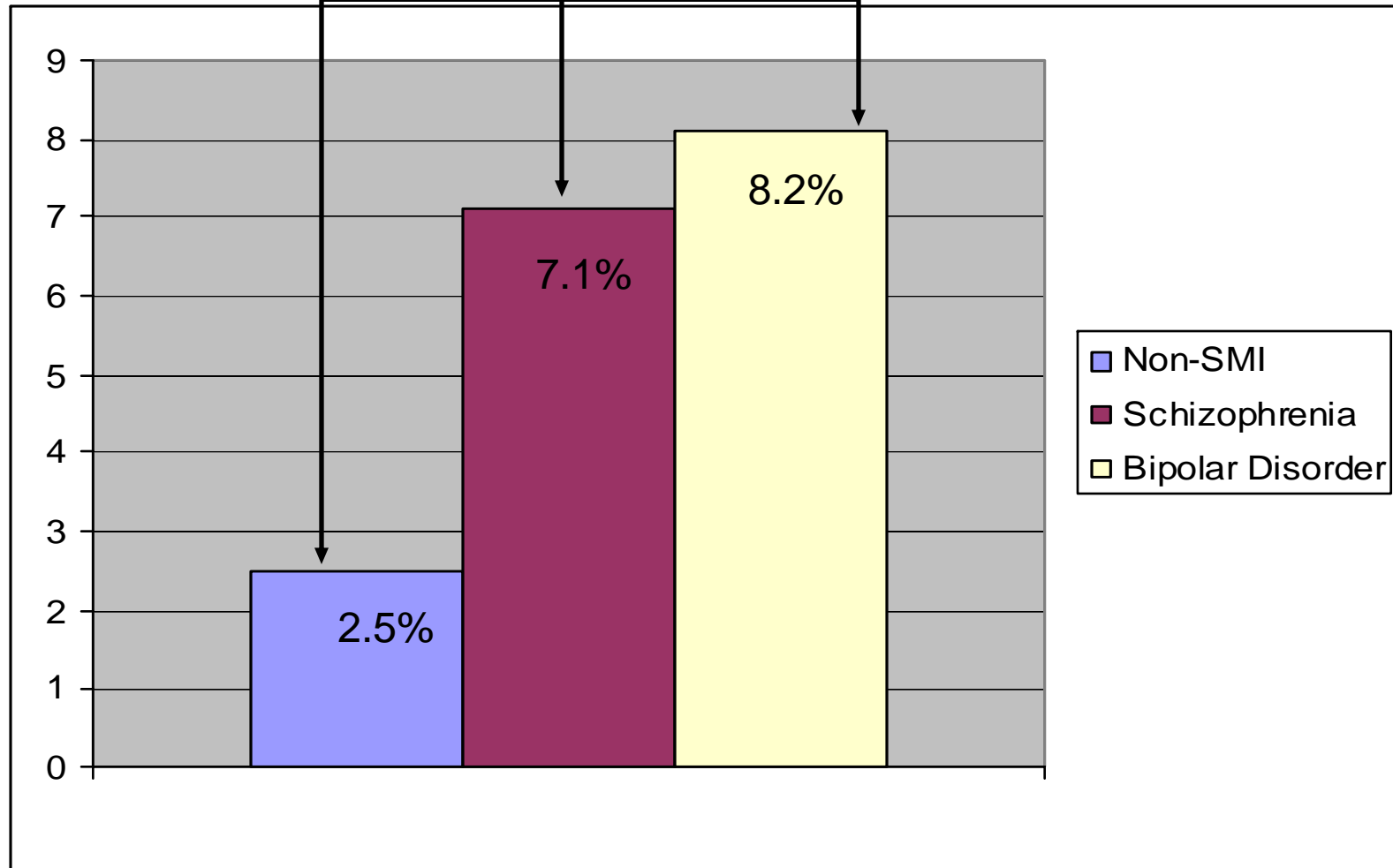
*P<0.0001

PREVALENCE OF HEP C



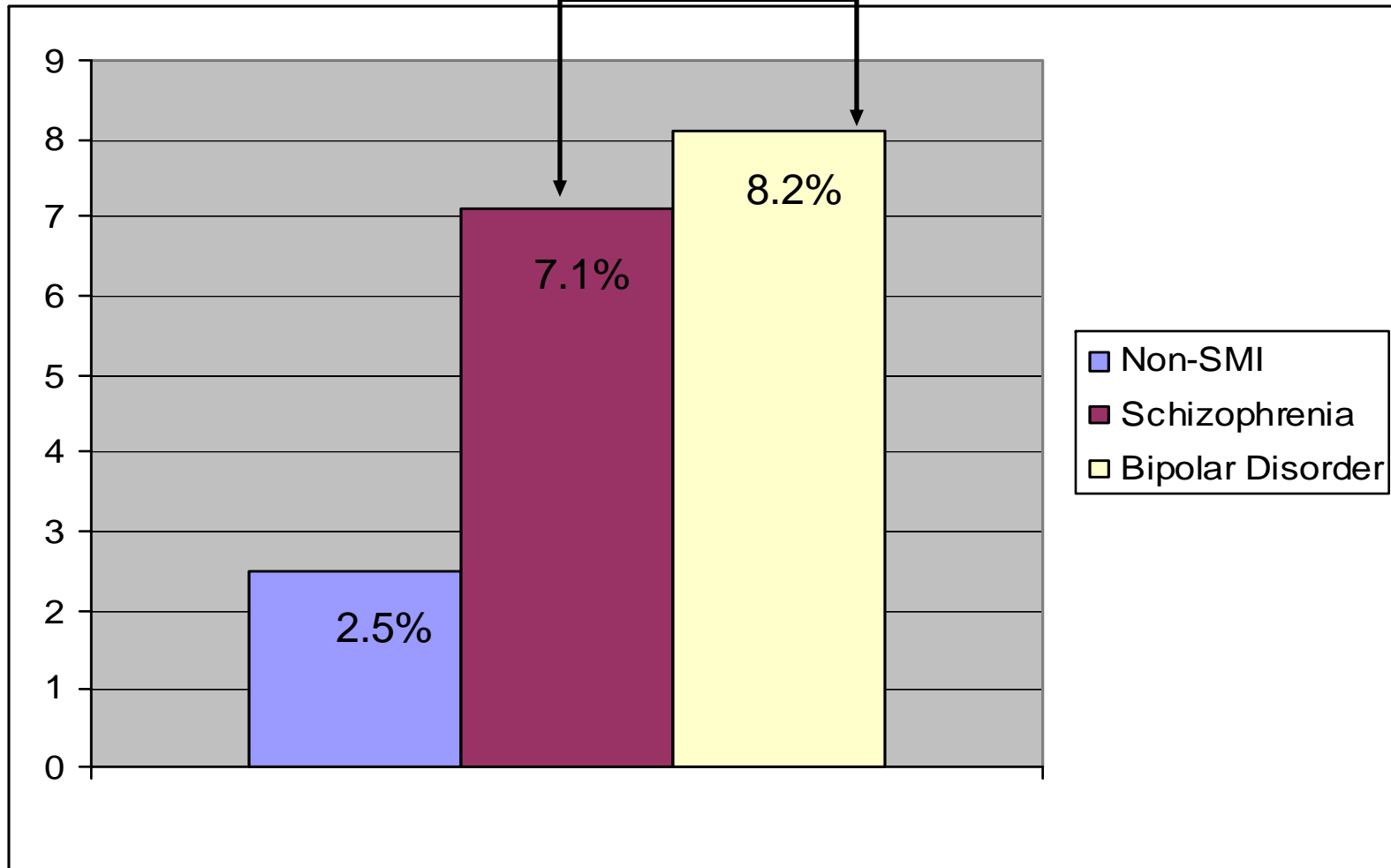
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CRUDE ODDS OF HEP C

| Diagnostic Category | Crude Odds Ratio (95% Confidence Interval) |
|----------------------------|---|
| Schizophrenia | 2.94 (2.79,3.11) |
| Bipolar Affective Disorder | 3.43 (3.24,3.62) |
| Non-SMI Comparison | 1.00 (referent) |

CRUDE ODDS OF HEP C

| Diagnostic Category | | Crude Odds Ratio (95% Confidence Interval) |
|---------------------|--|--|
| Schiz | Those with SMI have ~3-3 1/2 times the risk for Hep. C as compared to Non-SMI Control Group. | 2.94 (2.79,3.11) |
| Bipo | | 3.43 (3.24,3.62) |
| Non- | | 1.00 (referent) |

FINAL LOGISTIC REGRESSION MODEL

- *Adjusted for demographic characteristics, marital status, homelessness, substance use, region, locale, service connection.*

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- *Adjusted for demographic characteristics, marital status, homelessness, substance use, region, locale, service connection.*
- *Significant interaction between diagnostic category and substance use*

ADJUSTED ODDS OF HEP C

| Diagnostic Category | Crude Odds Ratio (95% CI) | Adjusted Odds Ratio (95% CI) |
|-----------------------|---------------------------|------------------------------|
| Schizophrenia | 2.94 (2.79,3.11) | |
| Without Substance Use | | 1.47 (1.36, 1.59) |
| With Substance Use | | 5.95 (5.51, 6.43) |
| Bipolar Affective D/O | 3.43 (3.24,3.62) | |
| Without Substance Use | | 1.64 (1.51, 1.78) |
| With Substance Use | | 7.02 (6.50, 7.57) |
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ADJUSTED ODDS OF HEP C

| Race | Crude Odds Ratio (95% CI) | Adjusted Odds Ratio (95% CI) |
|---------------|---------------------------|------------------------------|
| Black | 2.00 (1.93,2.08) | 1.40 (1.34, 1.47) |
| Hispanic | 1.58 (1.48,1.68) | 1.65 (1.53, 1.78) |
| Other/Unknown | 0.40 (0.38,0.43) | 0.68 (0.63, 0.73) |
| White | 1.00 (referent) | 1.00 (referent) |

ADJUSTED ODDS OF HEP C

| Marriage Category | Crude Odds Ratio (95% CI) | Adjusted Odds Ratio (95% CI) |
|--------------------|---------------------------|------------------------------|
| Never Married | 2.41 (2.30,2.52) | 1.24 (1.18, 1.31) |
| Divorced/Separated | 3.13 (3.00,3.26) | 1.51 (1.43, 1.58) |
| Widowed | 1.02 (0.93,1.13) | 1.02 (0.91,1.14) |
| Married | 1.00 (referent) | 1.00 (referent) |

ADJUSTED ODDS OF HEP C

| Substance Use | Crude Odds Ratio (95% CI) | Adjusted Odds Ratio (95% CI) |
|---------------|---------------------------|------------------------------|
| Yes | 7.32 (7.07, 7.57) | 5.48 (4.91, 6.12) |
| No | 1.00 (referent) | 1.00 (referent) |

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 - ~3-3.5 times the crude prevalence of Hepatitis C
- ***Co-occurring Substance Use:***
 - Modifies Relationship Between HCV and Schizophrenia/Bipolar Disorder
- ***Those with Bipolar Disorder:***
 - At Greater Risk Compared to those with Schizophrenia

LIMITATIONS

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- Generalizability

IMPLICATIONS

- Hepatitis C Screening
Recommend

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Recommend
- Evaluate Substance Use
- STIRR Intervention

ADJUSTED ODDS OF HIV

| Age | Crude Odds Ratio (95% CI) | Adjusted Odds Ratio (95% CI) |
|-------------|---------------------------|------------------------------|
| 50> years | 0.42 (0.36, 0.48) | 0.55 (0.48, 0.64) |
| 40-49 years | 1.46 (1.26, 1.68) | 1.16 (1.00, 1.35) |
| <40 years | 1.00 (referent) | 1.00 (referent) |

ADJUSTED ODDS OF HIV

| Male | Crude Odds Ratio (95% CI) | Adjusted Odds Ratio (95% CI) |
|------|---------------------------|------------------------------|
| Yes | 2.12 (1.69, 2.67) | 2.74 (2.17, 3.46) |
| No | 1.00 (referent) | 1.00 (referent) |

ADJUSTED ODDS OF HIV

| Urban Locale | Crude Odds Ratio (95% CI) | Adjusted Odds Ratio (95% CI) |
|--------------|---------------------------|------------------------------|
| Yes | 3.49 (2.98, 4.09) | 2.12 (1.80, 2.49) |
| No | 1.00 (referent) | 1.00 (referent) |

ADJUSTED ODDS OF HIV

| Service Connected | Crude Odds Ratio (95% CI) | Adjusted Odds Ratio (95% CI) |
|-------------------|---------------------------|------------------------------|
| Yes | 0.85 (0.78, 0.92) | 0.91 (0.83, 0.99) |
| No | 1.00 (referent) | 1.00 (referent) |

ADJUSTED ODDS OF HIV

| Homeless | Crude Odds Ratio (95% CI) | Adjusted Odds Ratio (95% CI) |
|----------|---------------------------|------------------------------|
| Yes | 3.28 (2.98, 3.61) | 1.07 (0.96, 1.19) |
| No | 1.00 (referent) | 1.00 (referent) |

ADJUSTED ODDS OF HIV

| Region | Crude Odds Ratio (95% CI) | Adjusted Odds Ratio (95% CI) |
|-----------|---------------------------|------------------------------|
| Central | 0.65 (0.56,0.76) | 0.66 (0.57,0.77) |
| Northeast | 1.54 (1.36,1.74) | 1.40 (1.24,1.59) |
| South | 1.14 (1.01,1.28) | 1.16 (1.02,1.31) |
| West | 1.00 (referent) | 1.00 (referent) |