**Appendix 3. Alcohol-attributable fractions for each data point included in the meta-analysis by cause of fatal nontraffic injury**

# Air-space transport

**Study**

**BAC ≥ 0.10 g/dL Tested**

**AAF**

**95% CI**

**Type: Published studies**

Botch et al. 20091 Botch et al. 20082 Li et al. 19983 **Subtotal**

**Random effects model**

Heterogeneity: *I* 2 = 24%, *p* = 0.27

**Type: State data systems**

Virginia Utah **Subtotal**

**Random effects model**

Heterogeneity: *I* 2 = 0%, *p* = 1.00

1 139

8 215

0.01 [0.00; 0.04]

0.04 [0.02; 0.07]

0.04 [0.01; 0.10]

**0.03 [0.02; 0.05]**

**0.03 [0.02; 0.05]**

0.00 [0.00; 0.20]

0.00 [0.00; 0.25]

**0.00 [0.00; 1.00]**

**0.00 [0.00; 1.00]**

**0.03 [0.02; 0.05]**

**0.03 [0.01; 0.05]**

4 101

**455**

0 17

0 13

**30**

**Total**

**Random effects model**

Heterogeneity: *I* 2 = 0%, *p* = 0.62

**485**

0

0.05 0.1 0.15 0.2

## Aspiration

**Study**

**BAC ≥ 0.10 g/dL Tested**

**AAF**

**95% CI**

**Type: Published studies**

Boghossian et al. 20104 (Canada)

2\* 11

0.18

[0.02; 0.52]

**Subtotal 11**

**Random effects model**

Heterogeneity: not applicable

**0.18 [0.05; 0.51]**

**0.18 [0.05; 0.51]**

**Type: State data systems**

Virginia Utah

North Carolina

4 50

5 26

15 21

0.08

0.19

0.71

[0.02; 0.19]

[0.07; 0.39]

[0.48; 0.89]

**Subtotal 97**

**Random effects model**

Heterogeneity: *I* 2 = 92%, *p* < 0.01

**0.25 [0.17; 0.34]**

**0.27 [0.06; 0.66]**

**Total**

**Random effects model**

Heterogeneity: *I* 2 = 88%, *p* < 0.01

**108**

0.2 0.4

0.6 0.8

**0.24 [0.17; 0.33]**

**0.24 [0.08; 0.54]**

\* Alcohol intoxication was reported to be a factor associated with the fatal injuries.

Child maltreatment

**Study**

**BAC ≥ 0.10 g/dL Tested**

**AAF**

**95% CI**

**Type: Published studies** Colorado CFPS 20215 Parks et al. 20116

South Carolina SCFAC 20197

41\*

25\*

15\*

452

260

145

0.09

0.10

0.10

[0.07; 0.12]

[0.06; 0.14]

[0.06; 0.16]

**Subtotal**

**Random effects model**

Heterogeneity: *I* 2 = 0%, *p* = 0.90

**857**

**0.09 [0.08; 0.12]**

**0.09 [0.08; 0.12]**

**Total**

**Random effects model**

Heterogeneity: *I* 2 = 0%, *p* = 0.90

**857**

0.06 0.08

0.1 0.12 0.14 0.16

**0.09 [0.08; 0.12]**

**0.09 [0.08; 0.12]**

\* Caregivers were reported to be alcohol-intoxicated or alcohol-impaired.

## 

## Drowning

**Study**

**BAC ≥ 0.10 g/dL Tested**

**AAF**

**95% CI**

**Type: Published studies**

Okuda et al. 20158 Cummings & Quan 19999 Browne et al. 200310

Canadian Red Cross Society 200611

Lincoln et al. 199612

8

91

58

583

94

57

304

178

1500

186

0.14

0.30

0.33

0.39

0.51

[0.06; 0.26]

[0.25; 0.35]

[0.26; 0.40]

[0.36; 0.41]

[0.43; 0.58]

**Subtotal**

**Random effects model**

Heterogeneity: *I* 2 = 89%, *p* < 0.01

**2225**

**0.37 [0.35; 0.40]**

**0.33 [0.24; 0.44]**

**Type: State data systems**

Utah Virginia Minnesota

North Carolina

11

83

49

131

130

346

136

230

0.08

0.24

0.36

0.57

[0.04; 0.15]

[0.20; 0.29]

[0.28; 0.45]

[0.50; 0.63]

**Subtotal**

**Random effects model**

Heterogeneity: *I* 2 = 97%, *p* < 0.01

**842**

**0.33 [0.29; 0.36]**

**0.28 [0.13; 0.50]**

**Total**

**Random effects model**

Heterogeneity: *I* 2 = 94%, *p* < 0.01

**3067**

0.1

0.2 0.3 0.4 0.5 0.6

**0.36 [0.34; 0.38]**

**0.31 [0.21; 0.42]**

# Fall injuries

**Study**

**BAC ≥ 0.10 g/dL Tested**

**AAF**

**95% CI**

**Type: State data systems**

Virginia

North Carolina

89

116

760

159

0.12

0.73

[0.10; 0.14]

[0.65; 0.80]

**Subtotal**

**Random effects model**

Heterogeneity: *I* 2 = 100%, *p* < 0.01

**919**

**0.22 [0.20; 0.25]**

**0.37 [0.07; 0.83]**

**Total**

**Random effects model**

Heterogeneity: *I* 2 = 100%, *p* < 0.01

**919**

0.1 0.2 0.3 0.4 0.5 0.6 0.7

**0.22 [0.20; 0.25]**

**0.37 [0.07; 0.83]**

# 

# Fire injuries

**Study**

**BAC ≥ 0.10 g/dL Tested**

**AAF**

**95% CI**

**Type: Published studies** Levine et al. 200113 Tridata Corporation 199914

U.S. Fire Administration 200315 McGwin et al. 200016

Marshall et al. 199817

45

67

113

114

69

196

255

374

247

130

0.23

0.26

0.30

0.46

0.53

[0.17; 0.29]

[0.21; 0.32]

[0.26; 0.35]

[0.40; 0.53]

[0.44; 0.62]

**Subtotal**

**Random effects model**

Heterogeneity: *I* 2 = 93%, *p* < 0.01

**1202**

**0.34 [0.31; 0.37]**

**0.35 [0.25; 0.46]**

**Type: State data systems**

Utah Virginia

North Carolina

5 40

51 338

80 100

0.12

0.15

0.80

[0.04; 0.27]

[0.11; 0.19]

[0.71; 0.87]

**Subtotal**

**Random effects model**

Heterogeneity: *I* 2 = 98%, *p* < 0.01

**478**

**0.28 [0.25; 0.33]**

**0.32 [0.07; 0.73]**

**Total**

**Random effects model**

Heterogeneity: *I* 2 = 96%, *p* < 0.01

**1680**

0.2

0.4 0.6 0.8

**0.32 [0.30; 0.35]**

**0.34 [0.20; 0.51]**

# 

# Firearm injuries

**Study**

**BAC ≥ 0.10 g/dL Tested**

**AAF**

**95% CI**

**Type: Published studies** Cherry et al. 200118 Collins 201019

Shields et al. 200820

55 351

2 7

10 20

0.16

0.29

0.50

[0.12; 0.20]

[0.04; 0.71]

[0.27; 0.73]

**Subtotal**

**Random effects model**

Heterogeneity: *I* 2 = 85%, *p* < 0.01

**378**

**0.18 [0.14; 0.22]**

**0.27 [0.13; 0.49]**

**Type: State data systems**

Minnesota Virginia Colorado Utah

North Carolina

1 17

7 67

10 42

9 30

11 19

0.06

0.10

0.24

0.30

0.58

[0.00; 0.29]

[0.04; 0.20]

[0.12; 0.39]

[0.15; 0.49]

[0.33; 0.80]

**Subtotal**

**Random effects model**

Heterogeneity: *I* 2 = 79%, *p* < 0.01

**175**

**0.22 [0.16; 0.28]**

**0.22 [0.11; 0.41]**

**Total**

**Random effects model**

Heterogeneity: *I* 2 = 80%, *p* < 0.01

**553**

0.2

0.4 0.6

**0.19 [0.16; 0.22]**

**0.24 [0.14; 0.38]**

# Homicide

**Study**

**BAC ≥ 0.10 g/dL Tested**

**AAF**

**95% CI**

**Type: Published studies**

Spunt et al. 199821 Spunt et al. 199522 Banks et al. 200823 Greenfeld 199824

41\*

86\*

12

65

181

269

37

173

0.23

0.32

0.32

0.38

[0.17; 0.29]

[0.26; 0.38]

[0.18; 0.50]

[0.30; 0.45]

**Subtotal**

**Random effects model**

Heterogeneity: *I* 2 = 68%, *p* = 0.02

**660**

**0.31 [0.27; 0.35]**

**0.31 [0.25; 0.37]**

**Type: State data systems**

Utah

6 39

0.15

[0.06; 0.31]

**Subtotal 39**

**Random effects model**

Heterogeneity: not applicable

**0.15 [0.07; 0.30]**

**0.15 [0.07; 0.30]**

**Total**

**Random effects model**

Heterogeneity: *I* 2 = 70%, *p* < 0.01

**699**

0.1 0.2 0.3 0.4

**0.30 [0.27; 0.34]**

**0.29 [0.23; 0.36]**

\* Homicide offenders reported to be drunk or alcohol-intoxicated.

# Hypothermia

**Study**

**BAC ≥ 0.10 g/dL Tested**

**AAF**

**95% CI**

**Type: Published studies**

Koutsavlis et al. 200325 (Canada)

3\* 12

0.25

[0.05; 0.57]

**Subtotal 12**

**Random effects model**

Heterogeneity: not applicable

**0.25 [0.08; 0.55]**

**0.25 [0.08; 0.55]**

**Type: State data systems**

Utah Virginia

North Carolina

13 55

26 101

11 21

0.24

0.26

0.52

[0.13; 0.37]

[0.18; 0.35]

[0.30; 0.74]

**Subtotal**

**Random effects model**

Heterogeneity: *I* 2 = 69%, *p* = 0.04

**177**

**0.28 [0.22; 0.35]**

**0.30 [0.20; 0.43]**

**Total**

**Random effects model**

Heterogeneity: *I* 2 = 54%, *p* = 0.09

**189**

0.1 0.2 0.3 0.4 0.5 0.6 0.7

**0.28 [0.22; 0.35]**

**0.29 [0.20; 0.40]**

\* Alcohol intoxication was reported to be a risk factor.

## Motor vehicle nontraffic crashes

**Study**

**BAC ≥ 0.10 g/dL Tested**

**AAF**

**95% CI**

**Type: Published studies** Minnesota DNR 2002–201026 Hall et al. 200927

Wisconsin DNR 2002–202028

Minnesota DNR 2001–201526

Wisconsin DNR 2001–202029 Landen et al. 199930

44

23

118

81

206

11

166

52

245

165

343

17

0.27

0.44

0.48

0.49

0.60

0.65

[0.20; 0.34]

[0.30; 0.59]

[0.42; 0.55]

[0.41; 0.57]

[0.55; 0.65]

[0.38; 0.86]

**Subtotal**

**Random effects model**

Heterogeneity: *I* 2 = 90%, *p* < 0.01

**988**

**0.49 [0.46; 0.52]**

**0.47 [0.37; 0.58]**

**Type: State data systems**

Utah

5 48

0.10

[0.03; 0.23]

**Subtotal 48**

**Random effects model**

Heterogeneity: not applicable

**0.10 [0.04; 0.23]**

**0.10 [0.04; 0.23]**

**Total**

**Random effects model**

Heterogeneity: *I* 2 = 91%, *p* < 0.01

**1036**

0.2

0.4 0.6 0.8

**0.47 [0.44; 0.50]**

**0.42 [0.28; 0.56]**

## Occupational and machine injuries

**Study**

**BAC ≥ 0.10 g/dL Tested**

**AAF**

**95% CI**

**Type: Published studies** West et al. 199631 (Canada) Foster & Dissanaike 201432 Davis & Brissie 200033 Fullerton et al. 199534 Lucas & Lincoln 200735

0

0

0

29

14\*

24

11

10

449

71

0.00

0.00

0.00

0.06

0.20

[0.00; 0.14]

[0.00; 0.28]

[0.00; 0.31]

[0.04; 0.09]

[0.11; 0.31]

**Subtotal**

**Random effects model**

Heterogeneity: *I* 2 = 69%, *p* = 0.01

**565**

**0.08 [0.06; 0.10]**

**0.05 [0.01; 0.24]**

**Type: State data systems**

Utah 1 5

North Carolina 3 7

0.20

0.43

[0.01; 0.72]

[0.10; 0.82]

**Subtotal 12**

**Random effects model**

Heterogeneity: *I* 2 = 0%, *p* = 0.42

**0.33 [0.13; 0.62]**

**0.33 [0.13; 0.62]**

**Total**

**Random effects model**

Heterogeneity: *I* 2 = 70%, *p* < 0.01

**577**

0

0.2 0.4 0.6 0.8

**0.08 [0.06; 0.11]**

**0.08 [0.02; 0.22]**

\* Alcohol was concluded to be a factor associated with the fatal injuries in investigation reports.

## Other road vehicle crashes

## (railroad-trespasser injuries)

**Study**

**BAC ≥ 0.10 g/dL Tested**

**AAF**

**95% CI**

**Type: Published studies**

North American Management 201336 CDC 199937

Pelletier et al. 199738

470\*

40

100

940

78

125

0.50

0.51

0.80

[0.47; 0.53]

[0.40; 0.63]

[0.72; 0.87]

**Subtotal**

**Random effects model**

Heterogeneity: *I* 2 = 94%, *p* < 0.01

**1143**

**0.53 [0.50; 0.56]**

**0.61 [0.44; 0.77]**

**Type: State data systems**

North Carolina

33 48

0.69

[0.54; 0.81]

**Subtotal 48**

**Random effects model**

Heterogeneity: not applicable

**0.69 [0.54; 0.80]**

**0.69 [0.54; 0.80]**

**Total**

**Random effects model**

Heterogeneity: *I* 2 = 93%, *p* < 0.01

**1191**

0.4 0.5 0.6

0.7

0.8

**0.54 [0.51; 0.57]**

**0.63 [0.49; 0.75]**

\* Alcohol was reported to be a factor based on coroners' and chief medical examiners' response.

# Poisoning (not alcohol)

**Study**

**BAC ≥ 0.10 g/dL Tested**

**AAF**

**95% CI**

**Type: Published studies** Przepyszny & Jenkins 200739 Moolenaar et al. 199540 Levine et al. 199541

19 84

17 74

48 119

0.23

0.23

0.40

[0.14; 0.33]

[0.14; 0.34]

[0.31; 0.50]

**Subtotal**

**Random effects model**

Heterogeneity: *I* 2 = 79%, *p* < 0.01

**277**

**0.30 [0.25; 0.36]**

**0.29 [0.20; 0.39]**

**Type: State data systems**

Utah Michigan Virginia Minnesota

North Carolina

170

475

668

60

1126

1719

4081

5576

500

2388

0.10

0.12

0.12

0.12

0.47

[0.09; 0.11]

[0.11; 0.13]

[0.11; 0.13]

[0.09; 0.15]

[0.45; 0.49]

**Subtotal**

**Random effects model**

Heterogeneity: *I* 2 = 100%, *p* < 0.01

**14264**

**0.18 [0.17; 0.18]**

**0.16 [0.09; 0.27]**

**Total**

**Random effects model**

Heterogeneity: *I* 2 = 100%, *p* < 0.01

**14541**

0.1 0.2 0.3 0.4

**0.18 [0.17; 0.18]**

**0.20 [0.13; 0.29]**

# 

# Suicide

**Study**

**BAC ≥ 0.10 g/dL Tested**

**AAF**

**95% CI**

**Type: Published studies** Weinberger et al. 200142 Lewis et al. 200743

San Nicolas & Lemos 201544 Bullock & Diniz 200045 (Canada) Davis 199946

Wolford-Clevenger et al. 202047

Cherpitel et al. 199648

Fisher et al. 201549 Branas et al. 201150 Kaplan et al. 201351

Shields et al. 2006,52 200820 Przepyszny & Jenkins 200739 Conner et al. 201653

1

0

14

11

4

75

17

380

24

7777

656

8

88

46

14

102

77

24

447

101

2178

123

39579

2702

31

224

0.02

0.00

0.14

0.14

0.17

0.17

0.17

0.17

0.20

0.20

0.24

0.26

0.39

[0.00; 0.12]

[0.00; 0.23]

[0.08; 0.22]

[0.07; 0.24]

[0.05; 0.37]

[0.13; 0.21]

[0.10; 0.26]

[0.16; 0.19]

[0.13; 0.28]

[0.19; 0.20]

[0.23; 0.26]

[0.12; 0.45]

[0.33; 0.46]

**Subtotal**

**Random effects model**

Heterogeneity: *I* 2 = 89%, *p* < 0.01

**45648**

**0.20 [0.19; 0.20]**

**0.18 [0.14; 0.23]**

**Type: State data systems**

Utah Virginia Minnesota Colorado Michigan

North Carolina

485

493

588

1038

962

1249

2416

2417

2490

4221

3645

1886

0.20

0.20

0.24

0.25

0.26

0.66

[0.18; 0.22]

[0.19; 0.22]

[0.22; 0.25]

[0.23; 0.26]

[0.25; 0.28]

[0.64; 0.68]

**Subtotal**

**Random effects model**

Heterogeneity: *I* 2 = 100%, *p* < 0.01

**17075**

**0.28 [0.28; 0.29]**

**0.29 [0.19; 0.42]**

**Total**

**Random effects model**

Heterogeneity: *I* 2 = 99%, *p* = 0

**62723**

0 0.1 0.2 0.3 0.4 0.5 0.6

**0.22 [0.22; 0.22]**

**0.21 [0.16; 0.27]**

## Water transport

**Study**

**BAC ≥ 0.10 g/dL Tested**

**AAF**

**95% CI**

**Type: Published studies**

New York State OPRHP 2013–201954 Wisconsin DNR 2004–201855

Browne et al. 200356 Smith et al. 200157 Barss 201158 (Canada)

14

37

18

60

565

83

170

73

221

1923

0.17

0.22

0.25

0.27

0.29

[0.10; 0.27]

[0.16; 0.29]

[0.15; 0.36]

[0.21; 0.34]

[0.27; 0.31]

**Subtotal**

**Random effects model**

Heterogeneity: *I* 2 = 62%, *p* = 0.03

**2470**

**0.28 [0.26; 0.30]**

**0.25 [0.21; 0.30]**

**Type: State data systems**

Virginia Minnesota

3 7

20 45

0.43

0.44

[0.10; 0.82]

[0.30; 0.60]

**Subtotal 52**

**Random effects model**

Heterogeneity: *I* 2 = 0%, *p* = 0.94

**0.44 [0.31; 0.58]**

**0.44 [0.31; 0.58]**

**Total**

**Random effects model**

Heterogeneity: *I* 2 = 64%, *p* = 0.01

**2522**

0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8

**0.28 [0.27; 0.30]**

**0.27 [0.22; 0.32]**

|  |
| --- |
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