

11-2020

## COVID-19 Evacuation and Sheltering Risk Perception Study

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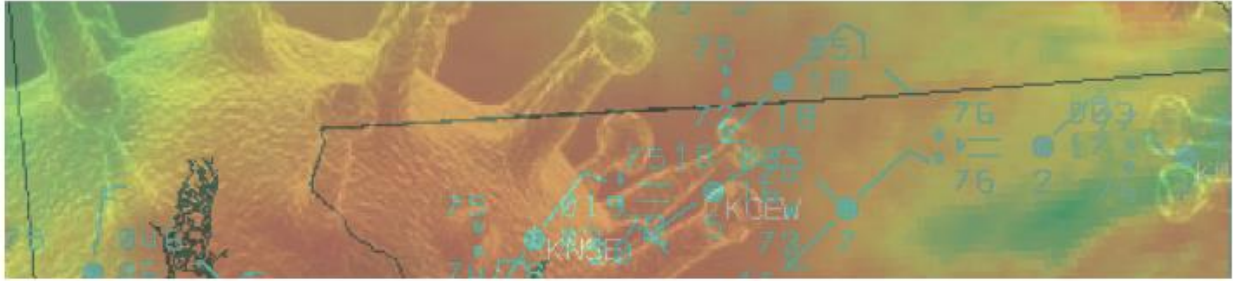
Behr, Joshua G.; Diaz, Rafael; Yusuf, Wie; Giles, Bridget; Lawsure, Kaleen; and McLeod, George, "COVID-19 Evacuation and Sheltering Risk Perception Study" (2020). *Presentations, Lectures, Posters, Reports*. 28. <https://digitalcommons.odu.edu/odurc-presentations/28>

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**Authors**

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# COVID-19 EVACUATION and SHELTERING Risk Perception Study



A Report Prepared for the  
Virginia Department of Emergency Management

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Bridget Giles, Kaleen Lawsure, George McLeod



November 10, 2020

Attention: Curtis Brown  
State Coordinator of Emergency Management

Michelle Oblinsky  
VEST Bureau Chief

Subject: COVID-19 Evacuation and Sheltering Risk Perception Study

Enclosure: (1) Draft Final Report

Curtis and Michelle:

The Virginia Modeling, Analysis and Simulation Center (VMASC) is pleased to submit the enclosed Draft Final Report in accordance with the contract requirements for VMASC Project 200334-010 titled, "COVID-19 Evacuation and Sheltering Risk Perception Study."

Please direct any questions of a technical nature to Dr. Joshua G Behr ( email: [jbehr@odu.edu](mailto:jbehr@odu.edu), cell 757-683-6564 ).

Regards,



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## Table of Contents

<b>Executive Overview</b> .....	23
<b>Executive Summary of Findings</b> .....	25
Anticipated Change in Evacuation & Sheltering Behaviors under COVID .....	26
Households that Plan to Shelter in the Region, other than at a Public Shelter, under COVID.....	27
Households that Plan to Shelter in a Public Shelter in the Region under COVID .....	30
Households that Plan to Evacuate from the Region under COVID .....	31
Perceptions & Behaviors Across All Households under COVID .....	33
Perceptions & Behaviors for Adult Disability & ADL Households under COVID .....	36
Eastern Shore (Accomack and Northampton) under COVID .....	37
Household Characteristics .....	40
<b>Recommendations</b> .....	41
Action Area #1: Shelter Staff & Management .....	43
Action Area #2: Shelter Capacity .....	44
Action Area #3: Evacuation Capacity .....	46
Action Area #4: Communications Guidelines .....	47
Action Area #5: Communication Strategies.....	48
Action Area #6: Equity & Blue Sky Planning for Recovery .....	49
<b>Part 1: Introduction and Background</b> .....	50
Major Parts of this Report.....	50
Purpose .....	53
Significance .....	54
COVID-19 Management Strategies .....	55
Evacuation & Public Shelter Planning .....	58
The 2020 Hurricane Season .....	61
Historic Hurricane Tracks.....	61
Study Area & COVID Maps.....	65
Health Districts (Map).....	65
COVID-19 Cases (Map).....	66
COVID-19 Cases per 100k Pop (Map).....	67
COVID-19 Hospitalizations (Map) .....	68
COVID-19 Hospitalizations per 100k Pop (Map) .....	69

COVID-19 Deaths (Map).....	70
COVID-19 Deaths per 100k Pop (Map) .....	71
<b>Part 2: Methodology</b> .....	<b>72</b>
Survey Methodology.....	72
Contact Methods .....	73
Response Rates by Locality .....	73
Distribution of Respondents by Locality .....	74
Responses by Modality .....	74
Spatial Placement of Households (Map).....	75
Unit of Analysis .....	76
Approach & Reporting .....	77
Control Variables.....	78
Income .....	78
Vulnerability.....	79
COVID Propinquity .....	82
Medical Fragility.....	83
Evacuation Zones .....	85
<b>Part 3: Household Characteristics</b> .....	<b>86</b>
Years Living in Hampton Roads (5 Year Increment).....	87
Years Living in Hampton Roads (10 Year Increment).....	88
..by..Medically Fragile Household .....	89
..by..Household Vulnerability.....	90
..by..Low-to-Moderate Income Household.....	91
Size of Household (4 Groups).....	92
..by..Medically Fragile Household .....	93
..by..Household Vulnerability.....	94
..by..Household COVID Propinquity .....	95
..by..Low-to-Moderate Income Household.....	96
..by..Low and Moderate Income Household.....	97
..by..Granulated Household Income .....	98
..by..Evacuation Zone .....	99
Size of Household (Per Person).....	100
..by..Medically Fragile Household .....	101

..by..Household Vulnerability.....	102
..by..Household COVID Propinquity .....	103
..by..Low-to-Moderate Income Household.....	104
..by..Low and Moderate Income Household.....	105
..by..Granulated Household Income .....	106
..by..Evacuation Zone.....	107
Children Under 18 in Household.....	108
..by..Medically Fragile Household .....	109
..by..Household Vulnerability.....	110
..by..Household COVID Propinquity .....	111
..by..Low-to-Moderate Income Household.....	112
..by..Low and Moderate Income Household.....	113
..by..Granulated Household Income .....	114
..by..Evacuation Zone.....	115
Children Under 18 in Household (Per Child).....	116
..by..Medically Fragile Household .....	117
..by..Household Vulnerability.....	118
..by..Household COVID Propinquity .....	119
..by..Low-to-Moderate Income Household.....	120
..by..Low and Moderate Income Household.....	121
..by..Granulated Household Income .....	122
..by..Evacuation Zone.....	123
Multigenerational Household .....	124
..by..Medically Fragile Household .....	125
..by..Household Vulnerability.....	126
..by..Household COVID Propinquity .....	127
..by..Low-to-Moderate Income Household.....	128
..by..Low and Moderate Income Household.....	129
..by..Granulated Household Income .....	130
..by..Evacuation Zone.....	131
Medically Fragile Household (Map).....	132
Medically Fragile Household.....	133
..by..Household COVID Propinquity .....	134

..by..Low-to-Moderate Income Household.....	135
..by..Low and Moderate Income Household.....	136
..by..Granulated Household Income .....	137
..by..Evacuation Zone.....	138
Severely Handicapped Children .....	139
..by..Low-to-Moderate Income Household.....	140
..by..Low and Moderate Income Household.....	141
Household Vulnerability (Map).....	142
Household Vulnerability .....	143
..by..Household COVID Propinquity .....	144
..by..Evacuation Zone.....	145
COVID Propinquity (Map) .....	146
COVID Propinquity Non Eastern Shore (Map) .....	147
COVID Propinquity Eastern Shore (Map) .....	148
COVID Propinquity .....	149
..by..Medically Fragile Household .....	150
..by..Household Vulnerability.....	151
..by..Low-to-Moderate Income Household.....	152
..by..Low and Moderate Income Household.....	153
..by..Granulated Household Income .....	154
Household Income Variables (Four Types) .....	155
Low-to-Moderate Income (LMI) .....	155
Low and Moderate Income.....	156
Granulated Household Income .....	157
At or Near Federal Poverty Level .....	158
Active Duty Military .....	159
..by..Household COVID Propinquity .....	160
..by..Enough Cash or Credit to Evacuate.....	161
Household Race and/or Ethnicity (with Refuse).....	162
Household Race and/or Ethnicity (without Refuse) .....	163
Household Race and/or Ethnicity (Collapsed with Refuse) .....	164
Household Race and/or Ethnicity (Collapsed without Refuse).....	165



<b>Part 4: Adult Disability &amp; ADL Households</b> .....	166
Activities of Daily Living (ADL).....	167
..by..Household COVID Proximity .....	168
..by..Low-to-Moderate Income Household.....	169
..by..Low and Moderate Income Household.....	170
..by..Granulated Household Income .....	171
..by..Evacuation Zone.....	172
..by..Likely Evacuate Out of Hampton Roads .....	173
..by..Concern about COVID Exposure while in Public Shelter .....	174
..by..Reason Not Go To Public Shelter: Concern COVID Exposure.....	175
..by..Reason Not Go To Public Shelter: COVID is the Primary.....	176
..by..Increases Likelihood Go To Public Shelter: Social Distancing .....	177
..by..Increases Likelihood Go To Public Shelter: Vigorous Cleaning .....	178
..by..Increases Likelihood Go To Public Shelter: Hotel Room .....	179
..by..Enough Cash or Credit to Evacuate.....	180
..by..Lost Wages Impact Upon Rent or Mortgage .....	181
..by..COVID Impact Upon Household Income .....	182
Percent of Household Members with ADL Limitations.....	183
..by..Household COVID Proximity .....	184
..by..Low-to-Moderate Income Household.....	185
..by..Low and Moderate Income Household.....	186
Hearing Disability.....	187
..by..Low-to-Moderate Income Household.....	188
..by..Low and Moderate Income Household.....	189
Sight Disability.....	190
..by..Low-to-Moderate Income Household.....	191
..by..Low and Moderate Income Household.....	192
Cognitive Disability.....	193
..by..Low-to-Moderate Income Household.....	194
..by..Low and Moderate Income Household.....	195
<b>Part 5: Evacuation Out &amp; Sheltering Within the Region</b> .....	196
Stay or Go.....	197
..by..Medically Fragile Household .....	200

<i>..by..</i> Household Vulnerability.....	201
<i>..by..</i> Household COVID Propinquity .....	202
<i>..by..</i> Low-to-Moderate Income Household.....	203
<i>..by..</i> Low and Moderate Income Household.....	204
<i>..by..</i> Granulated Household Income .....	205
<i>..by..</i> Evacuation Zone.....	206
Likely Evacuate Out of Hampton Roads (Map).....	207
Sheltering Venue if Likely to Stay in Hampton Roads.....	208
Primary Residence .....	209
Public Shelter .....	210
Somebody Else’s Home.....	211
Places other than Own Home (1).....	212
Places other than Own Home (2).....	213
Places other than either Own Home or Public Shelter .....	214
Likely to Stay in Hampton Roads .....	215
<i>..by..</i> Medically Fragile Household.....	216
<i>..by..</i> Household Vulnerability.....	217
<i>..by..</i> Household COVID Propinquity .....	218
<i>..by..</i> Low-to-Moderate Income Household.....	219
<i>..by..</i> Low and Moderate Income Household.....	220
<i>..by..</i> Granulated Household Income .....	221
<i>..by..</i> Evacuation Zone.....	222
Qualified Opportunity Zone (QOZ) & Evacuation .....	223
Qualified Opportunity Zone (QOZ) & Evacuation (Map) .....	224
<b>Part 6: COVID Impact on Household Evacuation &amp; Sheltering Behavior .....</b>	<b>225</b>
Research Questions .....	226
General Logic Model .....	228
Analysis 1: Change in Propensity to Evacuate .....	229
Analysis 2: Change in Propensity to Seek Public Shelter .....	232
Analysis 3: Change in Propensity to Evacuate .....	235
Analysis 4: Change in Propensity to Seek Public Shelter .....	238
Summary of Findings, Analyses 1-4 .....	241

Direction and Magnitude of Movements .....	243
Household Movement .....	244
Population Movement .....	246
<b>Part 7: Branch 1 – Shelter within Hampton Roads, but not within a Public Shelter .....</b>	<b>247</b>
Reason Not Evacuate: Transportation .....	248
<i>..by..</i> Medically Fragile Household .....	249
<i>..by..</i> Household Vulnerability.....	250
<i>..by..</i> Household COVID Propinquity .....	251
<i>..by..</i> Low-to-Moderate Income Household.....	252
<i>..by..</i> Low and Moderate Income Household.....	253
<i>..by..</i> Granulated Household Income .....	254
<i>..by..</i> Evacuation Zone.....	255
Reason Not Evacuate: Care for Another Person.....	256
<i>..by..</i> Medically Fragile Household .....	257
<i>..by..</i> Household Vulnerability.....	258
<i>..by..</i> Household COVID Propinquity .....	259
<i>..by..</i> Low-to-Moderate Income Household.....	260
<i>..by..</i> Low and Moderate Income Household.....	261
<i>..by..</i> Granulated Household Income .....	262
<i>..by..</i> Evacuation Zone.....	263
Reason Not Evacuate: Job Duties .....	264
<i>..by..</i> Medically Fragile Household .....	265
<i>..by..</i> Household Vulnerability.....	266
<i>..by..</i> Household COVID Propinquity .....	267
<i>..by..</i> Low-to-Moderate Income Household.....	268
<i>..by..</i> Low and Moderate Income Household.....	269
<i>..by..</i> Granulated Household Income .....	270
<i>..by..</i> Evacuation Zone.....	271
Reason Not Evacuate: Care for Pet or Livestock.....	272
<i>..by..</i> Medically Fragile Household .....	273
<i>..by..</i> Household Vulnerability.....	274
<i>..by..</i> Household COVID Propinquity .....	275
<i>..by..</i> Low-to-Moderate Income Household.....	276

..by..Low and Moderate Income Household.....	277
..by..Granulated Household Income .....	278
..by..Evacuation Zone .....	279
Reason Not Evacuate: Concern COVID Exposure (Map).....	280
Reason Not Evacuate: Concern COVID Exposure.....	281
..by..Medically Fragile Household .....	282
..by..Household Vulnerability.....	283
..by..Household COVID Propinquity .....	284
..by..Low-to-Moderate Income Household.....	285
..by..Low and Moderate Income Household.....	286
..by..Granulated Household Income .....	287
..by..Evacuation Zone .....	288
Reason Not Evacuate: COVID is the Primary .....	289
..by..Medically Fragile Household .....	290
..by..Household Vulnerability.....	291
..by..Household COVID Propinquity .....	292
..by..Low-to-Moderate Income Household.....	293
..by..Low and Moderate Income Household.....	294
..by..Granulated Household Income .....	295
..by..Evacuation Zone .....	296
Reason Not Go To Public Shelter: Concern COVID Exposure.....	297
..by..Medically Fragile Household .....	298
..by..Household Vulnerability.....	299
..by..Household COVID Propinquity .....	300
..by..Low-to-Moderate Income Household.....	301
..by..Low and Moderate Income Household.....	302
..by..Granulated Household Income .....	303
..by..Evacuation Zone .....	304
Reason Not Go To Public Shelter: COVID is the Primary.....	305
..by..Medically Fragile Household .....	306
..by..Household Vulnerability.....	307
..by..Household COVID Propinquity .....	308
..by..Low-to-Moderate Income Household.....	309

..by..Low and Moderate Income Household.....	310
..by..Granulated Household Income .....	311
..by..Evacuation Zone .....	312
Increases Likelihood Go To Public Shelter: Social Distancing .....	313
..by..Medically Fragile Household .....	314
..by..Household Vulnerability.....	315
..by..Household COVID Propinquity .....	316
..by..Low-to-Moderate Income Household.....	317
..by..Low and Moderate Income Household.....	318
..by..Granulated Household Income .....	319
..by..Evacuation Zone .....	320
Increases Likelihood Go To Public Shelter: Vigorous Cleaning .....	321
..by..Medically Fragile Household .....	322
..by..Household Vulnerability.....	323
..by..Household COVID Propinquity .....	324
..by..Low-to-Moderate Income Household.....	325
..by..Low and Moderate Income Household.....	326
..by..Granulated Household Income .....	327
..by..Evacuation Zone .....	328
Increases Likelihood GoTo Public Shelter: Hotel Room .....	329
..by..Medically Fragile Household .....	330
..by..Household Vulnerability.....	331
..by..Household COVID Propinquity .....	332
..by..Low-to-Moderate Income Household.....	333
..by..Low and Moderate Income Household.....	334
..by..Granulated Household Income .....	335
..by..Evacuation Zone .....	336
Household has a History of Sheltering in Public Shelter .....	337
..by..Medically Fragile Household .....	338
..by..Household Vulnerability.....	339
..by..Household COVID Propinquity .....	340
..by..Low-to-Moderate Income Household.....	341
..by..Low and Moderate Income Household.....	342

..by..Granulated Household Income .....	343
..by..Evacuation Zone .....	344
Households has a History of Evacuation out of the Region .....	345
..by..Medically Fragile Household .....	346
..by..Household Vulnerability .....	347
..by..Household COVID Propinquity .....	348
..by..Low-to-Moderate Income Household .....	349
..by..Low and Moderate Income Household .....	350
..by..Granulated Household Income .....	351
..by..Evacuation Zone .....	352
<b>Part 8: Branch 2 -- Shelter within Hampton Roads at a Public Shelter .....</b>	<b>353</b>
Concern about COVID Exposure while in Public Shelter .....	354
Reason Not Evacuate: Transportation .....	355
Reason Not Evacuate: Care for Another Person .....	356
Reason Not Evacuate: Job Duties .....	357
Reason Not Evacuate: Concern COVID Exposure .....	358
Reason Not Evacuate: COVID is the Primary .....	359
Increases Likelihood Go To Public Shelter: Hotel Room .....	360
Household has History of Evacuation Out of Region Due to Storm Threat .....	361
Household has History of Sheltering in Public Shelter Due to Storm Threat .....	362
<b>Part 9: Branch 3 -- Evacuation out of the Hampton Roads Region .....</b>	<b>363</b>
Concern about COVID Exposure while Evacuating .....	364
..by..Medically Fragile Household .....	365
..by..Household Vulnerability .....	366
..by..Household COVID Propinquity .....	367
..by..Low-to-Moderate Income Household .....	368
..by..Low and Moderate Income Household .....	369
..by..Granulated Household Income .....	370
..by..Evacuation Zone .....	371
Reason Not Go To Public Shelter: Concern COVID Exposure (Map) .....	372
Reason Not Go To Public Shelter: Concern COVID Exposure .....	373
..by..Medically Fragile Household .....	374

..by..Household Vulnerability.....	375
..by..Household COVID Propinquity .....	376
..by..Low-to-Moderate Income Household.....	377
..by..Low and Moderate Income Household.....	378
..by..Granulated Household Income .....	379
..by..Evacuation Zone.....	380
Reason Not Go To Public Shelter: COVID is the Primary.....	381
..by..Medically Fragile Household .....	382
..by..Household Vulnerability.....	383
..by..Household COVID Propinquity .....	384
..by..Low-to-Moderate Income Household.....	385
..by..Low and Moderate Income Household.....	386
..by..Granulated Household Income .....	387
..by..Evacuation Zone.....	388
Increases Likelihood Go To Public Shelter: Social Distancing .....	389
..by..Medically Fragile Household .....	390
..by..Household Vulnerability.....	391
..by..Household COVID Propinquity .....	392
..by..Low-to-Moderate Income Household.....	393
..by..Low and Moderate Income Household.....	394
..by..Granulated Household Income .....	395
..by..Evacuation Zone.....	396
Increases Likelihood Go To Public Shelter: Vigorous Cleaning .....	397
..by..Medically Fragile Household .....	398
..by..Household Vulnerability.....	399
..by..Household COVID Propinquity .....	400
..by..Low-to-Moderate Income Household.....	401
..by..Low and Moderate Income Household.....	402
..by..Granulated Household Income .....	403
..by..Evacuation Zone.....	404
Increases Likelihood Go To Public Shelter: Hotel Room .....	405
..by..Medically Fragile Household .....	406
..by..Household Vulnerability.....	407

..by..Household COVID Propinquity .....	408
..by..Low-to-Moderate Income Household.....	409
..by..Low and Moderate Income Household.....	410
..by..Granulated Household Income .....	411
..by..Evacuation Zone.....	412
Household has History of Sheltering in Public Shelter Due to Storm Threat .....	413
..by..Medically Fragile Household .....	414
..by..Household Vulnerability.....	415
..by..Household COVID Propinquity .....	416
..by..Low-to-Moderate Income Household.....	417
..by..Low and Moderate Income Household.....	418
..by..Granulated Household Income .....	419
..by..Evacuation Zone.....	420
<b>Part 10: Common Variable Findings .....</b>	<b>421</b>
Enough Cash or Credit to Evacuate.....	422
..by..Medically Fragile Household .....	423
..by..Household Vulnerability.....	424
..by..Household COVID Propinquity .....	425
..by..Low-to-Moderate Income Household.....	426
..by..Low and Moderate Income Household.....	427
..by..Granulated Household Income .....	428
..by..At or Near Federal Poverty Level .....	429
..by..Evacuation Zone.....	430
Lost Wages Impact Upon Rent or Motgage.....	431
..by..Medically Fragile Household .....	432
..by..Household Vulnerability.....	433
..by..Household COVID Propinquity .....	434
..by..Low-to-Moderate Income Household.....	435
..by..Low and Moderate Income Household.....	436
..by..Granulated Household Income .....	437
..by..At or Near Federal Poverty Level .....	438
..by..Evacuation Zone.....	439
Suffered Property Loss and/or Injury (Map).....	440



Suffered Property Loss and/or Injury.....	441
Suffered Property Loss.....	442
..by..Medically Fragile Household.....	443
..by..Household Vulnerability.....	444
..by..Household COVID Propinquity.....	445
..by..Low-to-Moderate Income Household.....	446
..by..Low and Moderate Income Household.....	447
..by..Granulated Household Income.....	448
..by..At or Near Federal Poverty Level.....	449
..by..Evacuation Zone.....	450
Suffered Injury.....	451
..by..Medically Fragile Household.....	452
..by..Household Vulnerability.....	453
..by..Household COVID Propinquity.....	454
..by..Low-to-Moderate Income Household.....	455
..by..Low and Moderate Income Household.....	456
..by..Granulated Household Income.....	457
..by..At or Near Federal Poverty Level.....	458
..by..Evacuation Zone.....	459
COVID Impact Upon Household Income.....	460
..by..Medically Fragile Household.....	461
..by..Household Vulnerability.....	462
..by..Household COVID Propinquity.....	463
..by..Low-to-Moderate Income Household.....	464
..by..Low and Moderate Income Household.....	465
..by..Granulated Household Income.....	466
..by..At or Near Federal Poverty Level.....	467
..by..Evacuation Zone.....	468
Know a Person who has Died from COVID Map.....	469
Know a Person who has Died from COVID.....	470
..by..Medically Fragile Household.....	471
..by..Household Vulnerability.....	472
..by..Low-to-Moderate Income Household.....	473

<i>..by..</i> Low and Moderate Income Household.....	474
<i>..by..</i> Granulated Household Income .....	475
<i>..by..</i> Evacuation Zone .....	476
Know a Person who has been Sick from COVID Map .....	477
Know a Person who has been Sick from COVID.....	478
<i>..by..</i> Medically Fragile Household .....	479
<i>..by..</i> Household Vulnerability.....	480
<i>..by..</i> Low-to-Moderate Income Household.....	481
<i>..by..</i> Low and Moderate Income Household.....	482
<i>..by..</i> Granulated Household Income .....	483
<i>..by..</i> Evacuation Zone .....	484
Person in Household has been Infected with COVID Map .....	485
Person in Household has been Infected with COVID.....	486
<i>..by..</i> Medically Fragile Household .....	487
<i>..by..</i> Household Vulnerability.....	488
<i>..by..</i> Low-to-Moderate Income Household.....	489
<i>..by..</i> Low and Moderate Income Household.....	490
<i>..by..</i> Granulated Household Income .....	491
<i>..by..</i> Evacuation Zone .....	492
Frequency of Street Flooding Map .....	493
Frequency Street Flooding.....	494
<i>..by..</i> Likely Evacuate Out of Hampton Roads .....	495
<i>..by..</i> Suffered Property Loss .....	496
<i>..by..</i> Medically Fragile Household .....	497
<i>..by..</i> Household Vulnerability.....	498
<i>..by..</i> Household COVID Propinquity .....	499
<i>..by..</i> Low-to-Moderate Income Household.....	500
<i>..by..</i> Low and Moderate Income Household.....	501
<i>..by..</i> Granulated Household Income .....	502
<i>..by..</i> Evacuation Zone .....	503
Evacuation Zone Awareness Map (Non Eastern Shore) .....	504
Evacuation Zone Awareness Map (Eastern Shore) .....	505
Evacuation Zone Awareness Overview Zones A-D.....	506

Evacuation Zone-A Awareness.....	508
..by..Medically Fragile Household .....	509
..by..Household Vulnerability.....	510
..by..Household COVID Propinquity .....	511
..by..Low-to-Moderate Income Household.....	512
..by..Low and Moderate Income Household.....	513
..by..Granulated Household Income .....	514
Evacuation Zone-B Awareness.....	515
..by..Medically Fragile Household .....	516
..by..Household Vulnerability.....	517
..by..Household COVID Propinquity .....	518
..by..Low-to-Moderate Income Household.....	519
..by..Low and Moderate Income Household.....	520
..by..Granulated Household Income .....	521
Evacuation Zone-C Awareness.....	522
..by..Medically Fragile Household .....	523
..by..Household Vulnerability.....	524
..by..Household COVID Propinquity .....	525
..by..Low-to-Moderate Income Household.....	526
..by..Low and Moderate Income Household.....	527
..by..Granulated Household Income .....	528
Evacuation Zone-D Awareness.....	529
..by..Medically Fragile Household .....	530
..by..Household Vulnerability.....	531
..by..Household COVID Propinquity .....	532
..by..Low-to-Moderate Income Household.....	533
..by..Low and Moderate Income Household.....	534
..by..Granulated Household Income .....	535
Evacuation Zone (Validated Location of Household).....	536
..by..Fequency of Street Flooding .....	537
..by..Suffered Property Loss .....	539
..by..Likely Evacuate Out of Hampton Roads .....	540
Likely to Evacuate Out of Hampton Roads by Evacuation Zone Map.....	541

<b>Part 11: Trust for Storm Information</b> .....	542
Trust for Storm Information: Local News (0-10 Score).....	543
Trust for Storm Information: Local Elected Officials (0-10 Score).....	544
Trust for Storm Information: Local Emergency Officials (0-10 Score).....	545
Trust for Storm Information: State Emergency Officials (0-10 Score).....	546
Trust for Storm Information: Governor (0-10 Score).....	547
Summary Average Trust Across Actors.....	548
Summary Distribution Trust Across Actors.....	549
Trust for Storm Information: Local News.....	550
<i>..by..</i> Medically Fragile Household.....	551
<i>..by..</i> Household Vulnerability.....	552
<i>..by..</i> Household COVID Propinquity.....	553
<i>..by..</i> Low-to-Moderate Income Household.....	554
<i>..by..</i> Low and Moderate Income Household.....	555
<i>..by..</i> Granulated Household Income.....	556
<i>..by..</i> Evacuation Zone.....	557
Trust for Storm Information: Local Elected Officials.....	558
<i>..by..</i> Medically Fragile Household.....	559
<i>..by..</i> Household Vulnerability.....	560
<i>..by..</i> Household COVID Propinquity.....	561
<i>..by..</i> Low-to-Moderate Income Household.....	562
<i>..by..</i> Low and Moderate Income Household.....	563
<i>..by..</i> Granulated Household Income.....	564
<i>..by..</i> Evacuation Zone.....	565
Trust for Storm Information: Local Emergency Officials.....	566
<i>..by..</i> Medically Fragile Household.....	567
<i>..by..</i> Household Vulnerability.....	568
<i>..by..</i> Household COVID Propinquity.....	569
<i>..by..</i> Low-to-Moderate Income Household.....	570
<i>..by..</i> Low and Moderate Income Household.....	571
<i>..by..</i> Granulated Household Income.....	572
<i>..by..</i> Evacuation Zone.....	573
Trust for Storm Information: State Emergency Officials.....	574

..by..Medically Fragile Household .....	575
..by..Household Vulnerability.....	576
..by..Household COVID Propinquity .....	577
..by..Low-to-Moderate Income Household.....	578
..by..Low and Moderate Income Household.....	579
..by..Granulated Household Income .....	580
..by..Evacuation Zone .....	581
Trust for Storm Information: Governor .....	582
..by..Medically Fragile Household .....	583
..by..Household Vulnerability.....	584
..by..Household COVID Propinquity .....	585
..by..Low-to-Moderate Income Household.....	586
..by..Low and Moderate Income Household.....	587
..by..Granulated Household Income .....	588
..by..Evacuation Zone .....	589
<b>Part 12: Household Characteristics x City (Crosstabulations).....</b>	<b>590</b>
Years Living in Hampton Roads (5 Year increment).....	590
Years Living in Hampton Roads (10 Year increment).....	591
Size of Household (4 Groups).....	592
Size of Household (Per Person).....	593
Children Under 18 in Household.....	594
Children Under 18 in Household (Per Child).....	595
Multigenerational Household .....	596
Medically Fragile Household.....	597
Severely Handicapped Children .....	598
Household Vulnerability .....	599
Household COVID Propinquity.....	600
Low-to-Moderate Income (LMI) Household .....	601
Low and Moderate Income Household .....	602
Granualted Household Income .....	603
At or Near Federal Poverty Level .....	604
Active Duty Military .....	605

Household Race and/or Ethnicity (Collapsed, Excluding DK & R) .....	606
<b>Part 13: Adult Disabilities x City (Crosstabulations)</b> .....	607
Activities of Daily Living (ADL).....	607
Percent of Household Members with ADL Limitations.....	608
Hearing Disability .....	609
Sight Disability.....	610
Cognitive Disability.....	611
<b>Part 14: Evacuation Out and Sheltering Within the Region x City (Crosstabulations)</b> .....	612
Likely Stay in Hampton Roads (Primary Residence +1).....	612
Likely Stay in Hampton Roads (Primary Residence +2).....	613
Likely Stay in Hampton Roads (Primary Residence +3).....	614
Likely Evacuate Out of Hampton Roads.....	615
<b>Part 15: Branch 1 (Shelter within Hampton Roads, but not within a Public Shelter) x City (Crosstabulations)</b> .....	616
Reason Not Evacuate: Transportation .....	616
Reason Not Evacuate: Care for Another Person .....	617
Reason Not Evacuate: Job Duties .....	618
Reason Not Evacuate: Care for Pet or Livestock.....	619
Reason Not Evacuate: Concern COVID Exposure.....	620
Reason Not Evacuate: COVID is the Primary .....	621
Reason Not Go To Public Shelter: Concern COVID Exposure.....	622
Reason Not Go To Public Shelter: COVID is the Primary.....	623
Increases Likelihood Go To Public Shelter: Social Distancing .....	624
Increases Likelihood Go To Public Shelter: Vigorous Cleaning .....	625
Increases Likelihood Go To Public Shelter: Hotel Room .....	626
Household has History of Sheltering in Public Shelter Due to Storm Threat .....	627
Household has History of Evacuation Out of Region Due to Storm Threat .....	628
<b>Part 16: Branch 3 (Evacuation out of the Hampton Roads Region) x City (Crosstabulations)</b> .....	629
Concern about COVID Exposure while Evacuating .....	629
Reason Not Go To Public Shelter: Concern COVID Exposure.....	630
Reason Not Go To Public Shelter: COVID is the Primary.....	631
Increases Likelihood Go To Public Shelter: Social Distancing .....	632

Increases Likelihood Go To Public Shelter: Vigorous Cleaning .....	633
Increases Likelihood Go To Public Shelter: Hotel Room .....	634
Household has History of Sheltering in Public Shelter Due to Storm Threat .....	635
<b>Part 17: Common Variable Findings x City (Crosstabulations) .....</b>	<b>636</b>
Enough Cash or Credit to Evacuate.....	636
Lost Wages Impact Upon Rent or Motgage .....	637
Suffered Injury or/and Property Loss.....	638
Suffered Property Loss .....	639
Suffered Injury .....	640
COVID Impact Upon Household Income.....	641
Know a Person who has Died from COVID .....	642
Know a Person who has been Sick from COVID.....	643
Person in Household has been Infected with COVID.....	644
Frequency of Street Flooding.....	645
<b>Part 18: Trust Variables x City (Crosstabulations).....</b>	<b>646</b>
Trust (0-10 Score).....	647
Trust for Storm Information: Local News .....	647
Trust for Storm Information: Local Elected Officials.....	648
Trust for Storm Information: Local Emergency Officials.....	649
Trust for Storm Information: State Emergency Officials .....	650
Trust for Storm Information: Governor .....	651
Trust (Above/Below Middle).....	652
Trust for Storm Information: Local News .....	652
Trust for Storm Information: Local Elected Officials.....	653
Trust for Storm Information: Local Emergency Officials.....	654
Trust for Storm Information: State Emergency Officials .....	655
Trust for Storm Information: Governor .....	656
Trust (Low to High).....	657
Trust for Storm Information: Local News .....	657
Trust for Storm Information: Local Elected Officials.....	658
Trust for Storm Information: Local Emergency Officials.....	659
Trust for Storm Information: State Emergency Officials .....	660

Trust for Storm Information: Governor ..... 661

**Appendix A Survey Instrument**..... 662

**Appendix B References** ..... 674



## Executive Overview

This report, **COVID-19 Evacuation and Sheltering Risk Perception Study**, is one of several key science-based research efforts produced for the State reflecting the most current knowledge related to evacuation and sheltering behavior. The primary data source for this report are interviews with 2,200 households across ten localities in Hampton Roads, including the Eastern Shore. The findings – and recommendations – within this report are intended to inform and advance state and local evacuation and public shelter planning.

This report contains 31 specific recommendations (Action Items) that broadly advance coastal resilience and protect the health and wellbeing of Virginia residents. All citizens benefit from these recommendations; however, these recommendations especially advance the health and wellbeing of medically fragile and vulnerable populations. While progress has been made, disparities in health and wellbeing across Virginian’s populations persist. Expectedly, these differences are likely to be exacerbated by a catastrophic severe weather event, such as a hurricane with wind and surge flooding, during the time of a pandemic. These Action Items, when implemented, may be expected to lessen the disparate impacts of severe weather events, thus addressing issues of equity and social justice.

We close the 2020 hurricane season and advance into the 2021 season while simultaneously experiencing the ongoing COVID-19 public health crisis. Virginia may soon need to concurrently manage emergency response to one or more hurricanes under pandemic conditions. The coupling of hurricane events within the life cycle of a pandemic is a real possibility with far reaching implications for the health and wellbeing of our communities.

There exist tensions between storm evacuation and sheltering (associated with increasing social interactions and the congregation of populations in public sheltering and transportation spaces) with virus pandemic containment and treatment (requiring social distancing, quarantining, and specialized medical care).

Evacuation and public sheltering are intended to remove persons from areas of high risk to areas of lesser risk and, thus, protect the wellbeing of persons. However, COVID-related fears and risk assessments may discourage residents from evacuation and public sheltering, and thus increase sheltering in place in primary residences at high risk to acute injury and death from flood and wind.

Understanding how the COVID-19 environment may alter evacuation and sheltering behavior is a salient concern for state and local planners. Translating these behavioral changes into estimates for the number of residents that will shelter in place, seek public shelter, and evacuate from the region provides actionable information in support of planning.

This report is organized into eighteen parts, beginning with this **Executive Overview, Executive Summary of Findings, and Recommendations**. The next section, Introduction and Background, provides context and rationale for the Study. This is followed by the Methodology section, detailing the study design and sampling methods. Sections 3-5 and 7-11 report findings, arranged by category, controlling for Medical Fragility, Vulnerability, COVID Proximity, Income, and Evacuation Zone. Section 6 reports estimates, in terms of number of households and number of residents, expected to alter evacuation and sheltering behaviors in response to COVID-related risk perceptions. Sections 12-18 report findings for a large range of variables disaggregated across the ten sampled localities.

## Executive Summary of Findings

This summary highlights selected findings and is organized into eight sections related to hurricane evacuation and sheltering within a COVID-19\* environment:

1. Anticipated Change in Evacuation & Sheltering Behaviors under COVID,
2. Households that Plan to Shelter in the Region, other than at a Public Shelter, under COVID,
3. Households that Plan to Shelter in a Public Shelter in the Region under COVID,
4. Households that Plan to Evacuate from the Region under COVID,
5. Perceptions & Behaviors Across All Households under COVID,
6. Perceptions & Behaviors for Adult Disability and ADL Households under COVID,
7. Eastern Shore (Accomack and Northampton), and
8. Household Characteristics.

\*Note: “COVID-19” and “COVID” are used interchangeably throughout this report.

## Anticipated Change in Evacuation & Sheltering Behaviors under COVID

- Under the compound threat of a *significant* hurricane approaching the Hampton Roads region under a COVID environment, 52.4 percent of all households anticipate staying in the Hampton Roads region and 47.6 anticipate leaving the region.
- Among those staying in the Hampton Roads region, 3.9 percent anticipate sheltering within a public shelter, 6.3 percent within somebody else's home, 3.7 percent at another type of venue, such as place of employment, and the remainder will shelter in their primary residence.
- The perceived risk of COVID exposure will alter sheltering behavior. We may anticipate a substantial net loss of households seeking public shelter, a minimum 20,145 and maximum 24,917 households which would otherwise have sought public shelter.
- The perceived risk of COVID exposure will alter the propensity to evacuate out of the Hampton Roads region. We may anticipate a range of 8,097 to 12,483 households will alter their propensity to evacuate and will now remain in Hampton Roads, although not at a public shelter.
- We may anticipate a sizable increase in the number of households remaining in the region (other than at a public shelter). Estimated is a range of an additional 13,784 to 19,712 households that may be expected to remain in the region, households that would have otherwise either evacuated or sheltered in a public shelter.

## Households that Plan to Shelter in the Region, other than at a Public Shelter, under COVID

### ***COVID-19 Exposure Reason not to Evacuate***

- Nearly 23.3 percent of households report concerns related to COVID exposure as being one of the reasons the household is unlikely to evacuate during this hurricane season should a significant hurricane approach the region, with 57.0 percent of these reporting it to be the primary reason.
- Specifically, 27.1 percent of households residing in evacuation Zone A, 31.1 percent of Low-to-Moderate Income (LMI) households, 35.7 percent of medically fragile households, and 37.1 percent of hyper vulnerable households cite COVID as a reason for not evacuating.

### ***COVID-19 Exposure Reason not to Seek Public Shelter***

- Just less than 37.5 percent of households that plan to shelter in a home in the region report one of the reasons they are unlikely to seek public shelter is concerns related to COVID exposure during this hurricane season should a significant hurricane approach the region, with 72.5 percent of these reporting it to be the primary reason.
- Specifically, 37.4 percent of households residing in evacuation Zone A, 43.6 percent of medically fragile households, 44.3 percent of Low-to-Moderate Income (LMI) households, and 48.3 percent of hyper vulnerable households avoid public shelter due to COVID.

### ***Reduction in Persons and Social Distancing Assurances Changes Behavior***

- Only 14.2 percent of households that plan to shelter in a home in the region report an increased likelihood of seeking public shelter when told public shelters may be limiting the number of persons in efforts to maintain social distancing and provided assurances of reducing number of people and social distancing in local public shelters.
- Specifically, 11.1 percent of households residing in evacuation Zone A, 15.2 percent of Low-to-Moderate Income (LMI) households, 15.7 percent of hyper vulnerable households, and 16.8 percent of medically fragile households respond to assurances of reductions in number of people and social distancing in local public shelters.

### ***Vigorous Cleaning Assurance Changes Behavior***

- Only 17.9 percent of households that plan to shelter in a home in the region report an increased likelihood of seeking public shelter when told that public shelters will use vigorous, regular cleaning schedules.
- Specifically, 16.6 percent of households residing in evacuation Zone A, 18.3 percent of medically fragile households, 19.7 percent of Low-to-Moderate Income (LMI) households, and 21.1 percent of hyper vulnerable households respond to assurances of vigorous cleaning.

### ***Hotel Room Option Changes Behavior***

- More than 45.7 percent of households that plan to shelter in a home in the region report that being offered by the city a hotel room as a shelter, rather than a centralized place such as a school, will increase the likelihood that the household will use this as a shelter.
- Specifically, 44.6 percent of households residing in evacuation Zone A, 51.9 percent of Low-to-Moderate Income (LMI) households, 52.7 percent of medically fragile households, and 66.4 percent of hyper vulnerable households respond to a hotel option.

### ***Transportation a Reason Not to Evacuate***

- Slightly more than 6.5 percent that plan to shelter in a home in the region report concerns about having reliable transportation as one of the reasons for not evacuating.
- Specifically, 10.4 percent of Low-to-Moderate Income (LMI) households, 14.1 percent of medically fragile households, and 18.3 percent of hyper vulnerable households report transportation as a reason for not evacuating.

### ***Care for Others a Reason Not to Evacuate***

- Nearly 17.2 percent of households that plan to shelter in a home in the region report staying in the region to take care of somebody else who does not want to leave or cannot leave is a reason for not evacuating.
- Specifically, 22.0 percent of Low-to-Moderate Income (LMI) households, 27.5 percent of medically fragile households, and 31.7 percent of hyper vulnerable households stay to care for others.

### ***Job Duties a Reason Not to Evacuate***

- Over 22.0 percent of the households that plan to shelter in a home in the region report that the households remain in the region due to a house member being essential personnel required to remain to do a job.
- Specifically, 19.3 percent of households residing in evacuation Zone A, 19.5 percent of Low-to-Moderate Income (LMI) households, 26.0 percent of medically fragile households, and 26.8 percent of hyper vulnerable households stay due to job duties.

### ***Pet or Livestock a Reason Not to Evacuate***

- More than 19.4 percent of households that plan to shelter in a home in the region report that taking care of a pet or livestock is one of the reasons the household is unlikely to evacuate.
- Specifically, 18.8 percent of households residing in evacuation Zone A, 23.9 percent of medically fragile households, 25.9 percent of Low-to-Moderate Income (LMI) households, and 27.3 percent of hyper vulnerable households stay, in part, to take care of an animal.

## Households that Plan to Shelter in a Public Shelter in the Region under COVID

### ***Concerned about COVID while in Public Shelter***

- Roughly 60.0 percent of households that plan to go to a public shelter report that they are very concerned over COVID exposure while sheltering in a public shelter.

### ***COVID-19 Exposure Reason not to Evacuate***

- Roughly 47.5 percent of households that plan to go to a public shelter report concerns related to COVID exposure as being one of the reasons the household is unlikely to evacuate during this hurricane season should a significant hurricane approach the region, with 65.0 percent of these reporting it to be the primary reason.

### ***Hotel Room Option Changes Behavior***

- More than 66.7 percent of households that plan to go to a public shelter report that being offered by the city a hotel room as a shelter, rather than a centralized place such as a school, will increase the likelihood that the household will use this as a shelter.

### ***Transportation a Reason Not to Evacuate***

- More than 22.5 percent of households that plan to go to a public shelter report concerns about having reliable transportation as one of the reasons for not evacuating.

### ***Care for Others a Reason Not to Evacuate***

- Slightly more than 22.0 percent of households that plan to go to a public shelter report that staying in the region to take care of somebody else who does not want to leave or cannot leave is a reason for not evacuating.

### ***Job Duties a Reason Not to Evacuate***

- Over 22.5 percent of the households that plan to go to a public shelter report that the households will remain in the region due to a house member being essential personnel required to remain to do a job.



## Households that Plan to Evacuate from the Region under COVID

### ***Concerned about COVID during Evacuation***

- Nearly 38.7 percent of households that plan to evacuate from the region report that the household is very concerned about COVID exposure during the evacuation.
- Specifically, 45.3 percent of Low-to-Moderate Income (LMI) households, 45.9 percent of medically fragile households, and 50.3 percent of hyper vulnerable households are very concerned about COVID.

### ***COVID Exposure Reason not to Seek Public Shelter***

- Over 60.9 percent of households that plan to evacuate from the region report concerns related to COVID exposure as being one of the reasons the household is unlikely to use a public shelter during this hurricane season should a significant hurricane approach the region, with 77.1 percent of these households stating it to be the primary reason.
- Specifically, 66.9 percent of medically fragile households, 68.0 percent of Low-to-Moderate Income (LMI) households, and 71.0 percent of hyper vulnerable households express COVID as being a reason for not seeking public shelter.

### ***Reduction in Persons & Social Distancing Assurances Changes Behavior***

- More than 33.9 percent of households that plan to evacuate from the region report an increased likelihood of seeking public shelter when told public shelters may be limiting the number of persons in efforts to maintain social distancing.
- Specifically, 41.3 percent of Low-to-Moderate Income (LMI) households, 44.4 percent of medically fragile households, and 45.7 percent of hyper vulnerable households respond to assurances of reductions in number of people and social distancing in local public shelters.

### ***Vigorous Cleaning Assurance Changes Behavior***

- Slightly less than 43.1 percent of households that plan to evacuate from the region report an increased likelihood of seeking public shelter when told that public shelters will use vigorous, regular cleaning schedules.
- Specifically, 51.2 percent of Low-to-Moderate Income (LMI) households, 51.9 percent of medically fragile households, and 55.5 percent of hyper vulnerable households respond to assurances of vigorous cleaning.

### ***Hotel Room Option Changes Behavior***

- Nearly 64.3 percent of households that plan to evacuate from the region report that being offered by the city a hotel room as a shelter, rather than a centralized place such as a school, will increase the likelihood that the household will use this as a shelter.
- Specifically, 73.1 percent of medically fragile households, 74.6 percent of Low-to-Moderate Income (LMI) households, and 81.1 percent of hyper vulnerable households respond to a hotel option.

## Perceptions & Behaviors Across All Households under COVID

### ***COVID Impact Upon Household Income***

- Nearly 21.5 percent of all households report having household income decrease due to COVID.
- Specifically, 19.7 percent of households residing in evacuation Zone A, 26.7 percent of medically fragile households, 28.8 percent of Low-to-Moderate Income (LMI) households, 35.0 percent of households at or near federal poverty, and 38.2 percent of hyper vulnerable households have lost household income due to COVID.

### ***Know a Person who has Died from COVID***

- Nearly 27.3 percent of all households report knowing a person who has died from COVID.
- Specifically, 26.3 percent of Low-to-Moderate Income (LMI) households, 26.6 percent of hyper vulnerable households, 28.4 percent of households residing in evacuation Zone A, and 29.5 percent of medically fragile households know a person who has died from COVID.

### ***Know a Person who has been Sick from COVID***

- Nearly 57.7 percent of all households report knowing a person who has been sick from COVID.
- Specifically, 50.1 percent of medically fragile households, 53.9 percent of hyper vulnerable households, 53.7 percent of Low-to-Moderate Income (LMI) households, and 59.3 percent of households residing in evacuation Zone A know a person who has been sick from COVID.

### ***Person in Household has been Infected with COVID***

- Nearly 10.0 percent of Households have a member that has been infected with COVID.
- Specifically, 7.9 percent of households residing in evacuation Zone A, 10.6 percent of medically fragile households, 11.2 percent of Low-to-Moderate Income (LMI) households, 13.25 percent of hyper vulnerable households have had an infected household member with COVID.

### ***Enough Cash or Credit to Evacuate***

- About 17.7 percent households will not have enough cash or credit to support everyone in the household if evacuation was required.
- This means that approximately 116,095 Hampton Roads households, comprising 340,509 citizens, report a paucity of resources to support the household in the eventuality of evacuation.
- Specifically, nearly 25.3 percent of medically fragile households, 30.6 percent of Low-to-Moderate Income (LMI) households, 39.0 percent of hyper vulnerable households, and 55.6 percent of households at or near federal poverty do not have enough cash and credit to support evacuation.

### ***Lost Wages Impact Upon Rent or Mortgage***

- Nearly 30.6 percent of all households report that losing a week's pay due to a storm would cause difficulty making the next month's rent or mortgage.
- Specifically, nearly 25.9 percent of households within evacuation Zone A, 36.8 percent of medically fragile households, 45.2 percent of Low-to-Moderate Income (LMI) households, 56.6 percent of hyper vulnerable households, and 58.6 percent of households at or near the federal poverty level will have difficulty in making the next month's rent or mortgage.

### ***Suffered Property Loss***

- About 28.9 percent of households have suffered a storm or flood-related property loss.
- Specifically, nearly 19.8 percent of households at or near federal poverty, 32.1 percent of medically fragile households, 25.1 percent of Low-to-Moderate Income (LMI) households, 28.2 percent of hyper vulnerable households, and 33.2 percent of households residing in evacuation Zone A have suffered property loss.

### ***Suffered Storm Injury***

- Nearly 3.6 percent of all households report having at least one family member that has suffered a storm-related injury.
- Specifically, 2.4 percent of households residing in evacuation Zone A, 3.8 percent of Low-to-Moderate Income (LMI) households, 6.3 percent of households at or near federal poverty, 7.8 percent of medically fragile households, and 8.3 percent of hyper vulnerable households have a household member that has suffered a storm-related injury.

### ***Frequency of Street Flooding***

- About 30.4 percent of households report frequency of street flooding in front of their home or streets very near their home at least a couple times a year.
- Specifically, 34.9 percent of those households reporting property loss also say that it floods in front of their home or streets near their home at least a couple times a year and 36.3 percent of households living in evacuation Zone A report that it floods in front of their home or streets near their home at least a couple times a year.

### ***Evacuation Zone Awareness***

- Only 31.2 percent of all households were able to correctly identify the zone in which they reside. About 51.8 percent of households didn't know their zone and 17.1 percent misidentified their zone. Zone A households were more likely to correctly identify the zone (31.1 percent) relative to Zone D households (16.5 percent).
- Within Zone A, medically fragile households are much more likely not to know their zone or misidentify their zone relative to non-medically fragile households (77.1 and 65.42 percent, respectively) and Low-to-Moderate Income (LMI) households are also much more likely not to know their zone or misidentify their zone relative to non-LMI households (76.6 and 60.0 percent, respectively).
- Over 89.5 percent of households <25k income do not know their zone or misidentify their zone.

### ***Trust for Storm Information***

- Trust level for information about a storm heading towards Hampton Roads varied with local and state emergency officials having the highest trust (with smaller standard deviations) and local elected officials and the Governor having the least amount of trust (and larger standard deviations).
- Low-income households report the greatest amount of no trust among all income groups and across all officials, the Governor, and the news media.

## Perceptions & Behaviors for Adult Disability & ADL Households under COVID

### ***Activities of Daily Living***

- Slightly more than 15.8 percent of all households report having at least one adult member that is dependent upon another to help with normal Activities of Daily Living (ADL). Specifically, 22.5 percent of Low-to-Moderate Income (LMI) households and 13.5 percent of households residing in evacuation Zone A have at least a single adult member with ADL limitations.

### ***Hearing, Sight, and Cognitive Disabilities***

- Among all households, about 16.1 percent report having at least one adult member that has a hearing disability, 8.4 a sight impairment, and 5.6 a cognitive disability.

### ***COVID Exposure Reason not to Seek Public Shelter***

- Among ADL households, just over 20.7 percent cite concern about COVID exposure being one of the reasons for not seeking public shelter, with 22.3 percent of these households stating that COVID exposure is the primary reason for not seeking public shelter.

### ***COVID Impact Upon Household Income***

- Nearly 22.1 percent of ADL households report having household income decrease due to COVID.

### ***Vigorous Cleaning Assurance Changes Behavior***

- Among ADL households, just over 24.5 percent report an increased likelihood of seeking public shelter when told that public shelters will use vigorous, regular cleaning schedules.

### ***Hotel Room Option Changes Behavior***

- About 20.9 percent of ADL households report that being offered by the city a hotel room as a shelter, rather than a centralized place such as a school, will increase the likelihood that the household will use this as a shelter.

### ***Cash or Credit to Evacuate***

- Just under 27.8 percent of ADL households will not have enough cash or credit to support everyone in the household if evacuation was required.

### ***Lost Wages Impact Upon Rent or Mortgage***

- Among ADL households, nearly 23.4 percent report that losing a week's pay due to a storm would cause difficulty making the next month's rent or mortgage.

## Eastern Shore (Accomack and Northampton) under COVID

Many variables are disaggregated across the ten localities in the study region and are presented in the crosstabulation sections of Parts 12 through 18. Rich comparisons across localities are reported there. Below are several purposively selected comparisons intended to illustrate the differences, some stark, between the Eastern Shore and the remaining study region.

### ***COVID Propinquity***

- Accomack reports 11.5 percent of households registering immediate COVID propinquity (meaning immediate presence of COVID within the households), nearly double many of the other localities. Relative to most other localities, Accomack and Northampton households are more likely to report knowing a person who has been sick from COVID, knowing a person that has died from COVID, and having someone in the household who has been infected with COVID. Accomack and Northampton have relatively high COVID propinquity.

### ***Vulnerable Households***

- Accomack and Northampton have a sizable percent of households that are considered vulnerable, nearly 40.8 and 42.6 percent respectively.

### ***Low Income Households***

- Roughly 26.5 and 32.7 percent of households are low income households with nearly 10.8 and 12.7 percent less than 25k annual household income, Accomack and Northampton respectively.

### ***Activities of Daily Living***

- Nearly 15.9 percent and 13.9 percent of Accomack and Northampton households have members that need assistance with Activities of Daily Living (ADL).

### ***Public Sheltering***

- Only a small fraction of Accomack and Northampton households anticipate seeking local public shelter when confronted with a significant hurricane, 2.6 percent of households in Accomack and 1.2 percent of households in Northampton. These figures are the lowest among the ten study localities. Within Accomack and Northampton, COVID is often cited as the primary reason for not seeking local public shelter.

### ***Social Distancing & Vigorous Cleaning Assurances Change Behavior***

- Among those households anticipating remaining in the region, enforcement of social distancing within local public shelters are likely to increase the propensity to seek public shelter within roughly 21.9 percent of Accomack households and 12.5 percent of Northampton households. Similar figures are found for potential change in behavior for assurance of vigorous cleaning within public shelters.

### ***Hotel Room Option Changes Behavior***

- Among those households anticipating remaining in the region, the availability of a non-congregate hotel room as a public sheltering option increases the likelihood of using a public shelter among 46.6 and 41.7 percent of households, Accomack and Northampton respectively.

### ***Propensity to Evacuate***

- Roughly 46.0 and 46.9 percent of Accomack and Northampton households anticipate evacuating out of the region. These figures are the lowest among the ten study localities.

### ***Transportation a Reason Not to Evacuate***

- Access to transportation is a less common reason among Accomack and Northampton households, relative to other localities, for not likely evacuating the region, 2.6 and 4.7 percent respectively.

### ***Care for Another Person Reason Not to Evacuate***

- Caring for another person is cited among 18.8 and 16.9 percent of Accomack and Northampton households, respectively, as a reason not likely to evacuate the region.

### ***COVID Exposure Reason not to Evacuate***

- Concern about COVID exposure is cited more often within Accomack and Northampton, relative to most other localities, as a reason for not likely evacuating the region, 27.7 and 27.1 percent respectively.

### ***Cash or Credit to Evacuate***

- Nearly 13.7 percent and 17.5 percent of Accomack and Northampton households report not having enough cash or credit on hand to evacuate the household from the region.



### ***Lost Wages Impact Upon Rent or Mortgage***

- Lost wages stemming from a storm event is likely to impact the ability to make next month's rent of mortgage among 26.2 percent of Accomack households and 23.4 percent of Northampton households.

### ***Suffered Property Loss or Injury***

- Within Accomack and Northampton, 35.6 and 71.9 percent of households, respectively, report suffering either property loss or injury from a previous storm event. Nearly 5.3 percent of Accomack households report suffering injury, the highest in the study area.

### ***COVID Impact Upon Household Income***

- COVID has decreased income from nearly 22.7 and 16.9 percent of households within Accomack and Northampton, respectively.

### ***Frequency of Street Flooding***

- Nearly 11.8 percent of Accomack households and 6.6 percent of Northampton households report frequent street flooding in front of their home or nearby streets.

### ***Trust for Storm Information***

- Accomack and Northampton households exhibit lower trust of elected officials to communicate storm-related information relative to most other localities.

## Household Characteristics

This research includes interviews with several thousand Hampton Roads households, reflecting a wide variety of characteristics. Below is a small selection of the types of households from which the findings in this report are derived:

- Nearly 44.0 percent of households reside in Hampton Roads for 25 years or less.
- About 47.3 percent of households are low-to-moderate income households and 8.2 percent of households are at or below the federal poverty level.
- Just under 18.4 percent of households are single-person, 36.7 percent are two-person, and 44.9 percent are three-or-more persons.
- Just above 28.3 percent of households have children, about 33.5 percent of low-to-moderate income households have children, and nearly 61.8 percent of hyper vulnerable households have children.
- Just above 9.3 percent of households are multigenerational households and about 19.9 percent of hyper vulnerable households are multigenerational.
- About 29.0 percent of all households are medically fragile households, with about 36.2 percent of low-to-moderate income households being medically fragile and 46.8 percent of households with less than 25k annual household being medically fragile.
- About 1.4 percent of households have a child member that is severely handicapped, and 2.1 percent of moderate-income households have a severely handicapped child.
- About 5.7 percent of households have immediate COVID propinquity and 24.6 percent have high COVID propinquity.
- Just under 8.3 percent of households are active duty military households.
- About 20.0 percent of households are considered hyper vulnerable; 62 percent of these have children, and 19 percent are mutigenerational.
- Nearly 29.2 percent of all households may be classified as having at least one member that is medically fragile.
- Roughly 11.3 percent of households with immediate COVID propinquity are active-duty military and among these 11.3 percent have immediate COVID propinquity.
- Nearly 14.4 percent of households do not have enough cash or credit on hand to support their household out of region for five days given the necessity to evacuate.
- About 59 percent of households self-identify as white, 31.2 percent as non-white, and 9.0 percent refuse to characterize the household's race or ethnicity.

## Recommendations

The following 37 Action recommendations organized within six Action Areas are drawn from knowledge generated from three primary sources: 1) data derived from the conversations with the 2,200 households for this study, 2) review of the literature cited in this report, and 3) conversations with state and local stakeholders, including non-profits, service providers, planners, citizens, and community leaders, among others.

It is estimated that sizable portions of households in coastal urban areas – across all four evacuation zones – will not relocate to either a public shelter or evacuate away from areas at risk when faced with an impending significant hurricane event. The percentage of households that anticipate sheltering in place, typically within the primary residence, is estimated to increase even more under a COVID-type environment (i.e., compound hurricane-pandemic threat).

These increased propensities to shelter in-place are particularly true for vulnerable and medically fragile households. These households are at risk to suffer greatly from the immediate impacts of a catastrophic storm event.

These recommendations are intended to advance the health and wellbeing of populations during the current public health crisis. However, recent incidences, such as the highly contagious H1N1 swine flu, H5N1 avian flu, and the Middle East Respiratory Syndrome (MERS), suggest the potential for recurrence of epidemic and pandemic environments. These recommendations ought to be acted upon not only to mitigate the impacts of the current health crisis, but also in anticipation of future crises and to prudently build longer-term community resilience.

**In order to ...**

- 1. Protect the health and wellbeing of all Virginia citizens, including the most vulnerable and medically fragile,**
- 2. Build community resilience, and**
- 3. Address equity issues that are foundational to disparities in exposure to risk ...**

**We recommend the State of Virginia take the following 37 Actions organized within 6 Action Areas:**

- 1. Shelter Staff & Management**
- 2. Shelter Capacity**
- 3. Evacuation Capacity**
- 4. Communications Guidelines**
- 5. Communications Strategies**
- 6. Equity and Blue Sky Planning for Recovery**

## Action Area #1: Shelter Staff & Management

**Further develop planning to expand and make more robust shelter staffing and management under pandemic environment.**

### ***Action Items***

Shelter staffing and management plans ought to:

- 1) Provide for additional training and certification of shelter staff and volunteers, with specific consideration for the development of online training including infection control, cleaning and hygiene, cross training, and communication strategies to reduce anxieties of client populations,
- 2) Address work and rest schedules formulated to reduce fatigue, stress, and burnout, and maintain compassion among shelter staff and volunteers,
- 3) Incorporate a specific strategy that will assure adequate shelter staffing under COVID, especially in light of the expected decrease in shelter volunteers under COVID; this strategy ought to include identification, incentivization, recruitment, and training of potential new volunteers by existing, experienced volunteers and proactively work towards advancing principles of diversity and inclusion in shelter staff and volunteers,
- 4) Embed mental health-trained professionals in shelters to identify and tend to the mental health needs of client population, staff, and volunteers,
- 5) Include periodic testing and isolation protocols, including enforcement regimens and sanctions for non-compliance, and
- 6) Develop methods to promote, within the public shelter, a culture of partnership with the sheltered population, in contrast to simply being a passive, managed client population; identify skillsets within the population and publicly display roles that can be filled; move the culture in a direction towards a sense of ownership and contribution to the daily functioning of the shelter operations; facilitate a diversity of inclusion within the daily operation; avoid 'client' terminology in favor of 'resident partner.'

## Action Area #2: Shelter Capacity

### **Further develop State and local public shelter capacities under pandemic environment.**

#### ***Action Items***

Shelter capacity planning ought to:

- 1) Reduce the number of persons and communicate assurances of social distancing within the public shelter environment; expand the number and type of sheltering venues to compensate for decreased capacities of existing venues under COVID,
- 2) Perform updated canvas of potential new sheltering venues, specifically considering venues, such as parochial schools, that have recently installed Ultraviolet-C lamp treatments within the HVAC system,
- 3) Develop an autonomous public sheltering option (APSO) tier that incorporates decentralized public shelter venues, does not offer centralized services, and are available to households with low medical fragility and low vulnerability,
- 4) Include consideration of non- or low-congregate sheltering options, such as hotel venues, including development of screening and prioritization guidelines for these options,
- 5) Consider population management within shelters to increase segregation of at-risk populations and persons with emerging symptoms, as well as promote low-contact among all persons within the shelter environment,
- 6) Identify isolation areas within sheltering venues, assessing the security and monitoring of these areas, and adaption of these areas to negative pressure ventilation,
- 7) Incorporate preplanning for the procurement, staging, and storage of PPE and other cleaning supplies that are necessary for sanitation and infection control, especially supplies that may be in high demand during time of pandemic,
- 8) Anticipate potential failure or inoperability of generators, or absence of personnel familiar with generator operation, at roughly .15 of sheltering venues; perform assessment of generator assets relative to aging and life-cycle maintenance,
- 9) Perform local gap analyses, supported by State funding, in partnership with Universities familiar with population evacuation and sheltering behavior, to estimate the demand for local public sheltering relative to the capacity of local public sheltering, especially under COVID, and

10) Update the decade-old evacuation and sheltering studies conducted by the Virginia, Modeling, Analysis and Simulation Center (VMASC), incorporating new data, knowledge, and awareness relative to: 1) refined climate and land surface projections, 2) growth in the body of literature relative to vulnerable populations, 3) desire to address diversity, equity, and inclusion in building community resilience and advancing mitigation.

### Action Area #3: Evacuation Capacity

#### **Further develop government-facilitated evacuation capacities under pandemic environment.**

##### ***Action Items***

Evacuation capacity planning ought to:

- 1) Expand the number of staging areas that are either in or proximate to neighborhoods most likely impacted by surge flooding, households that are transportation and resource-constrained, and households that are vulnerable (as defined in this report),
- 2) Identify and address specific potential hurdles to staffing evacuation staging areas and motorized assets within a COVID environment,
- 3) Integrate additional and varied transportation assets, including free-market smaller vehicles and vans operated by independent entrepreneurs, to compensate for potential decreased availability of larger assets under COVID,
- 4) Identify protocols and controls for testing, screening, and monitoring infection throughout the exit and reentry pathways,
- 5) Incorporate preplanning for the procurement and storage of PPE and cleaning supplies that are necessary for sanitation and infection control, especially supplies that may be in high demand during time of pandemic,
- 6) Develop clear and understandable government-facilitated evacuation process guidance for the general population, specifically visuals illustrating the stages in evacuation and return, how to prepare for evacuation, care for health and wellbeing of clients (including medically fragile and ADL populations), anticipated household-borne costs, and security and safety measures,
- 7) Support research, through partnership with the University, that quantifies the increased capacities that may manifest from active Peer-to-Peer (P2P) transportation assistance and evacuation ridesharing programs,
- 8) Support research, through partnership with the University, that further investigates the documented association between vulnerable households and lack of reliable transportation being cited as a reason for not evacuating,
- 9) Perform local gap analyses, supported by State funding, to estimate the desire for evacuation (latent demand) relative to the available capacity to evacuate populations, especially under COVID.



#### Action Area #4: Communications Guidelines

**Develop guidelines for State and local PIOs to effectively communicate similar evacuation and shelter information under pandemic environment.**

##### ***Action Items***

PIO guidelines ought to include communication messaging that addresses:

- 1) Safety and security of evacuation and public sheltering environments,
- 2) Sanitation and infection control measures in place in evacuation and sheltering environments,
- 3) Procedures in place to support continuity in chronic condition medical regimens, including fulfillment and access to medications,
- 4) Risk trade-offs among sheltering in place within an evacuation zone relative to either evacuation out of the region or public sheltering,
- 5) Plans for infant and childcare within evacuation and sheltering environments, including meeting the health, nutrition, wellbeing, and educational needs during the time of disruption,
- 6) Clear purpose and function of public sheltering, including amenities and limitations of the public shelter environment and what one may expect, and
- 7) Each stage of public-assisted evacuation (mustering, screening, exit destination, return), including uncertainties, expectations, and limitations.

## Action Area #5: Communication Strategies

### **Develop more effective communication strategies to support State and local sheltering and evacuation.**

#### ***Action Items***

Effective communication strategies ought to:

- 1) Continue to raise awareness within the general population of the evacuation zone system, targeting geographies and population groups with relative low evacuation zone awareness, including medically fragile and lower income households,
- 2) Educate the population about the potential risks of sheltering in place within areas prone to surge flooding and wind damage, with specific consideration for the impact of hydrodynamic pressures, injury from debris, and post-event contaminants,
- 3) Respond directly to the barriers faced by medically fragile and vulnerable populations that may lower propensities to both evacuate out of the region and to see local and/or State public shelters,
- 4) Broadcast, near the beginning of the hurricane season, an information campaign that provides clear, understandable information about changes in local public shelter operations in light of COVID; specifically: 1) Reductions in the number of persons and assurances of social distancing within the public shelter, 2) Assurance of vigorous cleaning schedules within public shelter, and 3) Availability of non-congregate public shelter options (hotel) and autonomous public sheltering options (APSO),
- 5) Establish channels and methods to broadcast information to clients within public shelters and government-facilitated evacuation transportation environments, these methods and information to be sensitive to clients with sensory and cognitive impairments,
- 6) Increase the population's familiarity with the role of emergency managers and enhance trust in emergency management messaging at the state and local levels, and
- 7) Engage exit destination governments and chambers to proactively identify and address potential declines in receptivity and capacities at host destinations, specifically identify strategies to address potential declines in the absorptive capacities of exit destinations.

## Action Area #6: Equity & Blue Sky Planning for Recovery

**Advance the practice of preplanning for the recovery of housing, specifically to meet the needs of displaced vulnerable and medically fragile households.**

### ***Action Items***

The State's practice of preplanning for housing recovery ought to:

- 1) Provide technical and resource support for non-profits and partnerships, such as Recover Hampton Roads, focused building community resilience and on the repair of damaged housing of displaced vulnerable and medically fragile populations,
- 2) Establish an academic center of excellence focused on recovery-related equity and social justice issues and charged with generating science-based knowledge that informs State and local government policies, practices, and culture,
- 3) Partner with academic institutions to apply for federal security, mitigation, and resilience planning dollars, specifically programming dollars to address the housing recovery needs of vulnerable and medically fragile populations,
- 4) Incorporate into the State's coastal resilience comprehensive planning process the principle of building resilient communities through pre-event planning practices that speed housing recovery for vulnerable populations, and
- 5) Document, through cooperation with the University, the environmental, social, and access hurdles faced by Virginians that frustrate the ability of households to meaningfully reduce risk prior to, during, and following severe weather events; further document existing and potential diversity, equity, and inclusion pathways to building community resilience.

## Part 1: Introduction and Background

### Major Parts of this Report

This report is organized into 18 Parts and two appendices.

#### **Part 1 Introduction and Background**

*Description:* Frames the context of the information contained within this report, including a brief history of storms in the region and general information related to status of COVID.

#### **Part 2 Methodology**

*Description:* Provides detailed information about the Study's survey methodology, significance, and unit of analysis. In addition, offered are conceptual definitions and measurement of key concepts.

#### **Part 3 Household Characteristics**

*Description:* Reports descriptive characteristics of households and household members, including the composition of the household, resources, and geographic locations relative to flooding risk.

#### **Part 4 Adult Disability & ADL Households**

*Description:* Relates descriptions of the presence of adult disabilities within the households, including Activities of Daily Living (ADL) information, and hearing, sight, and cognitive disabilities.

#### **Part 5 Evacuation Out and Sheltering Within the Region**

*Description:* States the anticipated behavior of households when confronted with a severe weather event, such as a significant hurricane, under the current COVID environment. Who plans to stay and who plans to go?

#### **Part 6 COVID Impact on Household Evacuation & Sheltering Behavior**

*Description:* Assesses through description and quantification the expected change in evacuation and sheltering behavior under the COVID environment.

#### **Part 7 Branch 1 -- Sheltering within Hampton Roads, but not within a Public Shelter**

*Description:* Accounts for the anticipated behaviors of those planning to shelter within the region (but not in a public shelter) and the reasons for these behavioral choices.

***Continued...***

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**Part 8 Branch 2 -- Shelter within Hampton Roads at a Public Shelter**

Description: Provides description of the anticipated behaviors of those households seeking shelter in public shelter environments and relates the explanations for these behavioral choices.

**Part 9 Branch 3 – Evacuation out of the Hampton Roads Region**

Description: Details the anticipated behaviors of those households expecting to evacuate out of the region and explanations for these behavioral choices.

**Part 10 Common Variable Findings**

Description: Describes resource constraints confronting evacuated households, financial vulnerabilities, past storm-induced losses and sufferings, COVID impacts upon household income, and propinquity of COVID to the household.

**Part 11 Trust for Storm Information**

Description: Chronicles the variation in the household's trust for storm information across local and State actors.

**Part 12 Household Characteristics x City (Crosstabulation)**

Description: Illustrates the disaggregation by city of many of the household characteristics found in Part 3.

**Part 13 Adult Disabilities x City (Crosstabulation)**

Description: Assesses the differences in Activities of Daily Living (ADL) and specific disabilities identified in Part 4, across localities.

**Part 14 Stay or Go x City (Crosstabulation)**

Description: Reports variation in anticipated evacuation and sheltering behaviors, unidentified in Part 5, across localities.

**Part 15 Branch 1 (Sheltering within Hampton Roads, but not within a Public Shelter) x City (Crosstabulation)**

Description: Provides an accounting of differences in reasons for anticipated sheltering choices identified in Part 7, across localities.

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**Part 16 Branch 3 (Evacuation out of the Hampton Roads Region) x City (Crosstabulation)**

*Description:* Relates the reasons for anticipated evacuation choices identified in part 9, across localities.

**Part 17 Common Variable Findings x City (Crosstabulation)**

*Description:* Describes the differences across localities for many of the resources and experiential variables identified in Part 10.

**Part 18 Trust Variables x City (Crosstabulation)**

*Description:* Reports variation in household trust (reported in Part 11) across local and State actors and arranges these figures across the localities.

## Purpose

The eastern seaboard will again be impacted by severe weather events. Virginia's evacuation zone system and the Governor's authority to issue mandatory evacuations were recently exercised when confronted by Hurricane Florence. These actions are intended to reduce the risk posed to all residents, but the benefits of evacuation and public sheltering are especially operative for medically fragile and vulnerable populations, which tend to have lower propensities to evacuate. Government planning and practices that increase the likelihood of at-risk residents, but especially medically fragile and vulnerable populations, to evacuate and shelter away from risk promotes the wellbeing of Virginia's residents and advances the principle of resilient communities.

However, the current COVID environment also presents risks to all populations, but with medically fragile and vulnerable populations in particular at greater risk stemming from COVID exposure (J. G. Behr, Yusuf, Marshall, Dunn, & Group, 2020; Samuels, Karb, Vanjani, Trimbur, & Napoli, 2020). There exist tensions between storm evacuation and sheltering (associated with increasing social interactions and the congregation



Hurricane Florence September 12, 2018

<https://www.nesdis.noaa.gov> (Accessed Oct. 14, 2020)

of populations in public sheltering and transportation spaces) with virus pandemic containment and treatment (requiring social distancing, quarantining, and specialized medical care). Thus, there are tradeoffs in risk reduction/promotion under the compound threat of the 2020/21 hurricane seasons and the on-going public health crisis. Under the compound hurricane-pandemic threat, the risks confronted by different population groups vary greatly depending upon location, health, resources, among others.

This study is intended to help planners better understand residents' risk perceptions associated with COVID-19 and how these perceptions may alter public sheltering and evacuation decisions during a significant hurricane. These risk perceptions vary across geographies and household descriptive characteristics.

In this report, we provide insight and recommendations to assist Virginia's Governor's office, state and local emergency planners, and health and social services officials in crafting directives, messaging, and planning for the evacuation and sheltering of all residents, but with specific consideration for medically fragile and vulnerable populations. We provide these insights and recommendations in support of efforts to mitigate contagion and safeguard population wellbeing during a compound hurricane-pandemic threat.

## Significance

The nature of regional vulnerabilities may be theorized and tested through “what if” scenario modeling and simulation as well as emergency planning exercises. However, the occurrence of an actual event may lay bare the true vulnerabilities of a region. Areas that have recently witnessed natural disaster events necessarily may have greater intimacy with these vulnerabilities relative to a region that has not experienced such an event in quite some time, such as the greater Hampton Roads Region.

However, through lessons learned from other regions, theory, modeling, and innovative social-behavioral data gathering, we strive to approach a meaningful understanding of our region’s vulnerabilities, and translate these into action.



Imagery Willoughby Spit, Norfolk  
<https://mapio.net/pic/p-83586551/>

The COVID environment has added another layer of complexity to our comprehension of evacuation and public sheltering behavior. The authors of this Study believe that original and insightful contributions have been derived from this Study’s research approach, with an emphasis towards equity and inclusion in the studied populations. We believe, from these data, we may make inferences with a good degree of confidence about the likely behavior of the population in



F-22 Raptors taxi down the runway at Langley Air Force Base, Va., Oct. 1, 2015. Due to projected tidal surges and potential flooding caused by Hurricane Joaquin, Langley evacuated approximately 40 aircraft from the 1st and 192nd Fighter Wings. (U.S. Air Force photo by Senior Airman Kayla

a significant hurricane event during a pandemic. This actionable information may be used by State and local officials to adapt planning and target investments intended to reduce vulnerabilities and build community resilience in anticipation that a significant severe weather event is likely to occur within the next decade. In addition, we believe that these findings have significance beyond the State and the recommendations and Action Items here within are applicable to other coastal urban regions in the United States.

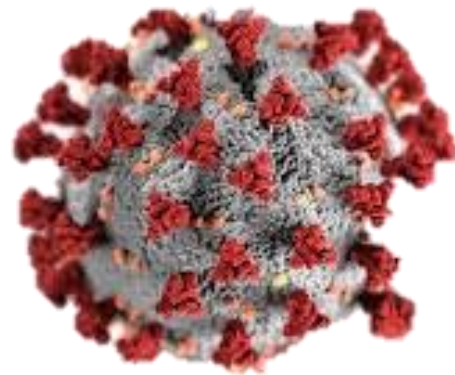


## COVID-19 Management Strategies

The coronavirus disease 2019 (COVID-19) is a highly contagious respiratory virus that is spread mostly from person to person contact. People infected with the virus usually experience minor to modest respiratory sickness like the common cold and recover without needing special treatment. However, COVID-19 can cause severe illness resulting in life threatening disease for the elderly and medically fragile, particularly those with comorbidities. The medically fragile, those most vulnerable to severe COVID-19 disease and even death, include those with medical problems such as obesity, diabetes, underlying lung, heart and kidney diseases, those who are undergoing treatment for cancer, those over 65 years of age, and those who live in a nursing home or other long-term care facilities. COVID-19 also disproportionately affects racial and ethnic minority groups, with high rates of death in African American, Native American, and Latin communities.

COVID-19 is a virus spread by respiratory droplets released when someone talks or sneezes, and the droplets subsequently land in the mouth or nose of the person nearby. The virus most commonly spreads between people who are in close contact with another (within 6 feet) for 15 minutes or longer. The virus is also spread when a person touches a contaminated surface, and subsequently touches their mouth, nose and eyes. Since a communal sheltering environment often involves the boarding of people in shared areas, there is risk of COVID-19 transmission. Risk is increased as more people are sheltered in a closed area within close proximity, as they are more likely to share areas such as bathrooms, and frequently touch surfaces such as doorknobs and handrails within the shelter, where spread of the virus may occur.

The 2020 Atlantic Hurricane season was marked by extreme activity in terms of number of named storms, but also has also brought unique challenges for emergency planners due to the co-occurring COVID-19. The COVID-19 environment has compounded risks faced by residents and has made more complex government planning to protect the lives and health of the citizenry (Pei, Dahl, Yamana, Licker, & Shaman, 2020; Phillips et al., 2020). COVID-19 has complicated the preparation and response of coastal communities for the 2020 Atlantic hurricane season and may be expected to continue to do so as we move into the 2021 season (J. G. Behr, Yusuf, Marshall, & Dunn, 2020; James M. Shultz et al., 2020). Hurricane response is challenged by “fundamental



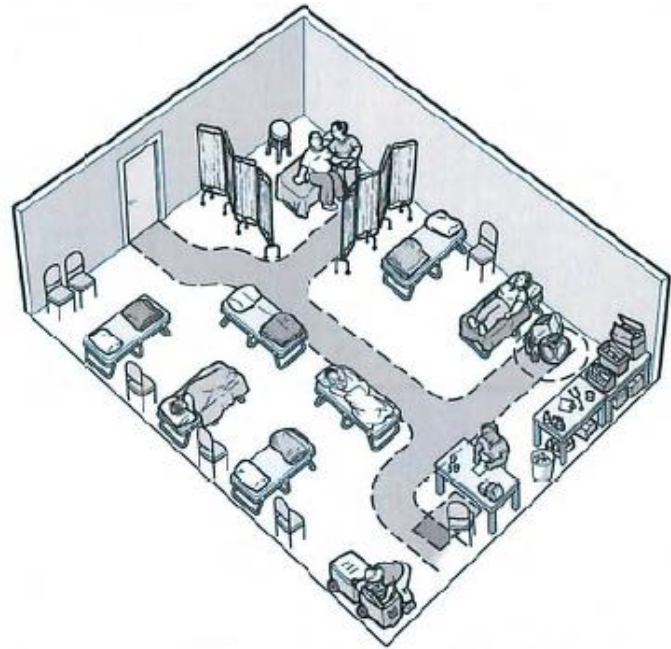
COVID Image: Download from CDC Image Library  
Oct. 22, 2020

<https://www.cdc.gov/media/subtopic/images.htm>

incompatibilities between the most effective population protection strategies” for COVID-19 and removal of populations away from areas of risk (Shultz, Fugate, & Galea, 2020).

Containment and anti-contagion strategies to manage the COVID-19 pandemic used both in the U.S. and across the world have included efforts associated with social or physical distancing, self-isolation and quarantining, and purposeful cleaning and hygiene activities (Auger et al., 2020; Capano, Howlett, Jarvis, Ramesh, & Goyal, 2020; Chu et al., 2020; Cowling & Aiello, 2020; Fong et al., 2020; Hsiang et al., 2020).

Social distancing is recognized as an important strategy to disrupt the contagion process (Barsom, Feenstra, Bemelman, Bonjer, & Schijven, 2020; Roy et al., 2020; Silva et al., 2020). However, government actions and population behaviors intended to reduce risk prior to, during, and following a severe storm event are associated with increased social interactions and the congregation of populations. For example, as projections track a severe storm over the mid-Atlantic region towards landfall, social interactions



Typical/Idealized model of medical care unit within shelter, non-COVID

significantly increase as the community engages in safeguarding property, garnering supplies, and securing fuel. In addition, as landfall is imminent, households may congregate in public shelters, at evacuation staging areas, and within transportation assets. The logistics of both exiting and returning to the region, as well as sheltering outside the region, will necessarily entail

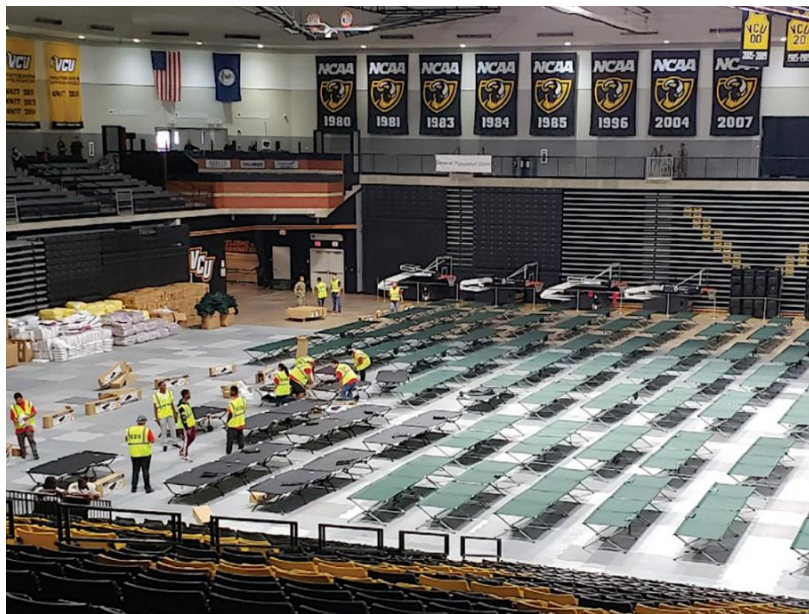


Hurricane Irene evacuees at St. Augustine Preparatory School, Richland, August 2011

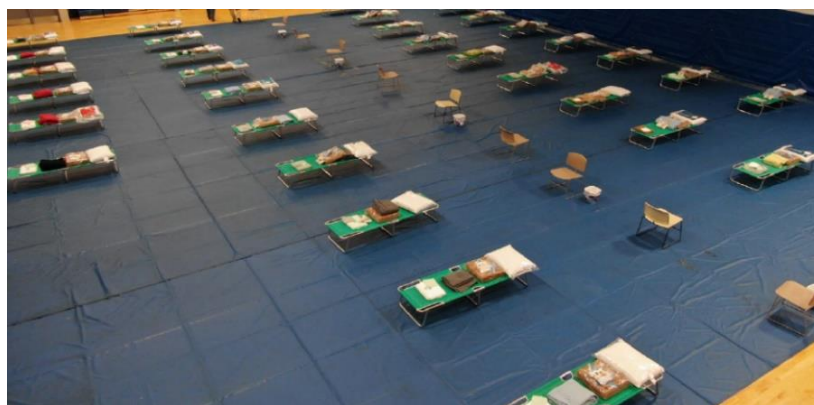
<https://catholicstarherald.org/school-serves-as-hurricane-evacuation->

being in proximity with others at rest areas, fueling and food stops, and at accommodations. Fears of contracting COVID-19 (Pakpour & Griffiths, 2020) within congregate sheltering and evacuation environments may diminish the propensity of households, that would otherwise evacuate or seek public shelter to move away from areas at high risk to storm surge and wind (J. Behr & Diaz, 2020; Sun, Zhang, & Su, 2020).

There are multiple methods for calculation of sheltering capacity (e.g., ICC-500, FEMA 361, ARC) ranging from 15 s/f/person to 40 s/f/bedridden person that are being reconsidered to account for social distancing and proximity standards, which are essential to the management of the current contagion. However, thoughtful space calculations, floorplan layouts, and hygiene protocols alone do not assure that best practices in social distancing and containment are achieved. Proximity standards and isolation are difficult to monitor, maintain, and enforce in dynamic sheltering and evacuation environments. The human element, meaning awareness, training, and cooperation, are absolutely essential if public sheltering and evacuation to congregate areas are to be considered low risk environments for contagion spread.



State shelter preparation at VCU for Hurricane Florence, VDEM 2018 emergency shelter report



National Mass Care Strategy, July 16, 2020

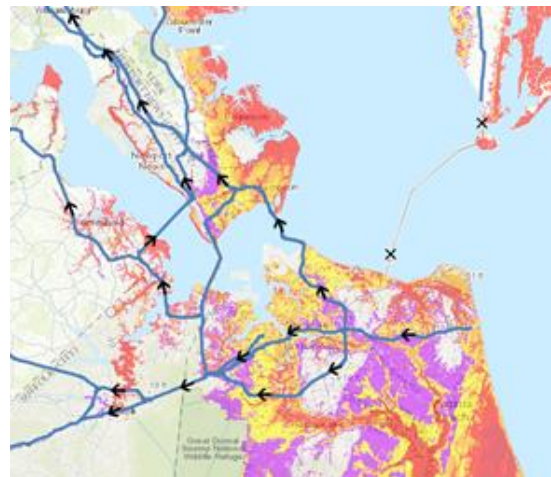
<https://nationalmasscarestrategy.org/multi-agency-pandemic-sheltering-job-aid/>

## Evacuation & Public Shelter Planning

State and local officials, through voluntary and mandatory evacuations, seek to facilitate the mobilization of residents away from areas most at risk (Smith & McCarty, 2009; Whitehead et al., 2000). Evacuation timing is complex (Dixit & Radwan, 2009; Whitehead, 2003). Storm paths are unpredictable, environmental conditions change, and population behaviors are often unfixed (Lindell, Prater, Perry, & Wu, 2002; Ng, Diaz, & Behr, 2015). State and local officials make assessments within a dynamic environment and often with data presented within bounds of uncertainty (Kapucu, Arslan, & Collins, 2010). While evacuation and public sheltering may be intended to remove residents from risk, a near-miss or low-impact storm in conjunction with evacuation and public sheltering may heighten COVID exposure (J. Behr & Diaz, 2016; Rasid, Haider, & Hunt, 2000).

Officials must assess, with imperfect or partial information, the tradeoffs among competing risks across populations with varying vulnerabilities (Sorenson, Shumpert, & Vogt, 2004). Evacuation and public shelter planning must also consider the availability of supply relative to expected demand (Baker, 1991; J. G. Behr & Diaz, 2014; Dow & Cutter, 2002). The provision of supply falls heavily within the scope of government. For example, the supply side involves the capacity in terms of both local- and State-managed shelters to provide for residents (Diaz et al., 2013). The size of sheltering venues and the availability of staff and volunteers are elements of supply.

The supply side also involves the capacity to evacuate residents out of the region, including the designation of 'recommended' evacuation routes (He, Zhang, Song, Wen, & Wu, 2009; Ng, Park, & Waller, 2010; Rui, Shiwei, & Zhang, 2009). The capacity of the regional roadways and infrastructure to manage the out-flow of departing households is a role of government (Henstra, 2010; Sorenson et al., 2004). Capacity to evacuate may also be increased due to available, contracted transportation assets, such as buses. However, within the COVID environment, the capacity of contracted transportation may be diminished due to the economic impact of the pandemic (failed delivery companies) and reduced availability of qualified coachpersons (J. G. Behr, Yusuf, Marshall, & Dunn, 2020).

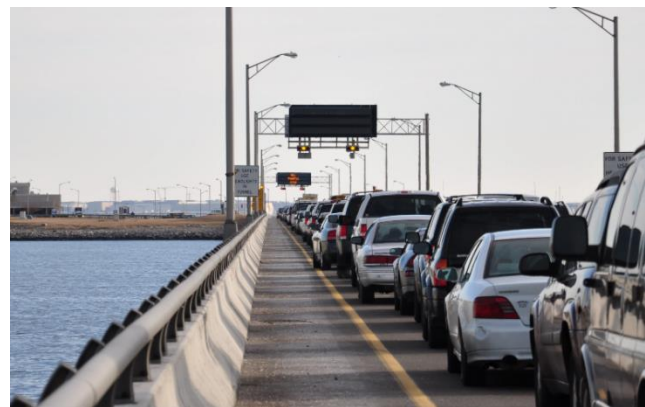


Major Evacuation Routes out of Southside Hampton Roads

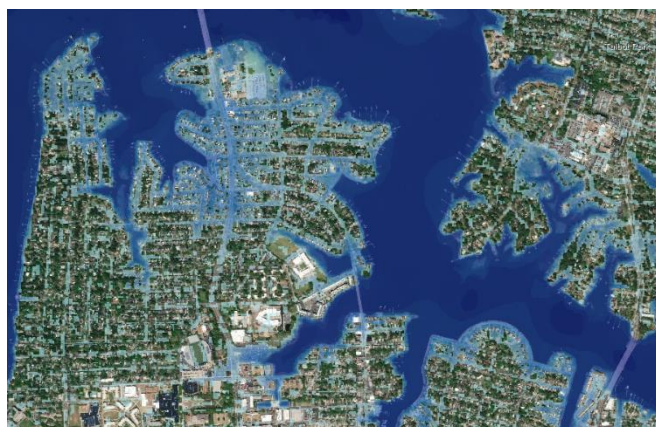


The demand side, meaning the level of demand for efficient evacuation and safe public sheltering, primarily falls within the purview of the individual household. The demand side is driven by a population at liberty to choose a course of action, or inaction. The demand side is driven by population behaviors in the form of number of households seeking public shelter, compliance (or non-compliance) with directives, number of households evacuating out of the region, number and timing of vehicles entering roadways, and exit paths and destinations, among others. Much research indicates the complexities inherent in the household evacuation/sheltering decision calculus (Bateman & Edwards, 2002; Huang, Lindell Michael, Prater Carla, Wu, & Siebeneck Laura, 2012; Huang, Lindell, & Prater, 2016; Huang, Lindell, & Prater, 2017; Huang, Lindell, Prater, Wu, & Siebeneck, 2012; Kang, Lindell, & Prater, 2007; Lindell, Kang, & Prater, 2011; Vásquez, Murray, & Mozumder, 2015).

As a large number of vehicles populate roads and highways during an evacuation, the transportation network is stressed (Nakanishi, Wise, Suenaga, & Manley, 2020) and may not be able to satisfy demand, resulting in congestion and near-gridlock behavior (Nigg, Barnshaw, & Torres, 2006). Awareness of limited capacity may condition the demand side as fewer households choose to evacuate due to congestion. While fewer households may choose to evacuate due to COVID-exposure concerns, this may be partially offset due to social distancing as the number of occupants per departing vehicle may decrease as households are less likely to ride-share and caravan.



Congestion on Hampton Roads bridges & tunnels during evacuation, Virginia Pilot



VIMS, Norfolk maximum flooding extents during hurricane Irene

This demand in terms of persons evacuating and seeking public shelter, however, may also be shaped by the content, aim, and intersectionality of government evacuation and shelter messaging (Borowski & Stathopoulos, 2020; Fischer, Stine, Stoker, Trowbridge, & Drain, 1995), when and if evacuation directives are issued (Yi, Nozick, Davidson, Blanton, & Colle, 2017), and how risk and supply information is communicated to the public (Morss et al., 2016; Soni, Sharma, Kumar, Verma, & Sutar, 2014).

A household's storm risk perception is viewed as a central consideration in the decision to shelter in place, seek public shelter, or evacuate out of the region. However, despite heightened risk perceptions, many households desirous of evacuation out of the region will not effectuate evacuation due to confounding factors such as resource constraints, limited social networks, fear of disruption to medical support networks, unfamiliarity with exit destinations, and limited transportation access, among others.

The COVID environment may also further confound evacuation out of the region. Many households, as evidenced within this Study, are faced with additional socio-economic stressors, such as job insecurity and decline in household income, stemming from business slow-downs and closures within the region. The intensity of these stressors varies across Hampton Roads' geographies and are felt more acutely among LMI populations relative to others. Evacuation out of the region can involve significant financial resources to cover transportation, fuel, lodging, and meals, potentially for an extended period (Lindell et al., 2011)

## The 2020 Hurricane Season

Hurricane Iota was the 13<sup>th</sup> Hurricane of the 2020 season according to the National Oceanic and Atmospheric Administration. The 2020 Atlantic hurricane season was record breaking with 31 tropical or subtropical cyclones, 30 named storms, 13 hurricanes, and 6 major hurricanes.

## Historic Hurricane Tracks

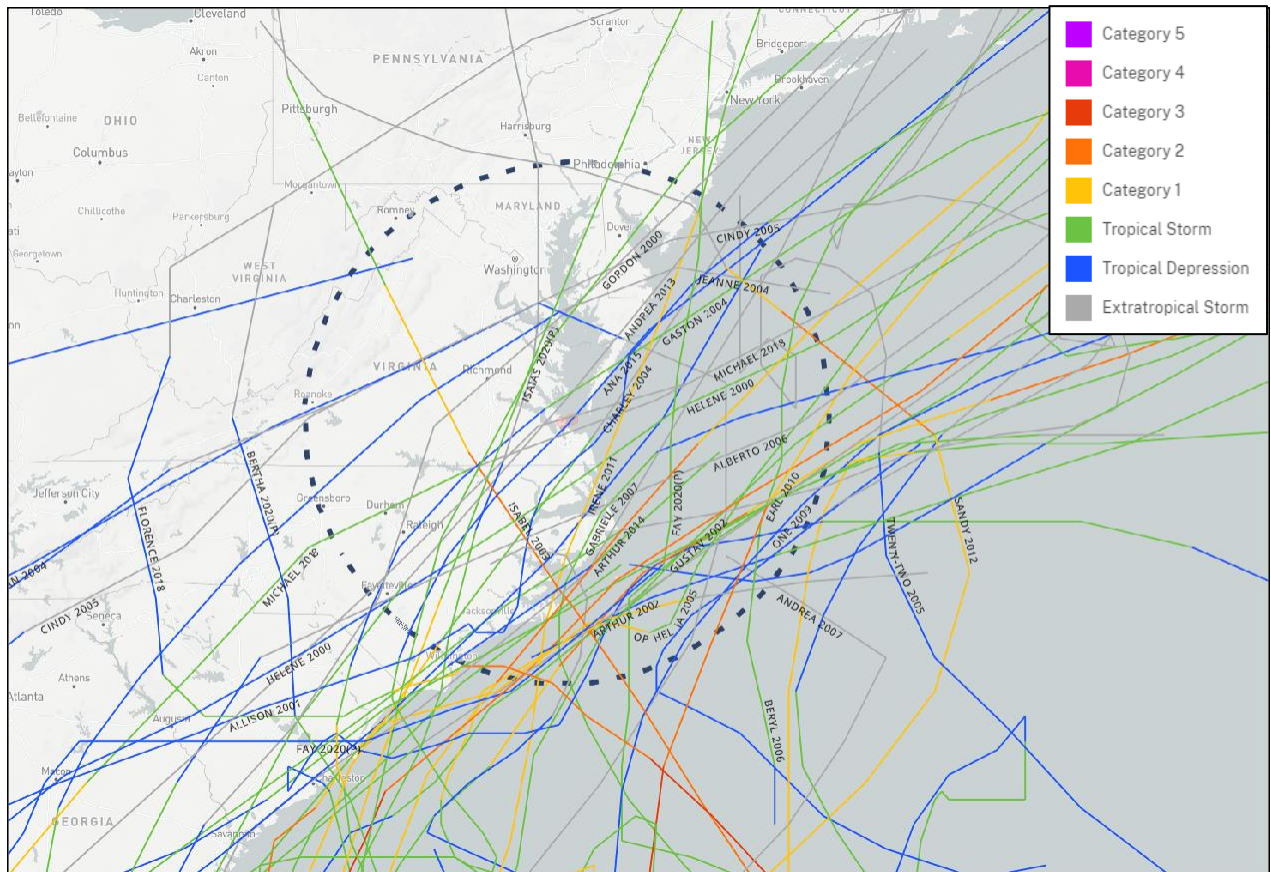
The Mid-Atlantic region receives frequent and repeated visits from severe weather events, although the strength and tracks for these severe weather events are quite varied. This variation has made predicting a generalized path difficult. Simply, each storm is different. To illustrate this variety, historic storms for the period between 2000 and 2020 within 250 miles of the City of Hampton are depicted. These data are generated by NOAA's Historic Hurricane Tracks on (October 14, 2020 at <https://bit.ly/3k06zR3>) based on the following six search filters:



This close-up view of Hurricane Isabel was taken by one of the Expedition 7 crew members onboard the International Space Station on Sept. 15, 2003. Accessed Oct. 14, 2020

<https://weather.com/storms/hurricane/news/hurricane-images-photos-most-iconic>

1. Categories: H5, H4, H3, H2, H1, TS, TD, ET
2. Months: ALL
3. Years: 2020, 2019, 2017, 2013, 2014, 2012, 2011, 2015, 2010, 2009, 2016, 2008,
4. 2007, 2006, 2004, 2003, 2005, 2002, 2001, 2000, 2018
5. El Niño-Southern Oscillation (ENSO): ALL Minimum Pressure (mb) below: 1150 Include Unknown Pressure Rating: TRUE Buffer Distance: 250
6. Buffer Unit: Miles



Historic Hurricane Tracks 2000-2020



The below table lists the names of severe weather events (Tropical Storm, Tropical Depression, Hurricane Cat, Extratropical Storm) impacting Southeastern Virginia, 2000 through 2020. Included are the dates and characteristics of these storms.

<b>STORM NAME</b>	<b>DATE</b>	<b>MAX WIND SPEED</b>	<b>MIN PRESSURE</b>	<b>MAX CATEGORY</b>
<b>ISAIAS 2020(P)</b>	Jul 23, 2020 to Aug 05, 2020	75	987	H1
<b>FAY 2020(P)</b>	Jul 04, 2020 to Jul 11, 2020	50	998	TS
<b>BERTHA 2020(P)</b>	May 25, 2020 to May 28, 2020	45	1007	TS
<b>ARTHUR 2020(P)</b>	May 15, 2020 to May 19, 2020	50	989	TS
<b>NESTOR 2019</b>	Oct 17, 2019 to Oct 21, 2019	50	996	TS
<b>MELISSA 2019</b>	Oct 08, 2019 to Oct 14, 2019	55	994	TS
<b>ERIN 2019</b>	Aug 26, 2019 to Aug 29, 2019	35	1002	TS
<b>DORIAN 2019</b>	Aug 24, 2019 to Sep 09, 2019	160	910	H5
<b>MICHAEL 2018</b>	Oct 06, 2018 to Oct 15, 2018	140	919	H5
<b>FLORENCE 2018</b>	Aug 30, 2018 to Sep 18, 2018	130	937	H4
<b>MARIA 2017</b>	Sep 16, 2017 to Oct 02, 2017	150	908	H5
<b>NOT_NAMED 2017</b>	Aug 27, 2017 to Aug 29, 2017	35	1004	TS
<b>CINDY 2017</b>	Jun 19, 2017 to Jun 24, 2017	50	991	TS
<b>MATTHEW 2016</b>	Sep 28, 2016 to Oct 10, 2016	145	934	H5
<b>JULIA 2016</b>	Sep 13, 2016 to Sep 21, 2016	45	1007	TS
<b>HERMINE 2016</b>	Aug 28, 2016 to Sep 08, 2016	70	981	H1
<b>EIGHT 2016</b>	Aug 27, 2016 to Sep 01, 2016	30	1010	TD
<b>COLIN 2016</b>	Jun 05, 2016 to Jun 08, 2016	45	987	TS
<b>BONNIE 2016</b>	May 27, 2016 to Jun 09, 2016	40	1006	TS
<b>CLAUDETTE 2015</b>	Jul 12, 2015 to Jul 15, 2015	45	1003	TS
<b>ANA 2015</b>	May 06, 2015 to May 12, 2015	50	998	TS
<b>ARTHUR 2014</b>	Jun 28, 2014 to Jul 09, 2014	85	972	H2
<b>ANDREA 2013</b>	Jun 05, 2013 to Jun 08, 2013	55	992	TS
<b>SANDY 2012</b>	Oct 21, 2012 to Oct 31, 2012	100	940	H3
<b>BERYL 2012</b>	May 25, 2012 to Jun 02, 2012	60	992	TS
<b>IRENE 2011</b>	Aug 21, 2011 to Aug 30, 2011	105	942	H3
<b>EARL 2010</b>	Aug 24, 2010 to Sep 06, 2010	125	927	H4
<b>ONE 2009</b>	May 26, 2009 to May 30, 2009	30	1006	TD
<b>HANNA 2008</b>	Aug 28, 2008 to Sep 08, 2008	75	977	H1
<b>CRISTOBAL 2008</b>	Jul 19, 2008 to Jul 23, 2008	55	998	TS
<b>GABRIELLE 2007</b>	Sep 08, 2007 to Sep 11, 2007	50	1004	TS
<b>BARRY 2007</b>	May 31, 2007 to Jun 05, 2007	50	990	TS
<b>ANDREA 2007</b>	May 06, 2007 to May 14, 2007	50	998	TS
<b>ERNESTO 2006</b>	Aug 24, 2006 to Sep 04, 2006	65	985	H1
<b>BERYL 2006</b>	Jul 18, 2006 to Jul 22, 2006	50	1000	TS

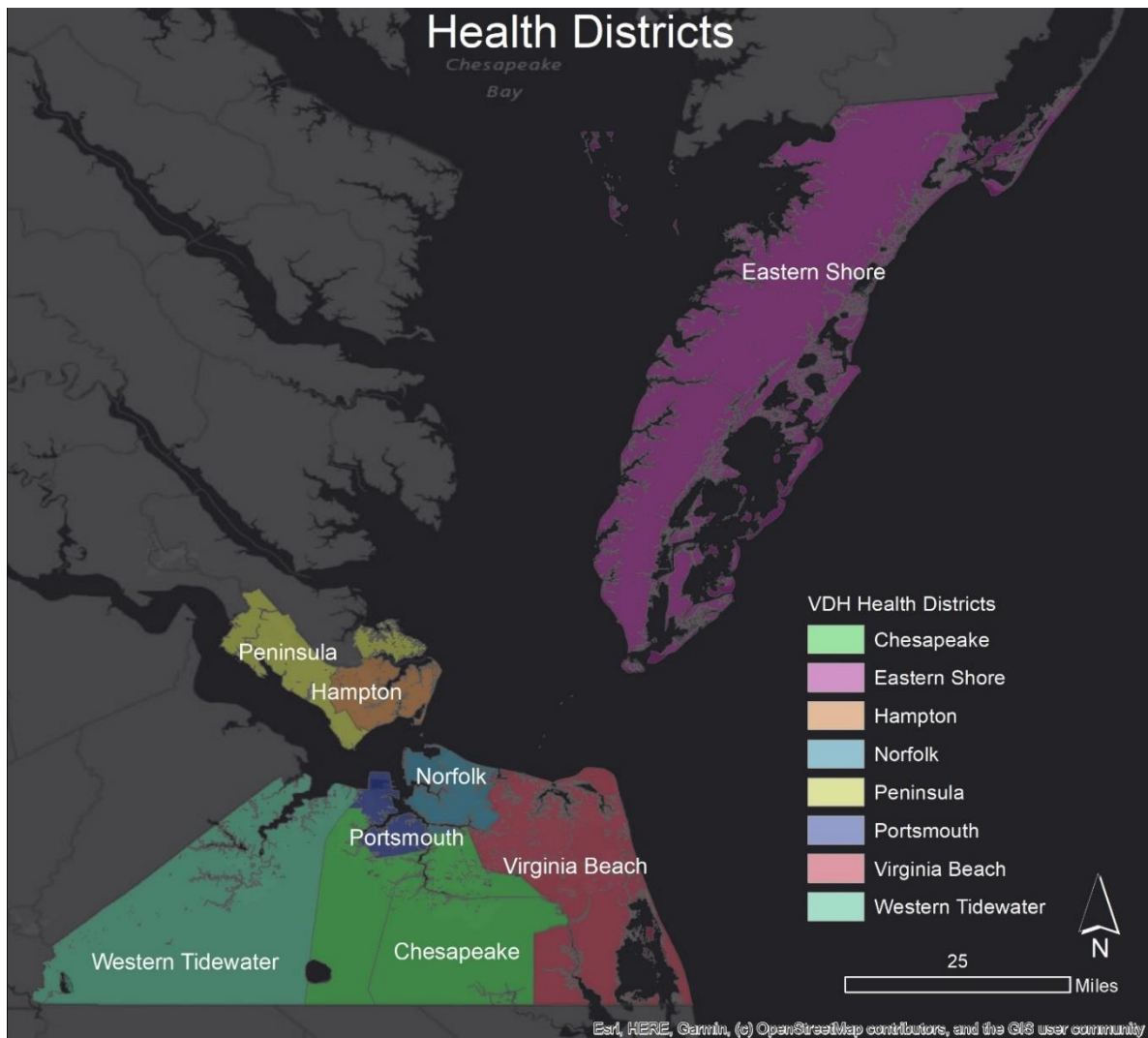
<b>ALBERTO 2006</b>	Jun 10, 2006 to Jun 19, 2006	60	969	TS
<b>TWENTY-TWO 2005</b>	Oct 08, 2005 to Oct 14, 2005	30	1005	TD
<b>OPHELIA 2005</b>	Sep 06, 2005 to Sep 23, 2005	75	976	H1
<b>CINDY 2005</b>	Jul 03, 2005 to Jul 11, 2005	65	991	H1
<b>JEANNE 2004</b>	Sep 13, 2004 to Sep 29, 2004	105	950	H3
<b>IVAN 2004</b>	Sep 02, 2004 to Sep 24, 2004	145	910	H5
<b>GASTON 2004</b>	Aug 27, 2004 to Sep 03, 2004	65	985	H1
<b>CHARLEY 2004</b>	Aug 09, 2004 to Aug 15, 2004	130	941	H4
<b>BONNIE 2004</b>	Aug 03, 2004 to Aug 14, 2004	55	1001	TS
<b>ALEX 2004</b>	Jul 31, 2004 to Aug 06, 2004	105	957	H3
<b>ISABEL 2003</b>	Sep 06, 2003 to Sep 20, 2003	145	915	H5
<b>BILL 2003</b>	Jun 28, 2003 to Jul 03, 2003	50	997	TS
<b>KYLE 2002</b>	Sep 20, 2002 to Oct 12, 2002	75	980	H1
<b>GUSTAV 2002</b>	Sep 08, 2002 to Sep 15, 2002	85	960	H2
<b>ARTHUR 2002</b>	Jul 14, 2002 to Jul 19, 2002	50	992	TS
<b>ALLISON 2001</b>	Jun 05, 2001 to Jun 19, 2001	50	1000	TS
<b>HELENE 2000</b>	Sep 15, 2000 to Sep 25, 2000	60	986	TS
<b>GORDON 2000</b>	Sep 14, 2000 to Sep 21, 2000	70	981	H1

## Study Area & COVID Maps

The Virginia Department of Health provides COVID-19-related data. These data are mapped to the study area. The map below shows the health districts in the study area. Data for these visualizations were last updated on November 1, 2020. Population is defined using the 2018 Center for Disease Control and Prevention (CDC) Social Vulnerability Index (SVI) geographic data set.

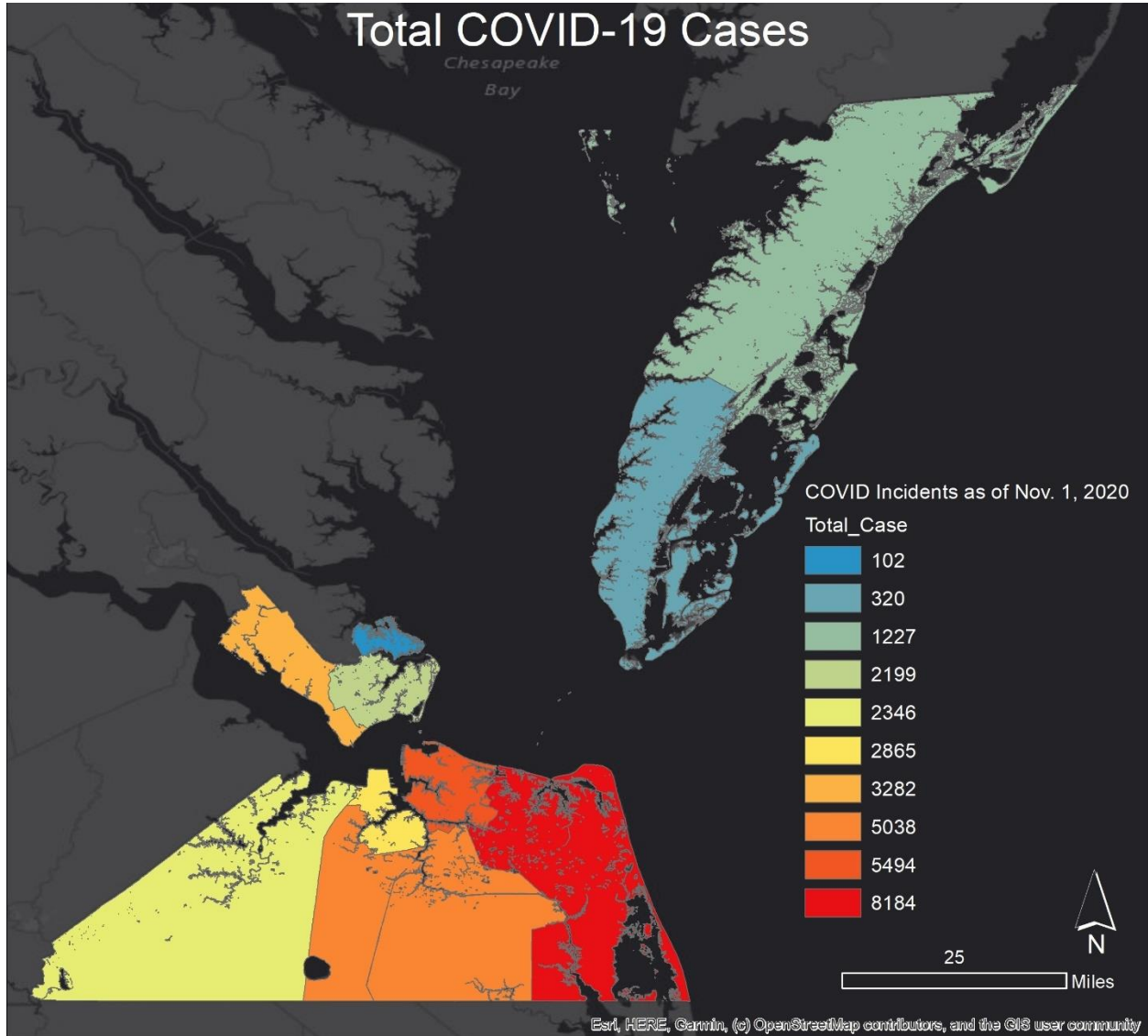
### Health Districts (Map)

The below map illustrates the location of the eight Virginia Department of Health (VDH) districts in the study area.



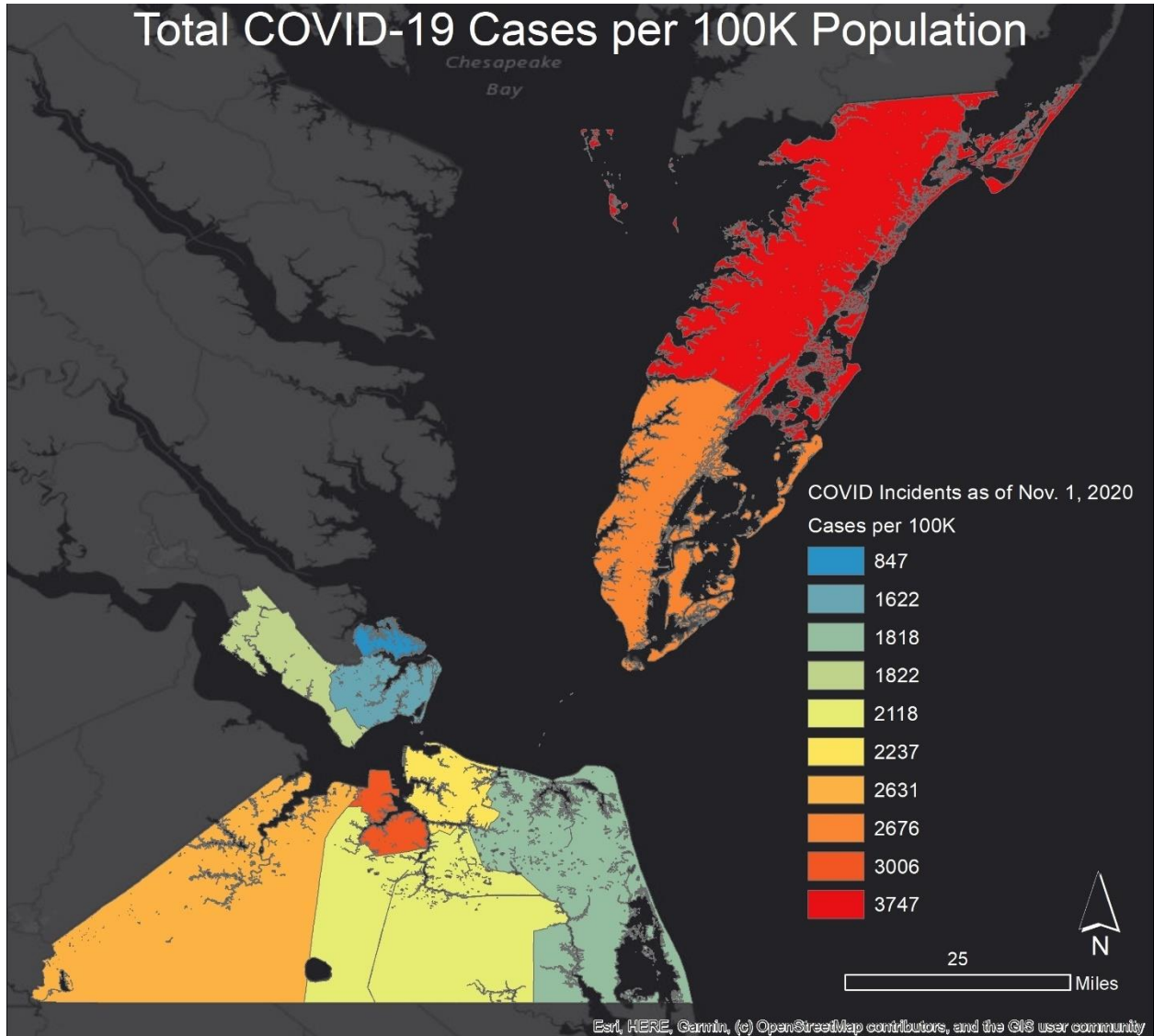
## COVID-19 Cases (Map)

The cities of Virginia Beach, Norfolk and Chesapeake have experienced the highest number of COVID-19 cases. These are also the localities with sizable populations.



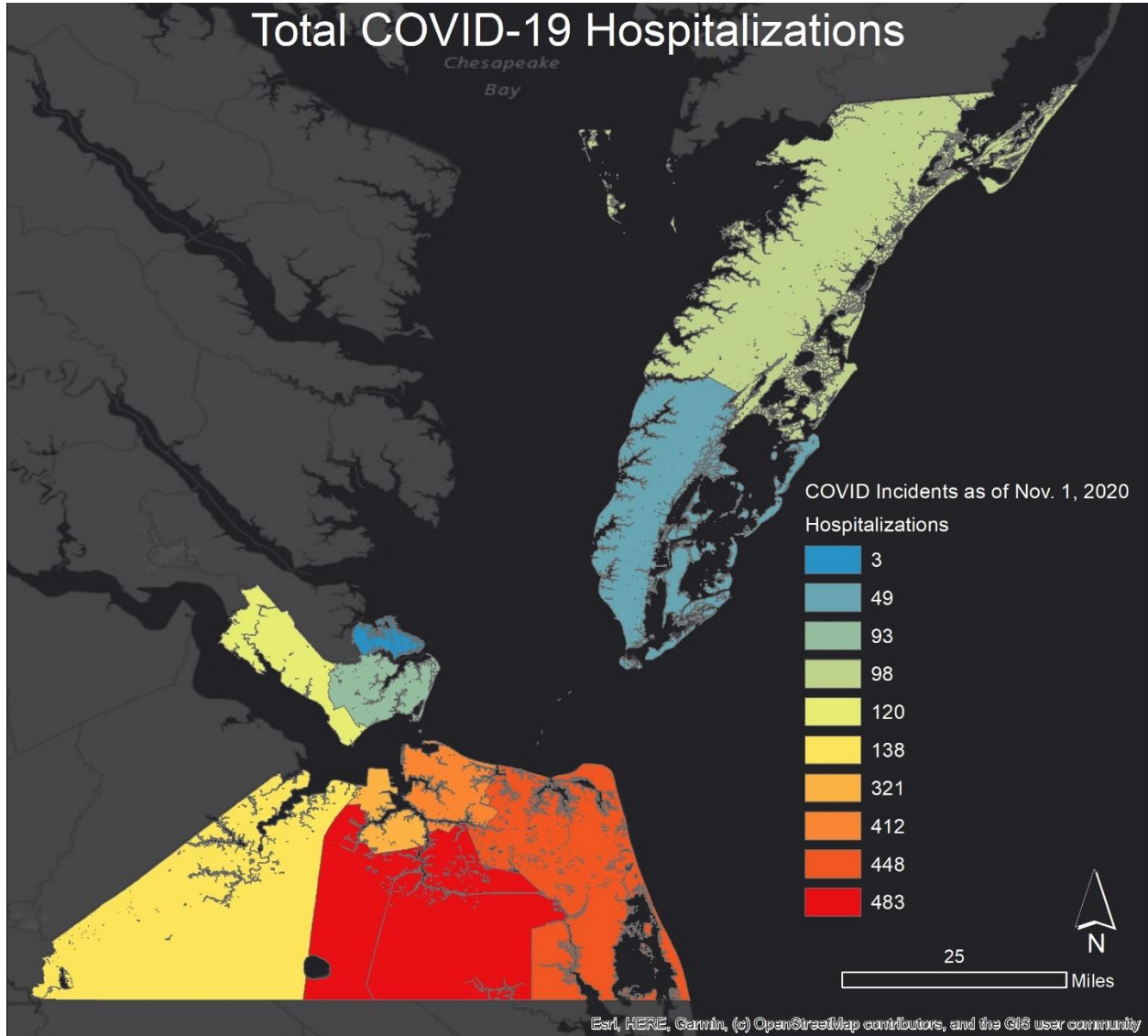
COVID-19 Cases per 100k Pop (Map)

Accomack, Portsmouth, and Northampton have experienced the highest number of cases per 100,000 population.



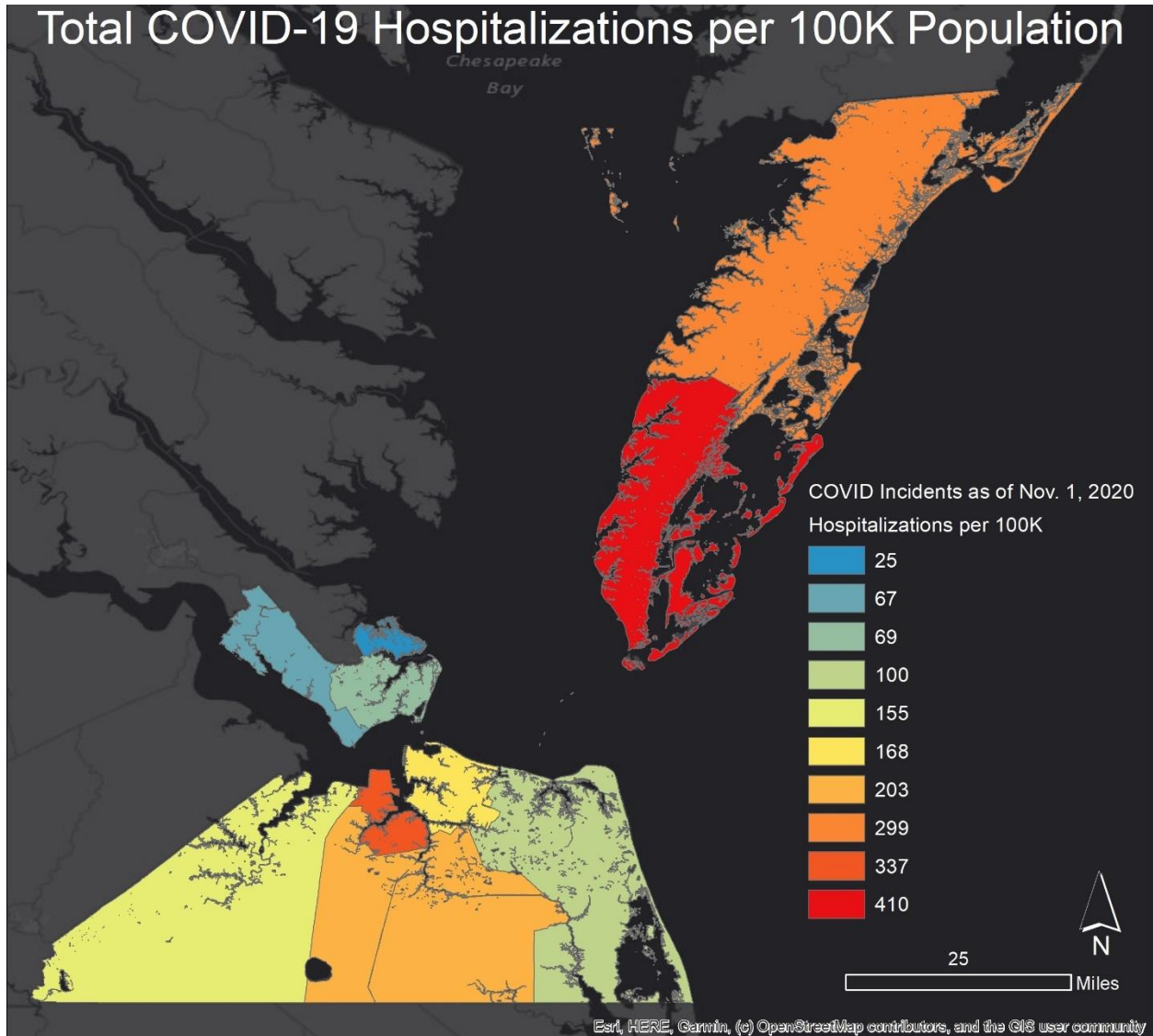
## COVID-19 Hospitalizations (Map)

The jurisdictions of Chesapeake, Virginia Beach, and Norfolk have experienced the highest number of hospitalizations.



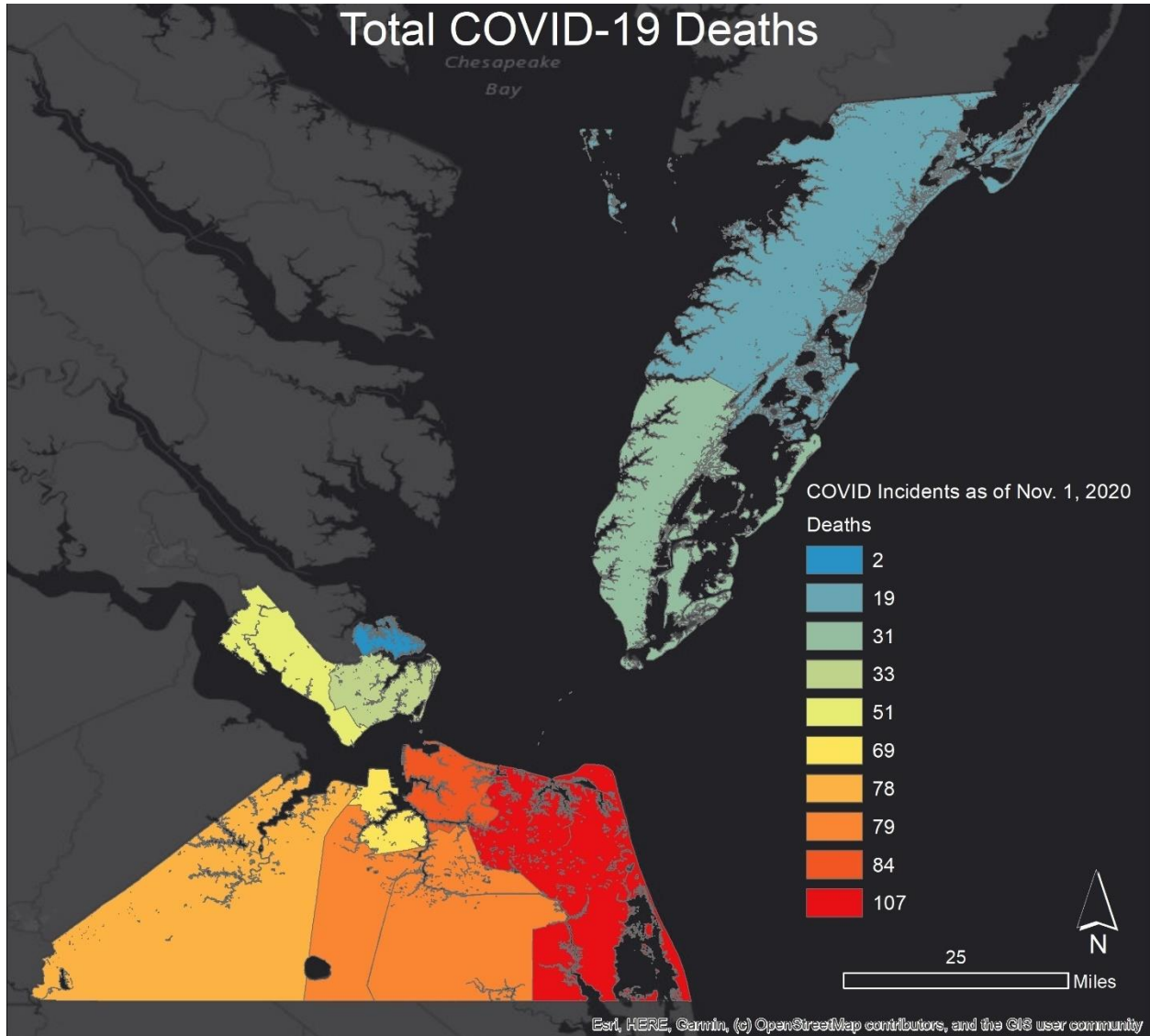
## COVID-19 Hospitalizations per 100k Pop (Map)

Northampton, Portsmouth and Accomack have experienced the highest number of hospitalizations per 100,000 population.



## COVID-19 Deaths (Map)

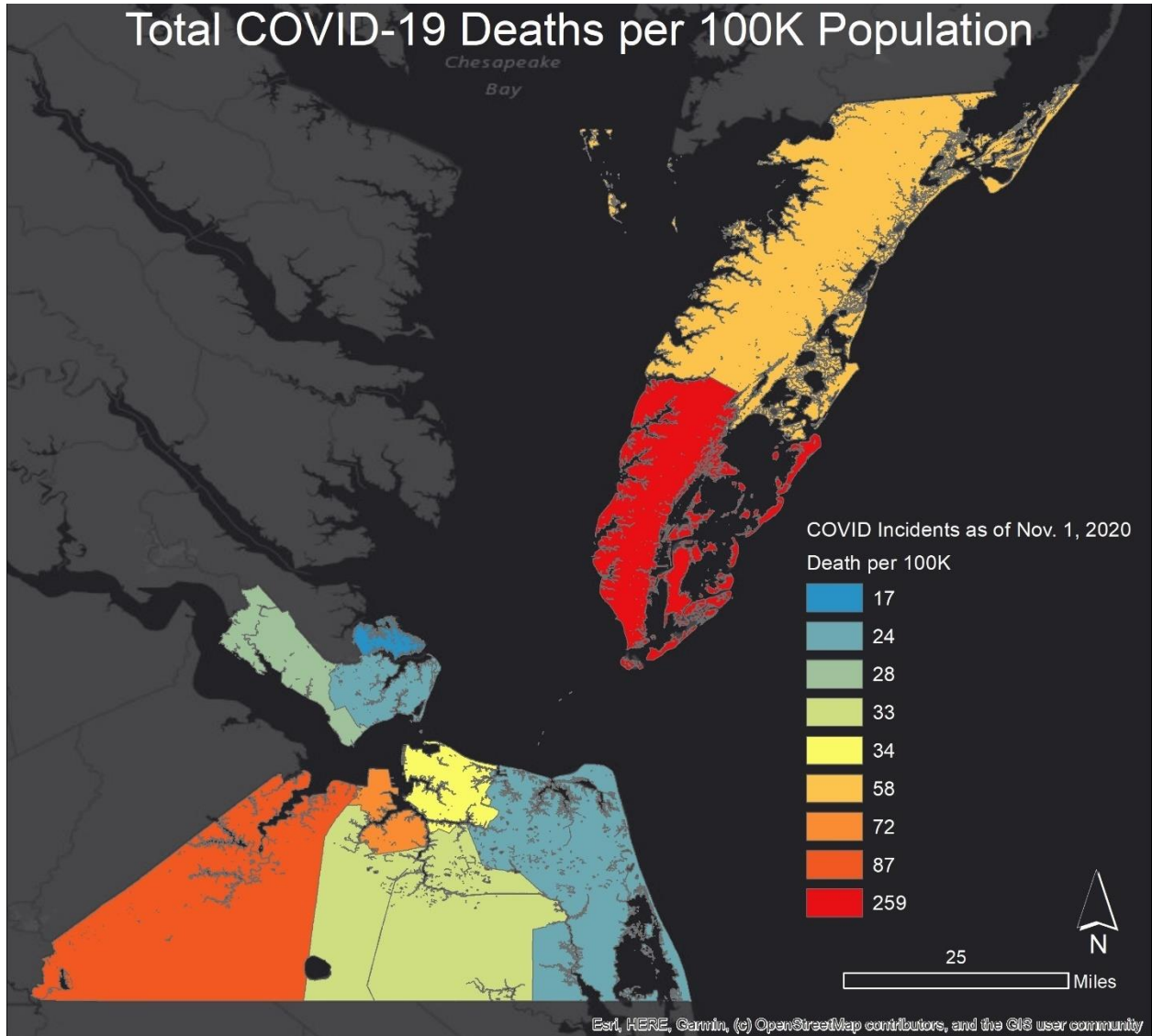
The jurisdictions of Virginia Beach, Norfolk, and Chesapeake have experienced the highest number of deaths.





### COVID-19 Deaths per 100k Pop (Map)

Northampton, Suffolk, and Portsmouth have experienced the highest number of deaths per 100K population.

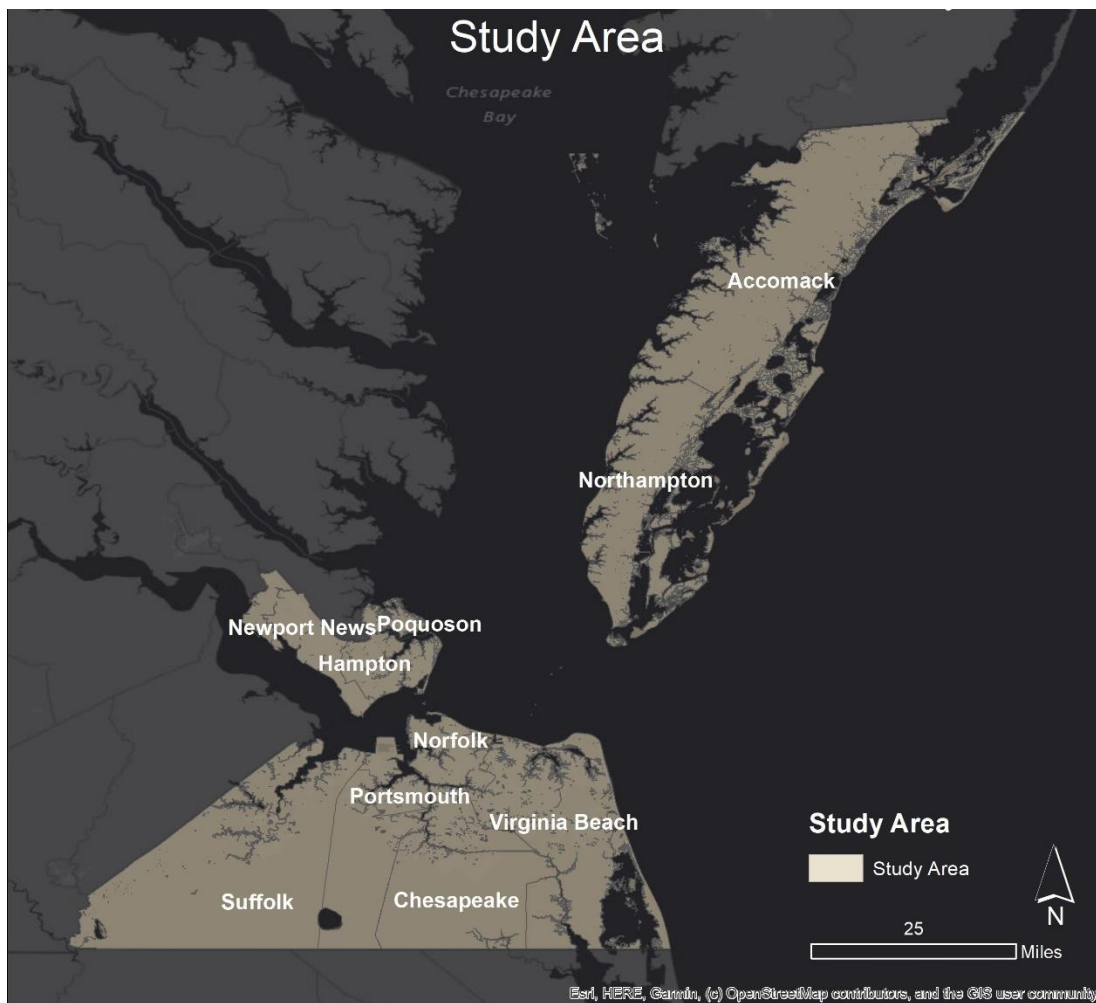


## Part 2: Methodology

### Survey Methodology

Beginning in September 2020, the authors conducted a random stratified telephone/web sampling of Hampton Roads households to identify risk perceptions and potential behaviors relative to evacuation and sheltering under the current COVID-19 health crisis. These perceptions and behaviors are analyzed in the context of household medical fragility and evacuation zones.

The household interview instrument was developed and refined by the authors and subject matter experts from the Virginia Department of Emergency Management and the Virginia Health Equity Working Group. Our approach was to elicit perishable data from Virginia residents in the following sample localities: Accomack, Chesapeake, Hampton, Newport News, Norfolk, Northampton, Poquoson, Portsmouth, Suffolk, and Virginia Beach.



We conducted targeted phone sampling of pre-screened phone numbers. The N=2,200 sample is a mix of 698 landline, 1,191 mobile, and 311 web-based interviews. The mobile numbers provide the opportunity to represent younger and minority respondents which may have otherwise been missed. The N = 2,200 household sample consists of 1) stratified sampling of the identified localities, plus 2) oversampling of the Eastern Shore. Web-based interviews were needed to maintain the project timeline and increase the number of respondents. Response rates by locality and modality are illustrated.

#### Contact Methods

Contact Method	No. of Responses	% of Total Responses
Landline Telephone	698	31.7
Cellphone	1,191	54.1
Web	311	14.1
Total	2,200	100.0

The following localities were included in the survey: Accomack, Chesapeake, Hampton, Newport News, Norfolk, Northampton Poquoson, Portsmouth, Suffolk, and Virginia Beach. The below table shows the evacuation routes and zones across the localities surveyed. Zone A is defined as the area(s) most likely to experience storm related flooding. Survey responses by locality are illustrated below.

#### Response Rates by Locality

Locality	No. of Responses	% of Total Responses
City of Virginia Beach	409	18.6
City of Chesapeake	277	12.6
City of Norfolk	278	12.6
City of Newport News	250	11.4
City of Hampton	225	10.2
City of Suffolk	203	9.2
City of Portsmouth	200	9.1
Northampton County	149	6.8
Accomack County	133	6.0
City of Poquoson	76	3.5
Total	2,200	100.0

### Distribution of Respondents by Locality

<b>Locality</b>	<b>Population</b>	<b>Survey Respondents</b>	<b>Respondents as % of Population</b>
Accomack County	32,561	133	0.41%
City of Chesapeake	245,745	277	0.11%
City of Hampton	135,753	225	0.17%
City of Newport News	181,000	250	0.14%
City of Norfolk	245,054	278	0.11%
Northampton County	11,810	149	1.26%
City of Poquoson	12,395	76	0.61%
City of Portsmouth	94,581	200	0.21%
City of Suffolk	93,825	203	0.22%
City of Virginia Beach	452,643	409	0.09%
<b>Total</b>	<b>1,505,367</b>	<b>2,200</b>	<b>0.15%</b>

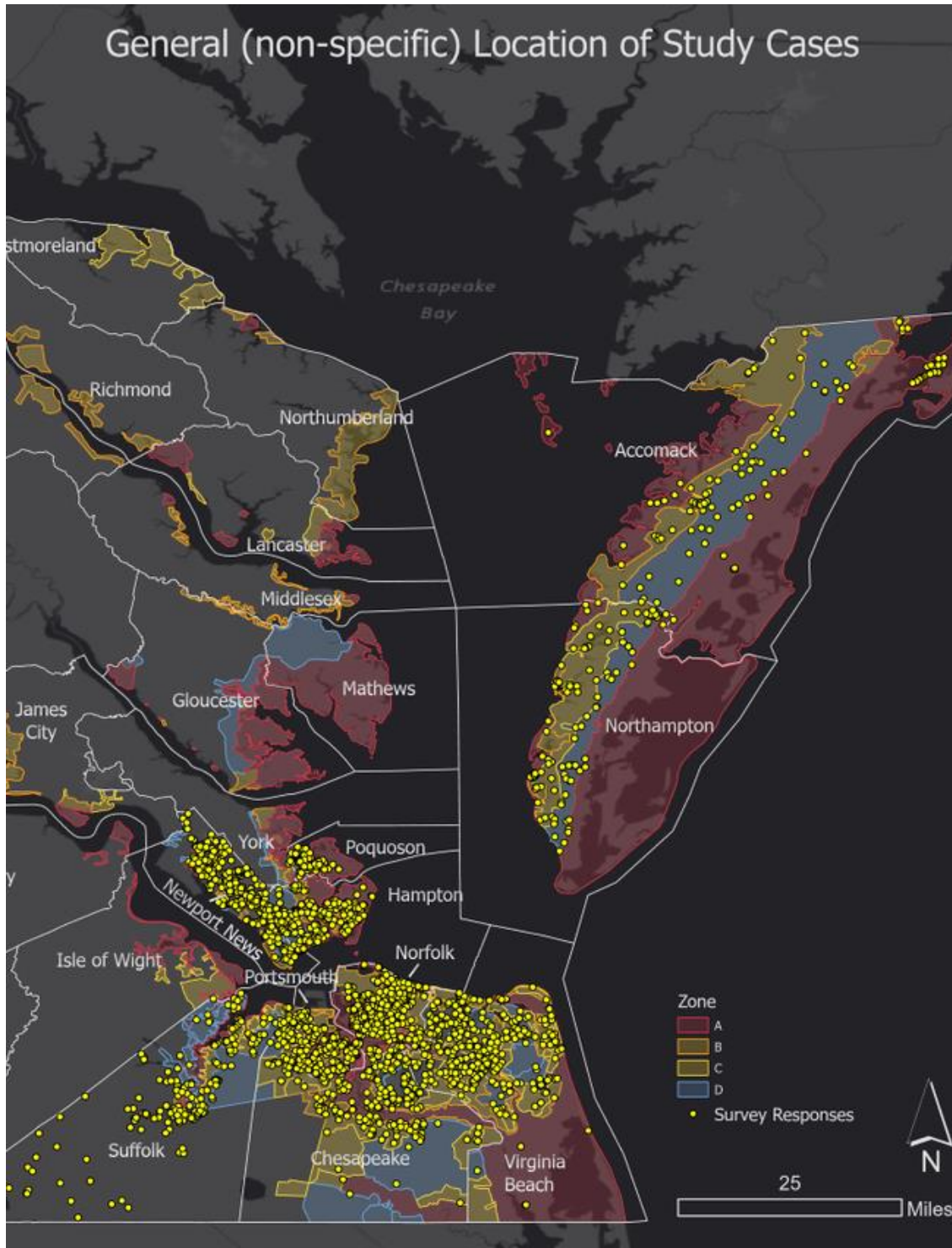
Source: Estimated 2019 population data from the Demographics Research Group, Weldon Cooper Center for Public Service, University of Virginia ([https://demographics.coopercenter.org/sites/demographics/files/2020-01/VAPopulationEstimates\\_2019-07\\_UVACooperCenter.xls](https://demographics.coopercenter.org/sites/demographics/files/2020-01/VAPopulationEstimates_2019-07_UVACooperCenter.xls))

### Responses by Modality

<b>Locality</b>	<b>Landline Telephone</b>	<b>Cellphone</b>	<b>Web</b>	<b>Total</b>	<b>Target</b>
Accomack County	42	78	13	133	150
City of Chesapeake	112	165	0	277	275
City of Hampton	57	135	33	225	225
City of Newport News	75	150	25	250	250
City of Norfolk	112	166	0	278	275
Northampton County	60	82	7	149	150
City of Poquoson	31	45	0	76	75
City of Portsmouth	49	96	55	200	200
City of Suffolk	81	122	0	203	200
City of Virginia Beach	79	152	178	409	400
<b>Total</b>	<b>698</b>	<b>1,191</b>	<b>311</b>	<b>2,200</b>	<b>2,200</b>

### Spatial Placement of Households (Map)

The below map illustrates the general location of sampled households (precise locations of geocoded dots are masked to assure anonymity).



## Unit of Analysis

For this study, we aggregate and present many of the findings at the household level. This unit of analysis reflects the authors' belief that many of the behavioral choices about how to prepare for and respond to an impending severe storm event takes place within the context of a social networks (the household being the prime network), rather than the individual being a inwardly-focused agent acting solely in the rational interest of self. The household is a fundamental social unit in our communities and often mitigation decisions are made within this context. We recognize that there are other, perhaps broader and more-diffuse, social-familial networks that may also condition decision making.

## Approach & Reporting

The approach to interviewing households begins with querying households about their anticipated behavior during this hurricane seasons under the COVID environment. Specifically, households are posed with the following two questions, the second of which is quasi open-ended allowing for registering what ‘something else’ may entail:

1. *Currently, in this Hurricane Season, if a significant hurricane were to head for Hampton Roads, then would your household likely evacuate out of the Hampton Roads region?*
2. *Since your household is not likely to evacuate out of the region, what then will your household likely do? Will you: Stay in Your Home, Stay at Somebody Else’s Home, Go to a Public Shelter, or Something Else?*

Drawing upon household responses to these two primary questions, the study’s approach is to classify respondent households as likely to engage in one of three actions when faced with an approaching, significant hurricane during the COVID environment:

1. Shelter within Hampton Roads, although not at a public shelter (Branch 1)
2. Shelter within Hampton Roads at a public shelter (Branch 2)
3. Evacuate out of the Hampton Roads region (Branch 3)

By way of these two questions and the classification of households, we are able to pursue different lines of interview questioning. These lines of interview questioning are referred to as “Branches” (i.e., Branch 1, 2, and 3). After the proffering the two screening questions, household questioning follows one of these three branches, then, following the branch questioning, all households are once again merged and asked a common line of questions, referred to in this report as Common Variables. Separate findings for these three Branches are reported, beginning in Part 7 of this report, followed by a reporting of the Common Variables in Part 10 of this report.

## Control Variables

The following five Control Variables require additional conceptual and measurement descriptions. These variables are used as control variables throughout the analysis but are also reported separately as free-standing variables of interest

### Income

Identification of households as Low-to-Moderate Income (LMI) uses the FY 2020 Median Family Income (MFI) for the HUD Metro area, which covers VA-NC portions of Hampton Roads. The MFI is \$82,543. Low Income is estimated at 50 percent MFI, meaning less than \$41,300 (rounded up per HUD guidelines). Moderate Income is estimated at 80 percent MFI, meaning less than \$66,100 (rounded up per HUD guidelines). The study data are gathered within 13 income ranges. Households within this study that fall within an income range of less than or equal to \$45,000 are classified as Low Income. Households within the study that fall above \$45,000, but also below an income range of less than or equal to \$65,000, are classified as Moderate Income.

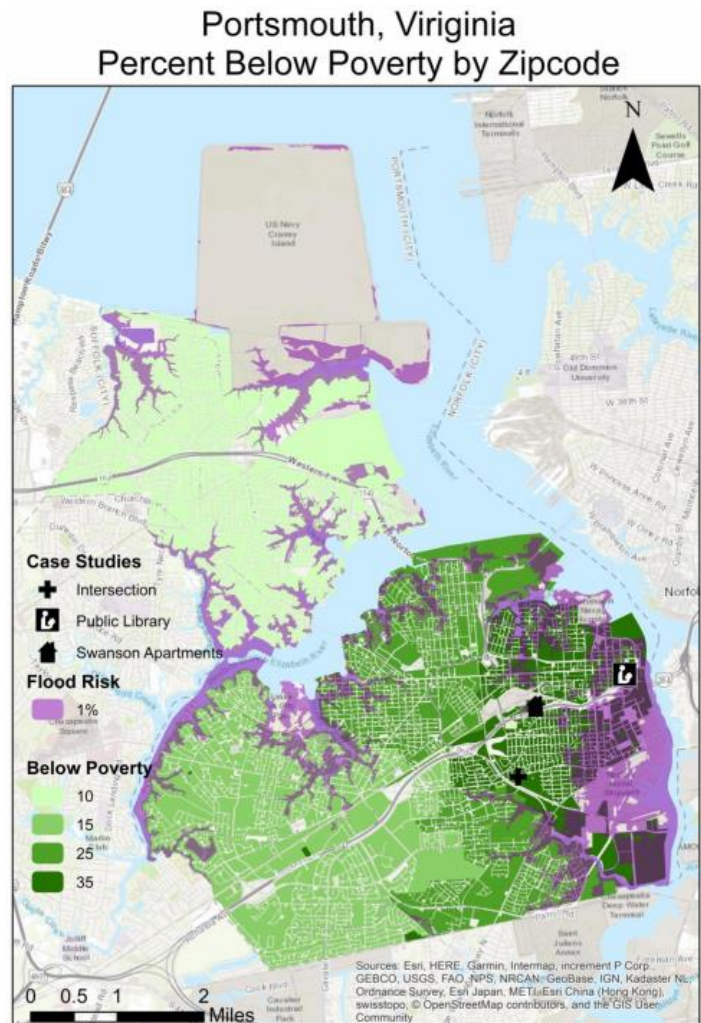


Image courtesy of Donta Council, "The New Normal of Flooding in Portsmouth," October, 2018



## Vulnerability

The concept of household “vulnerability” is quite broad. In this Study, the measurement of the concept of household vulnerability began by drawing on the history of storms and flooding in urban areas to gather an understanding of factors that appear associated with: 1) low storm preparedness, 2) acute injury or death from the immediate, and 3) lengthy housing displacement post-event. These factors capture, chronologically, the treatment of households prior to, during, and after the storm. For this Study, household vulnerability refers to the expected ability of a household, when faced with an impending severe weather event, to take mitigative actions to prepare for the impact of the storm, to lessen the immediate risk to the health and wellness of household members, and to recover to stable housing post-event. Thus, household vulnerability addresses preparation, lessening immediate impact, and speeding recovery.

Household vulnerability does neither considers the structural worthiness of the residential unit (year build, code, freeboard, etc.) nor the location of the residence vis-à-vis the floodplain (roughly coterminous with evacuation zone). This approach recognizes that the “registered” street address of the primary residence does not define the household as vulnerable perse, but, rather, the constraints that tether the household to that location in the face of a storm. Resource constraints, medical/health



Historic street flooding, Norfolk Virginia Pilot



Damaged cars from receding flood waters, Norfolk. Virginia Pilot

Resource constraints, medical/health

conditions, and psychological dispositions relative to risk perceptions, for example, may make the household less likely to relocate away from the registered address. These are the factors – rather than the actual location and structural worthiness – that inform the concept and measure of household vulnerability. In this sense, household vulnerability plays out over the days, months, and years following the actual event as the individual struggles to absorb the disruptive impacts of the storm and reestablish normalcy or, at least, achieve a new, stable normal.

All households within the broad reach of a severe storm event are vulnerable to some extent. However, some households are more vulnerable relative to others. Among all households, low-vulnerability households are the least vulnerable. Low-vulnerable households will have income above Low-to-Moderate Income (LMI), but not extenuating household characteristics as we capture them in the gathered data on household characteristics. Moderate



Powerline and trees across children's' play equipment, Newport News, Hilton Village, October, 2016. Hurricane Mathew. Photo: J.Gruenke, Daily Press

vulnerability, in this study, is conceptualized as having household members that are recognized as having difficulties in preparing for, weathering, or recovering from the storm. In this case, households that exhibit moderate-vulnerability will have income above Low-to-Moderate Income and either have members that either need assistance with activities of daily living or have children in the home or perhaps a child with mental and/or physical challenges. High-



Downed trees damage homes, Hampton, October, 2018. Hurricane Michael. Photo: J.Gruenke, Daily Press

vulnerability households are characterized as resource-constrained and are chiefly those with LMI, but no other extenuating characteristics. Hyper-vulnerable households are those that suffer both under the constraint of limited resources and under the condition of one or more extenuating characteristics.

The below table summarizes the operationalization of these four vulnerability intensities. The approach in measurement reflects the authors' view of that three sentinel indicators of household vulnerability are income, children and ADL. Access to resources (in the form of income) provide the opportunity to take precautionary measures to protect children and ADL adults within the household in the event of an impending severe weather event. In addition, the presence of children and ADL adults are essential in defining the vulnerability of a household.

The measurement reflects this view. As constructed, hyper vulnerable households are those with limited resource and with children or ADL adults, or both. In contrast, on the other end, low vulnerability households are those with resources and with no children and no ADL adults. Between these two (low and hyper vulnerability) are where we capture the role of the interplay among these three sentinel indicators income, children, and ADL adults. Moderate vulnerability are those households with Above Low-to-Moderate Income (LMI) and the presence of children or ADL adults, or both. Although children and/or ADL adults are present, the access to resources offers the potential for the household to remove children and ADL adults from harm's way. High vulnerability is those household with Low-to-Moderate Income (LMI), but having neither children nor ADL adults in the household. The absence of resources constrains the ability of the household to remove the household from risk, whether or not either children or ADL adults are present.

The below provides operationalization of the variable Vulnerable Households:

Household Characteristics	Low-Vulnerability	Moderate-Vulnerability	High-Vulnerability	Hyper-Vulnerability
Income	Above LMI	Above LMI	LMI	LMI
	<i>and...</i>	<i>and one or more...</i>	<i>and...</i>	<i>and one or more...</i>
ADL Difficulties Present	No	Yes	No	Yes
Children Present	No	Yes	No	Yes
Handicap Child Present	No	Yes	No	Yes

## COVID Propinquity

The concept of propinquity addresses the state of the household's closeness to COVID-19. Propinquity is more nuanced relative to simple spatial proximity and suggests closeness in terms of social network. The most immediate relationship a household may have with COVID is if a household member is, or has been, sick or has died from COVID-19. Presumably, this represents nearness in terms of spatial proximity and closeness in terms of being within the center of the household's broader social network. However, households are also experiencing COVID-19 through connections with others outside the household. We ask whether members of the households know persons who have been sick with or have died from COVID-19.

The concept of COVID Propinquity is theorized to have a connection with evacuation and sheltering behavior. These risks can be related to one's experience with COVID-19. For example, if a household has a family member that has been severely sickened by COVID-19, that household will most likely perceive the risk of COVID-19 exposure to be higher than a household with no family members or friends that have been infected with the disease. This increased perception of risk will increase the likelihood that one will shelter at home, or possibly in another type of non-congregate environment. On the other hand, the impacts of perceived COVID risks upon evacuation and sheltering behavior may be assuaged by assurances of vigorous cleaning protocols or enforced social distancing standards within public shelter environments or government facilitated evacuation areas and assets. The findings in this Study report several of these relationships.



COVID testing across Hampton Roads identifies positive cases. WAVY

The below table operationalizes the four levels of the variable Household COVID Propinquity:

<b>Propinquity</b>	
Low	Household does not know a person that has been infected, ill, and/or died from COVID
Medium	Member of the household knows a person that has been ill from COVID
High	Member of the household knows a person that has dies from COVID
Immediate	Member of the household has been infected, ill, and/or died from COVID

## Medical Fragility

Storm surge and flooding inundation stemming from hurricane events do not impact all communities and population equally. Some populations are more vulnerable relative to others. For example, although being at greater risk stemming from a storm's impact, individuals with impairments, such as physical, cognitive, and sensory deficits, as well as truncated social and financial networks, may have a lower propensity to evacuate. Elderly populations, especially those that reside in underserved communities that lack the means and ability to appropriately prepare for, and recover from, the shifting environment are vulnerable to both immediate- and long-term impacts of severe storm events. These populations disproportionately may shelter in place and utilize public sheltering venues.

The concept of fragility addresses those who have conditions or impairments that interfere or limit what would be otherwise their normal, routine activities. A generally accepted measure of disability that captures those functions that one must be able to adequately perform to live independently is the Activities of Daily Living (ADL), which includes activities such as ability to use a phone, shopping, food preparation, managing finances, or following a medication regimen. The inability to adequately perform these activities suggests diminished independence and a reliance on others to assist where one is experiencing a deficit. This functional decline makes it more difficult to respond and adapt to a stressor such as a public health crisis (COVID-19 pandemic) and a rapidly changing environment associated with a severe weather event (hurricane).

### "SANDTRINA'S" WALLOP

This computer simulation is a worst-case scenario of how a hurricane with a 13-foot storm surge would affect Hampton Roads and its health care infrastructure. Flooded areas are shown in blue. The red dots are medical facilities that would be inundated.



SOURCE: Virginia Modeling, Analysis and Simulation Center

THE VIRGINIAN-PILOT

Visuals of previous modeling conducted by authors of this Report (Behr & Diaz). Virginian Pilot

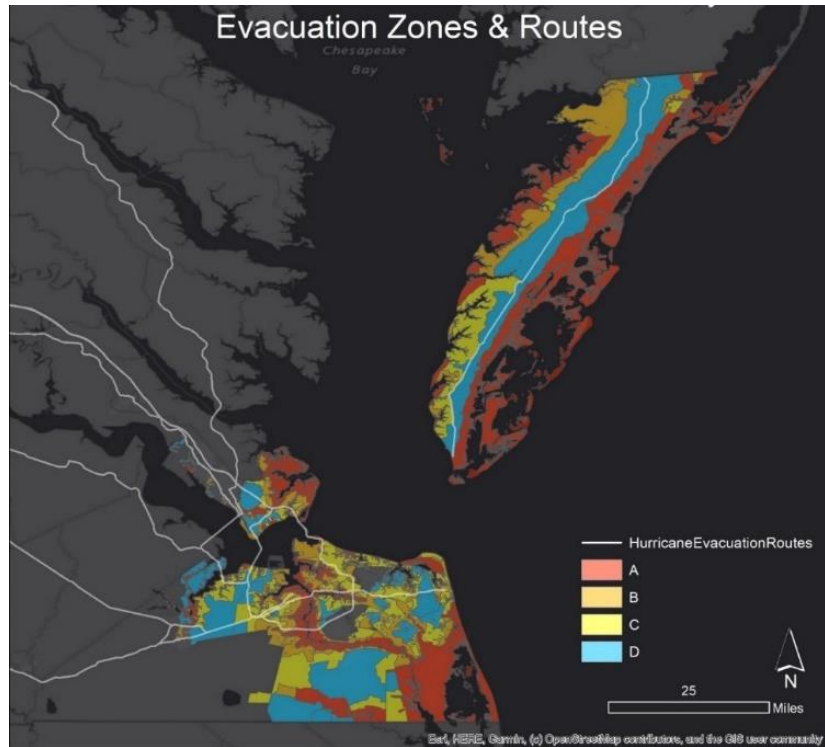
Medically fragile households are constructed with five indicators as shown in the below table. The variable ranges from Zero to Five. The presence of a characteristic within the household is scored as one; the variable score is a summation of the number of affirmative indicators. The presence of any single characteristic within the household is used in the dichotomous measure of medical fragility used in the analysis within this report.

The table below operationalizes the variable Medical Fragility:

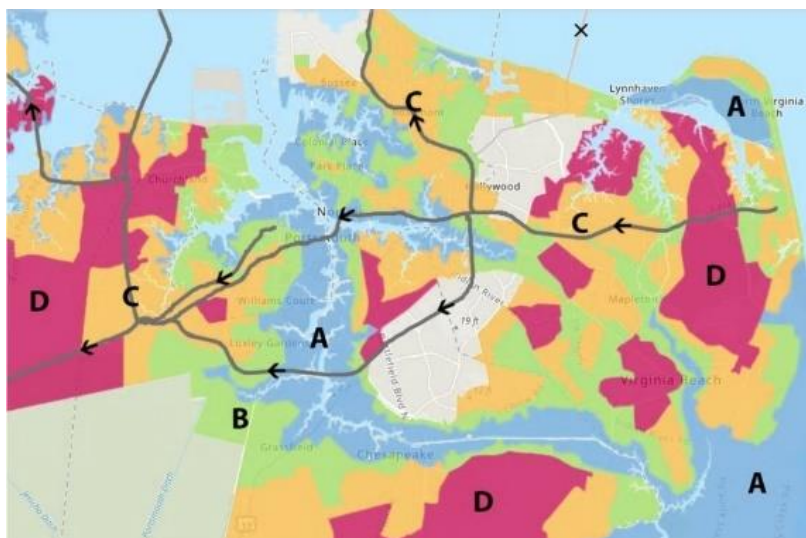
<b>Household Characteristic</b>	<b>Yes = 1</b>	<b>No = 0</b>
Instrumental Activities of Daily Living (IADL)	One or more adults	No adults
Hearing Disability	One or more adults	No adults
Sight Disability	One or more adults	No adults
Cognitive Disability	One or more adults	No adults
Severely Handicapped Child	One or more children	No children

## Evacuation Zones

In 2017, Virginia launched a four-tiered evacuation zones system for coastal Virginia including Hampton Roads, the Northern Neck, the Middle Peninsula, and the Eastern Shore (twelve of fourteen eastern states have such zones). Evacuation Zone A covers low-lying, near-coastal areas more proximate to surge and flooding. Virginia issued mandatory evacuation from Zone A as Hurricane Florence approached, a first in the State's history. Households were asked to self-identify the evacuation zone within which their household resided. In addition, through geolocated address mapping, more precise identification of evacuation zone was



conducted. This Study uses this more precise evacuation zone variable as a control variable in most of the analyses. In addition, the variable “evacuation zone awareness” has been



constructed by matching self-reported evacuation zone with the geolocated (true) evacuation zone. Additional analyses report variation in awareness across geographies.

Evacuation Routes over Evacuation Zones,  
southside Hampton Roads

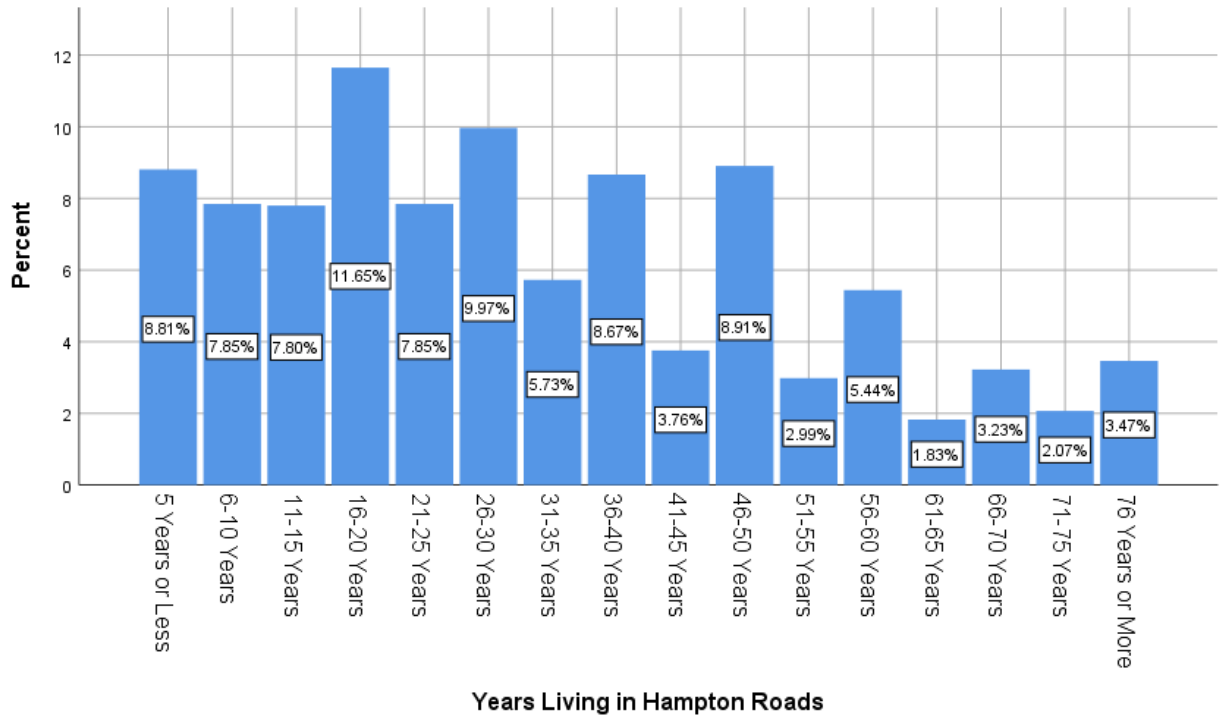
## Part 3: Household Characteristics

As reflected in the Purpose and Significance sections within Part 1, as well as the survey methodology section within Part 2, the intent of this study is to capture a meaningful, representative picture of the residents within Hampton Roads, their risk perceptions, past and anticipated likely behaviors, and vulnerabilities relative to evacuation and shelter specifically and, perhaps more broadly, the state of community resilience. These data, the insights drawn from such, and the recommendations contained in this report, necessitate that we interview a sample of households that reflect the diversity that is Hampton Roads. Equity and inclusion have been the foundation of the sampling approach as well as the nature and content of the survey instrument. In this Part 3 are reported households descriptive characteristics, many of which are instrumental in how we define key variables, such as household vulnerability, medical fragility, and COVID propinquity, found in this study. Many of these characteristics are understood, in both theoretical and practical terms, to be essential in understanding the dynamics that either facilitate or frustrate evacuation and sheltering. The centrality of these household characteristic is signaled by the placement within Part 3, near the beginning of the report.



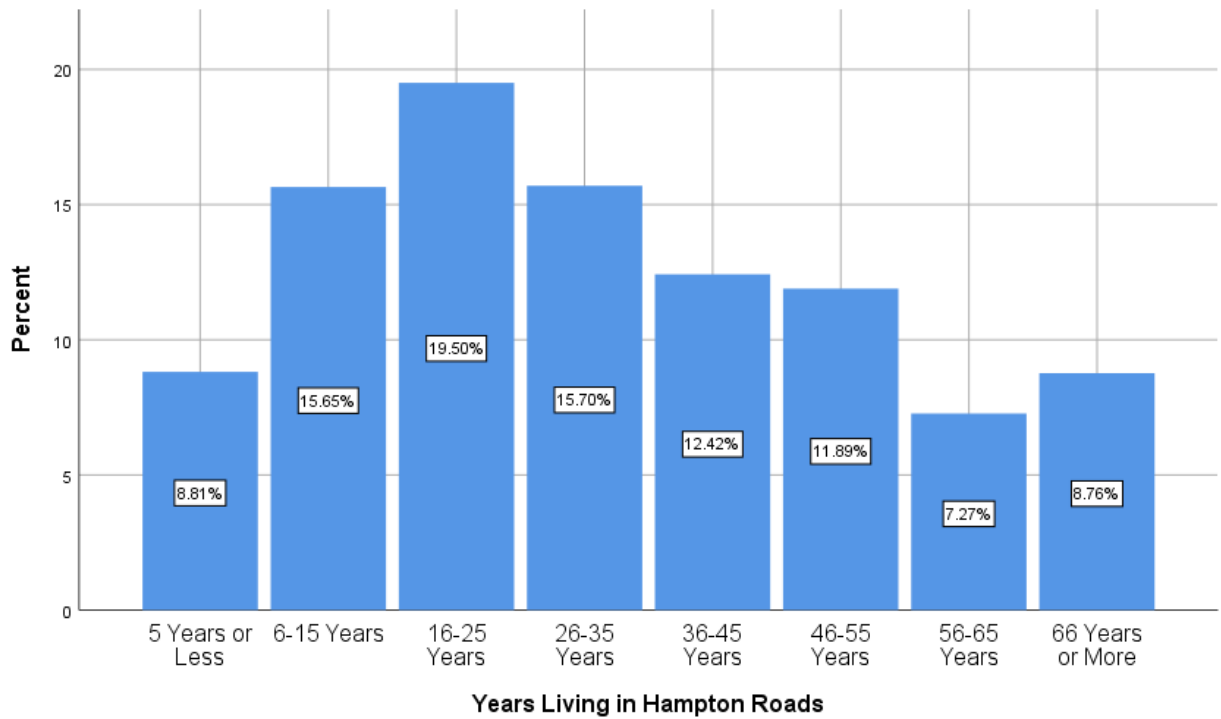
## Years Living in Hampton Roads (5 Year Increment)

This chart illustrates the distribution of the self-reported total years the household, rather than the individual respondent, has resided in Hampton Roads. Just under 9 percent have resided in Hampton Roads five years or less and just under 16 percent of the total population has resided in Hampton Roads ten years or less.



## Years Living in Hampton Roads (10 Year Increment)

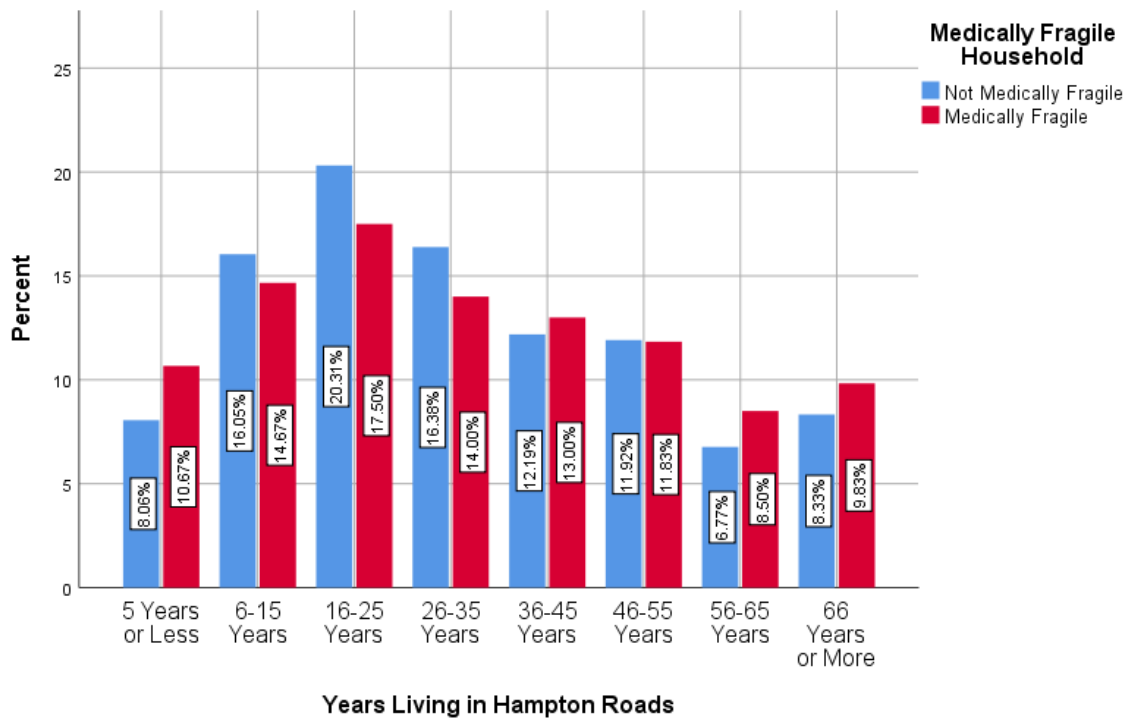
Most households are long-term residents of Hampton Roads. The median number of years that households have lived in Hampton Roads is in the 26 to 35 years range. Just under 9 percent of households report residing in Hampton Roads for five years or less. About 16 percent have lived in Hampton Roads for 6 to 15 years, while just under 20 percent of households have lived in Hampton Roads for 16 to 25 years. About 28 percent have lived in the region for 26 to 45 years, while almost 28 percent have lived in the region for 46 years or more. Just over 8 percent of households report having an active duty military member in the household.



..by..Medically Fragile Household

The chart below illustrates the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across eight residency intervals.

The distribution of medically fragile households across the residency intervals is different relative to the distribution of non-medically fragile households. There tends to be a larger portion of the medically fragile households that are short-term residents (less than 5 years) relative to non-medically fragile households. However, for households residing in Hampton Roads between 6 and 35 years, there tends to be a larger portion of the non-medically fragile households that are residents.

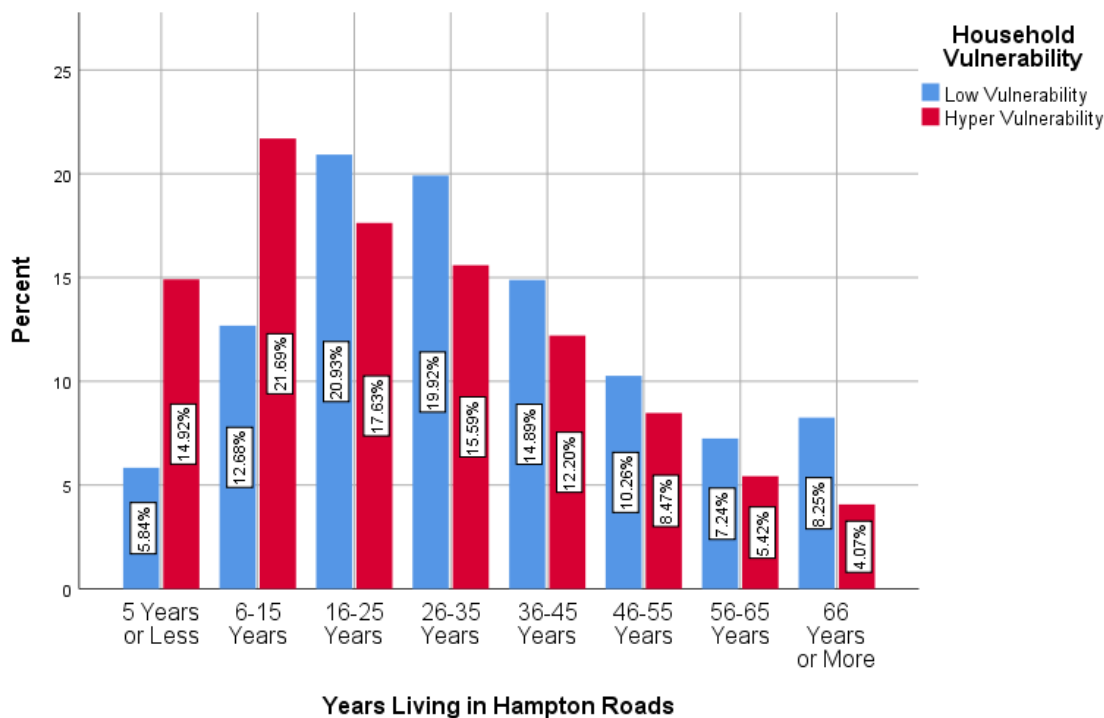


..by..Household Vulnerability

The chart below illustrates the proportions within Household Vulnerability (purposely selected only low and hyper vulnerability households) across the eight categories within Year Living in Hampton Roads.

For households with low vulnerability, only 6 percent have lived in Hampton Roads for less that 5 years, while about 13 percent have lived in the region for 6-15 years, and 21 percent have lived in the region for 16 -25 years. Over 61 percent of low vulnerability households have lived in the region over 25 years.

For households with hyper vulnerability, about 15 percent have lived in Hampton Roads for less that 5 years, while about 21 percent have lived in the region for 6-15 years, and 17 percent have lived in the region for 16 -25 years. Just over 45 percent of hyper vulnerability households have lived in the region over 25 years.

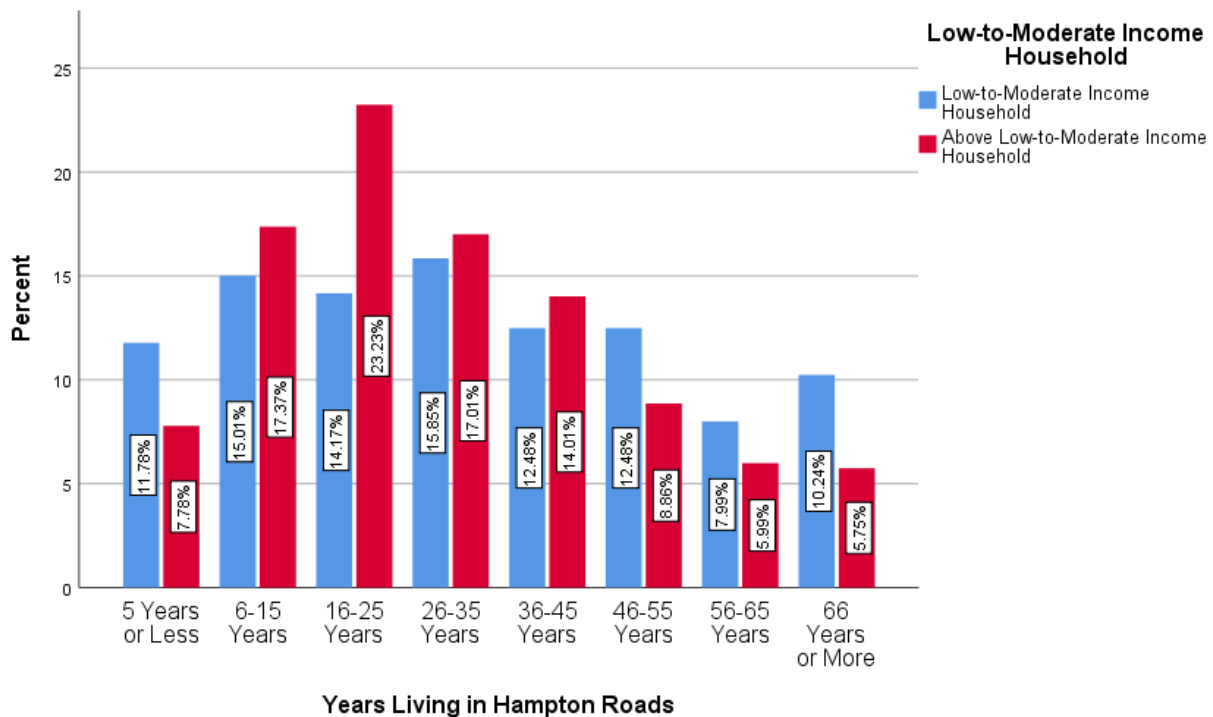


..by..Low-to-Moderate Income Household

The chart below illustrates the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across the categories within Years Living in Hampton Roads.

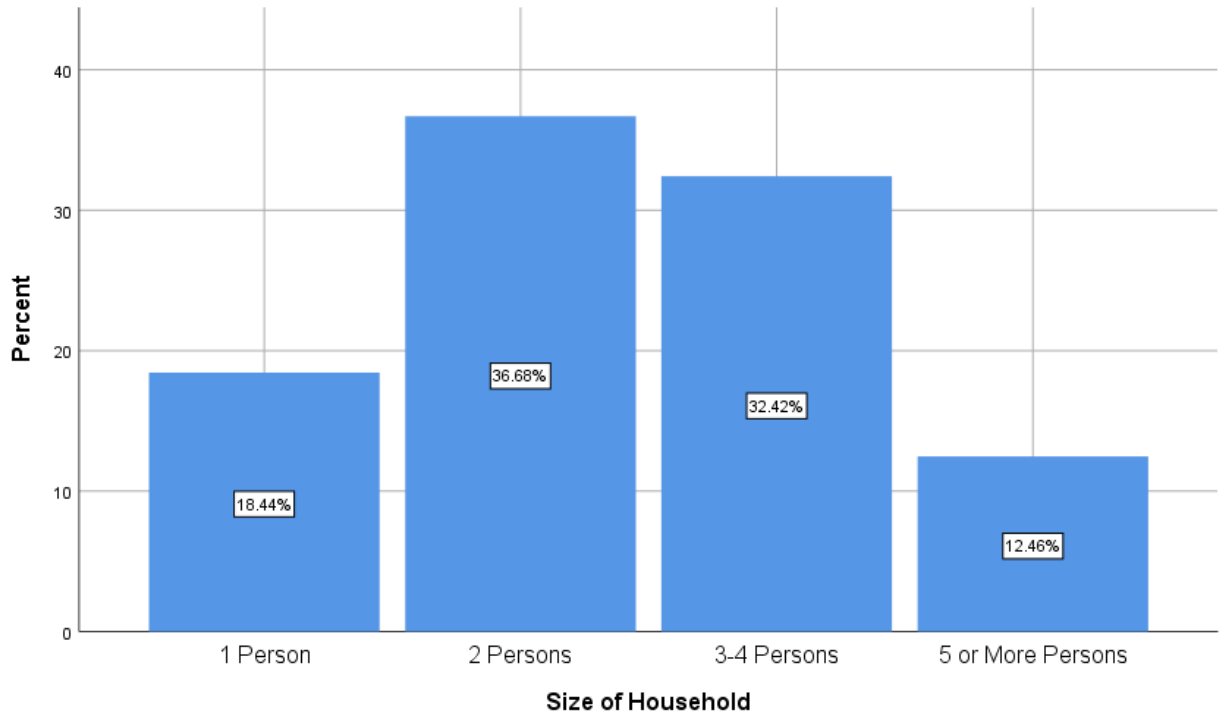
Low to moderate income households have lived in Hampton Roads for the following number of years: 5 years or less (12 percent), 6-15 years (15 percent), 16-25 years (14 percent), and over 26 years (59 percent).

Above low to moderate income households have lived in Hampton Roads for the following number of years: 5 years or less (8 percent), 6-15 years (17 percent), 16-25 years (23 percent), and over 26 years (52 percent).



### Size of Household (4 Groups)

This chart illustrates that just over 18 percent of households are single person households while over 12 percent are households with five or more members. The majority of households (just over 69 percent) are two-, three-, and four-member households.

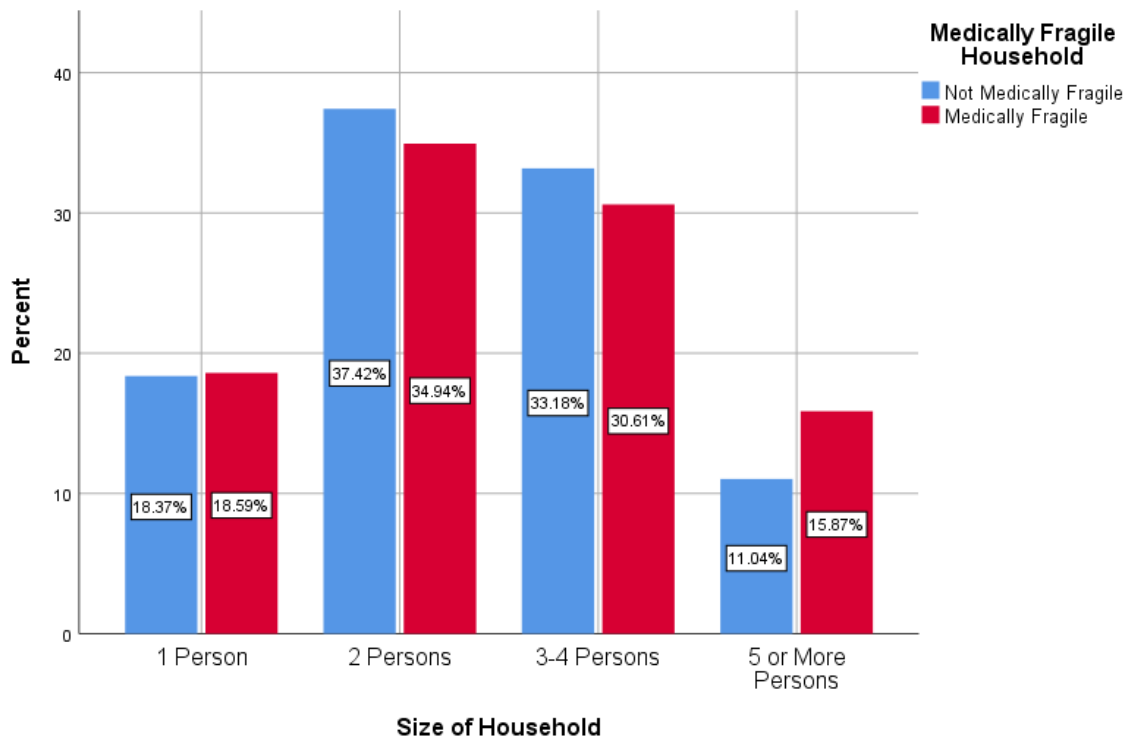


..by..Medically Fragile Household

The chart below illustrates the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across size of household.

For medically fragile households, about 19 percent were composed of 1 person, about 35 percent were composed of 2 persons, about 31 percent were composed of 3 to 4 persons, and about 16 percent were composed of more than 5 persons.

In contrast, for households that were not classified as medically fragile, 18 percent were composed of 1 person, about 37 percent were composed of 2 persons, about 33 percent were composed of 3-4 persons, and about 11 percent were composed of more than 5 persons.

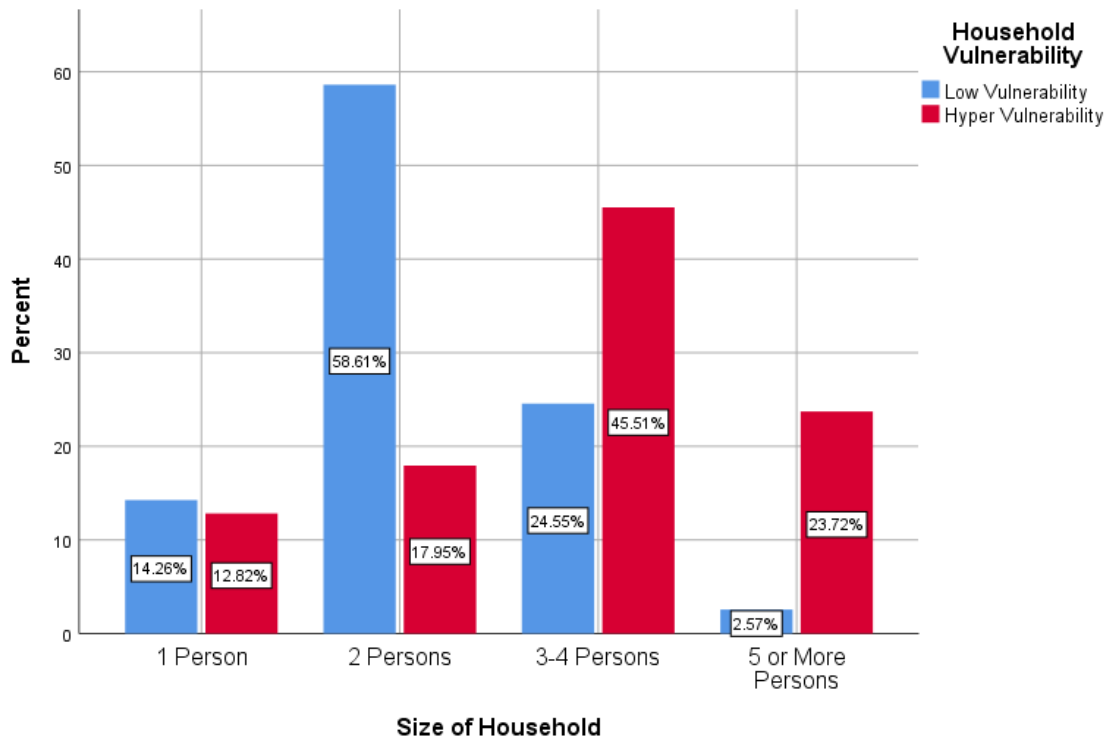


..by..Household Vulnerability

The chart below illustrates the proportions within Household Vulnerability (purposively selected only low and hyper vulnerability households) across Size of Household.

For households that have low vulnerability, about 14 percent are composed of one person, about 59 percent are composed of 2 persons, about 25 percent are composed of 3-4 persons, and under 3 percent are composed of 5 or more persons.

For households that have hyper vulnerability, about 13 percent are composed of one person, about 18 percent are composed of 2 persons, about 46 percent are composed of 3-4 persons, and about 24 percent are composed of 5 or more persons. The hyper vulnerable households tend to be larger in size, with more than 69 percent of hyper vulnerable households comprising three or more persons





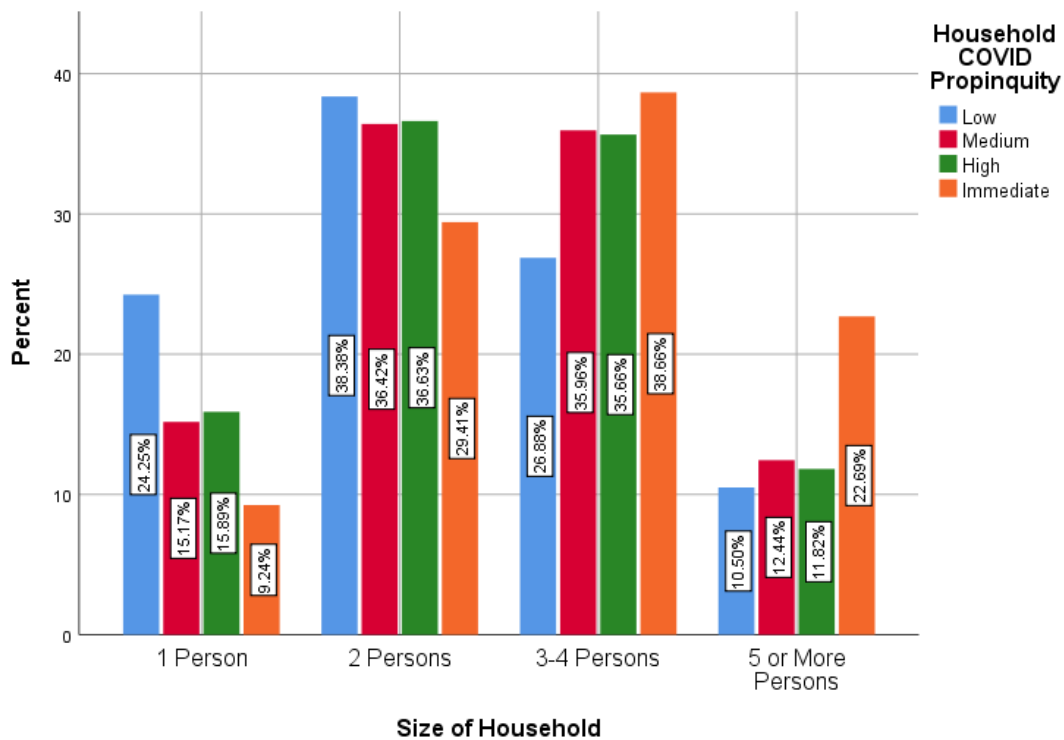
..by..Household COVID Propinquity

The chart below illustrates the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across Size of Household.

Low COVID propinquity households tend to be smaller households. Households with high or immediate COVID propinquity tend to be larger households. This is partly an artifact of the way COVID propinquity is measured (all else equal, large households have more opportunity to know of those suffering from COVID).

About 24 percent were composed of single person households report low COVID propinquity, 38 percent for 2 persons, 27 percent for 3-4 persons, and 11 percent for 5 or more person households.

As the household size increases, so does the immediate experience with COVID: for single person households, about 9 report immediate COVID propinquity, 29 percent for 2 persons, 39 percent for 3-4 persons, and 23 percent for 5 or more person households.

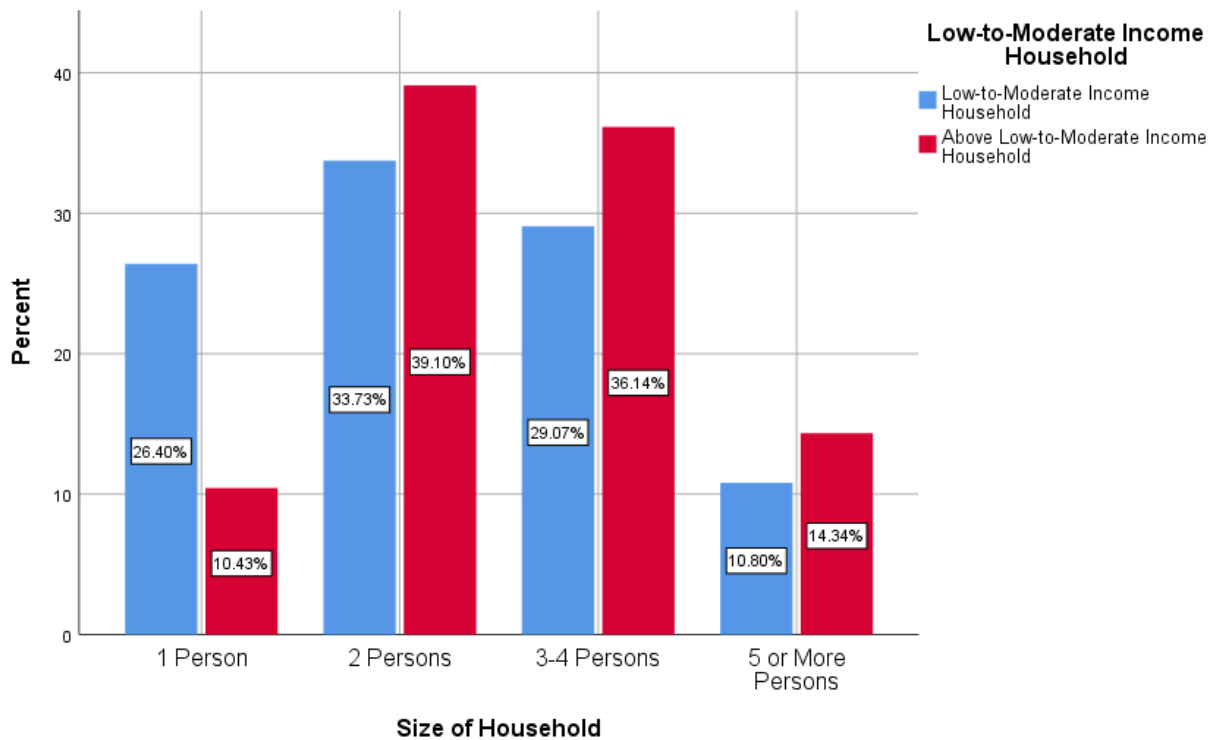


..by..Low-to-Moderate Income Household

The chart below illustrates the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across Size of Household.

For the low to moderate income households, about 26 percent were composed of 1 person, about 34 percent were composed of 2 persons, about 29 percent were composed of 3-4 persons and about 11 percent were composed of 5 or more persons

For the above low- to moderate-income household size, about 10 percent were composed of 1 person, about 39 percent were composed of 2 persons, about 36 percent were composed of 3-4 persons and about 14 percent were composed of 5 or more persons.



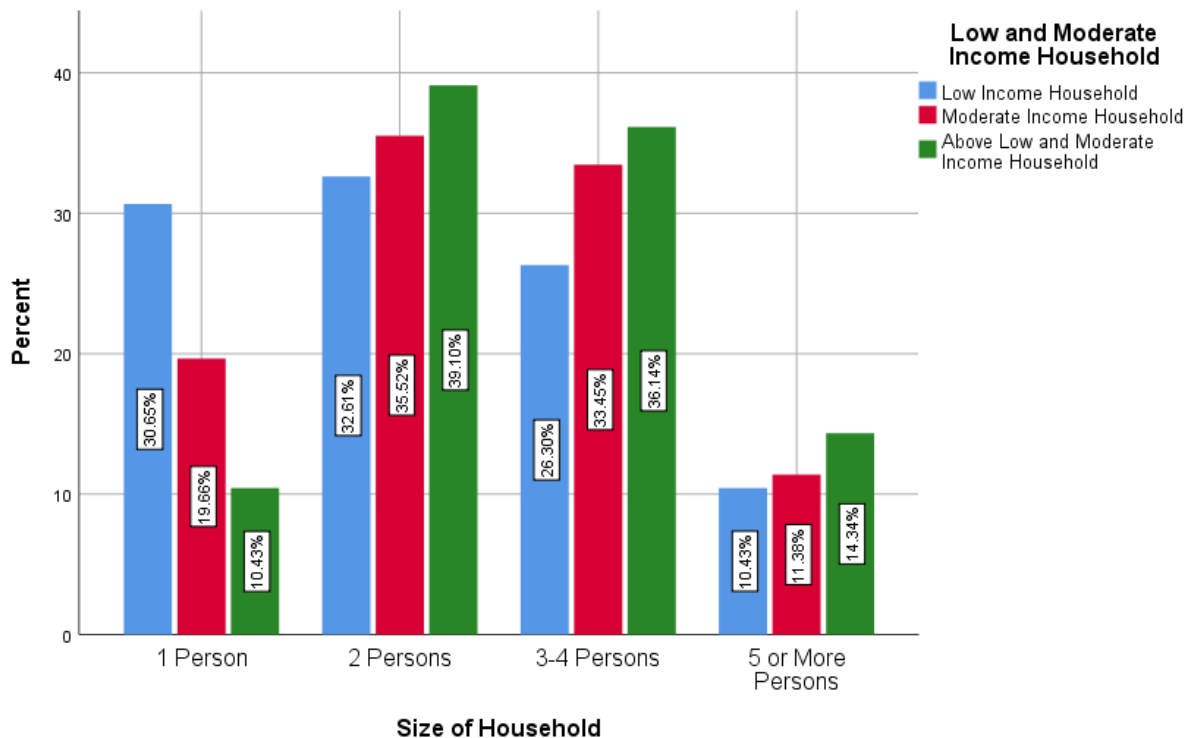
..by..Low and Moderate Income Household

The chart below illustrates the proportions within Low and Moderate Income Household (disaggregated into 'low,' 'moderate,' and 'above low and moderate' income households) across Size of Household.

Low income households tend to be single person households relative the two other income categories. Larger households tend to be higher income households. This is partly an artifact of the size of the household (all else equal, larger households may have more wage earners relative to smaller households).

Among low income households, about 31 percent are composed of single person, 33 percent are 2 persons, 26 percent are 3-4 persons, and 10 percent are 5 or more person households.

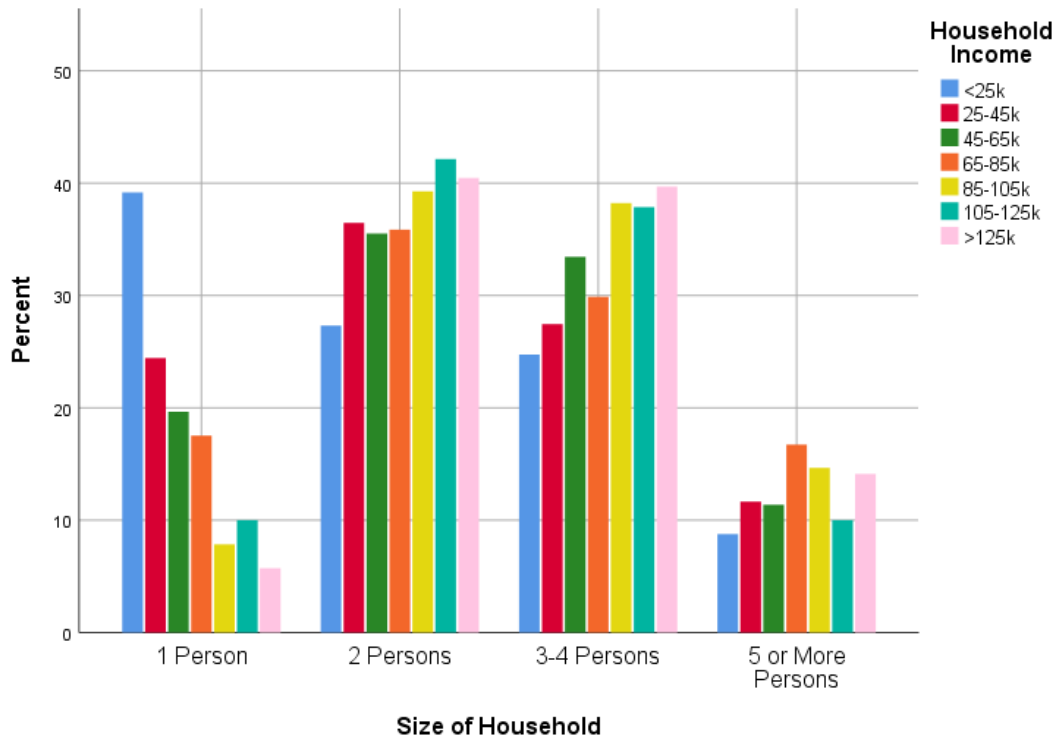
Among 'above low and moderate' income households, about 10 percent are composed of single person, 39 percent are 2 persons, 36 percent are 3-4 persons, and 14 percent are 5 or more person households.



..by..Granulated Household Income

The chart below illustrates the proportions within Household Income (disaggregated into seven household income gradients) across Size of Household.

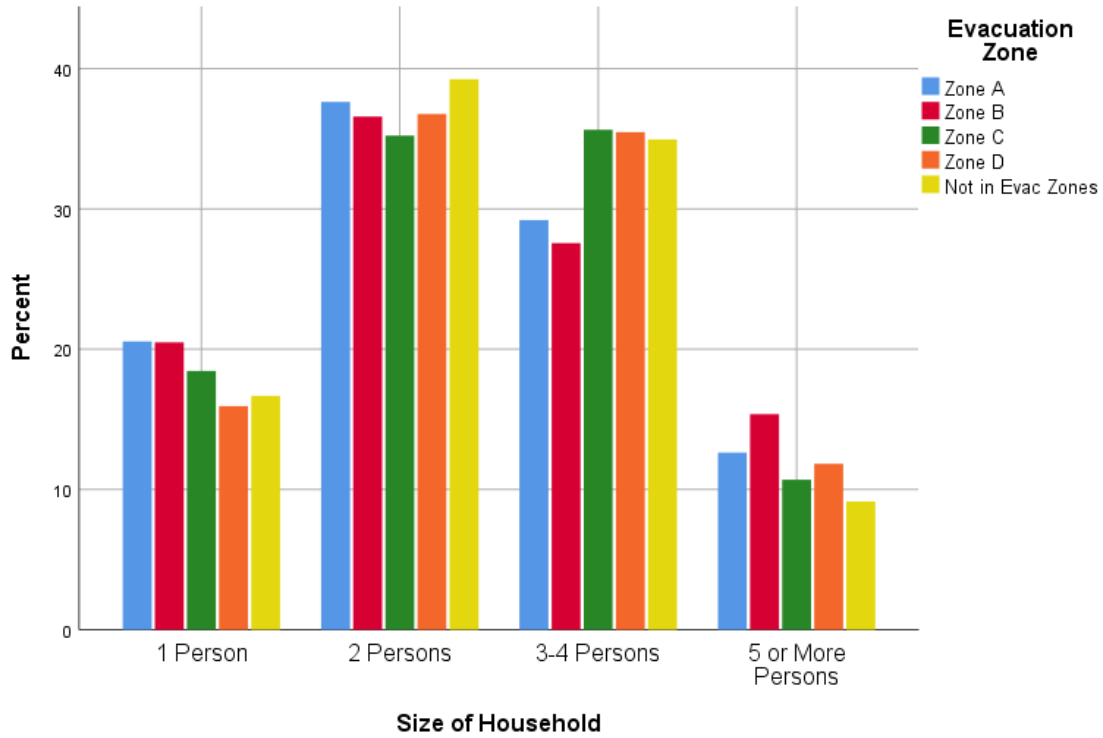
Households with lower household incomes tend to have fewer persons. Likewise, higher income households tend to be 2-, 3-, or 4-person households.



..by..Evacuation Zone

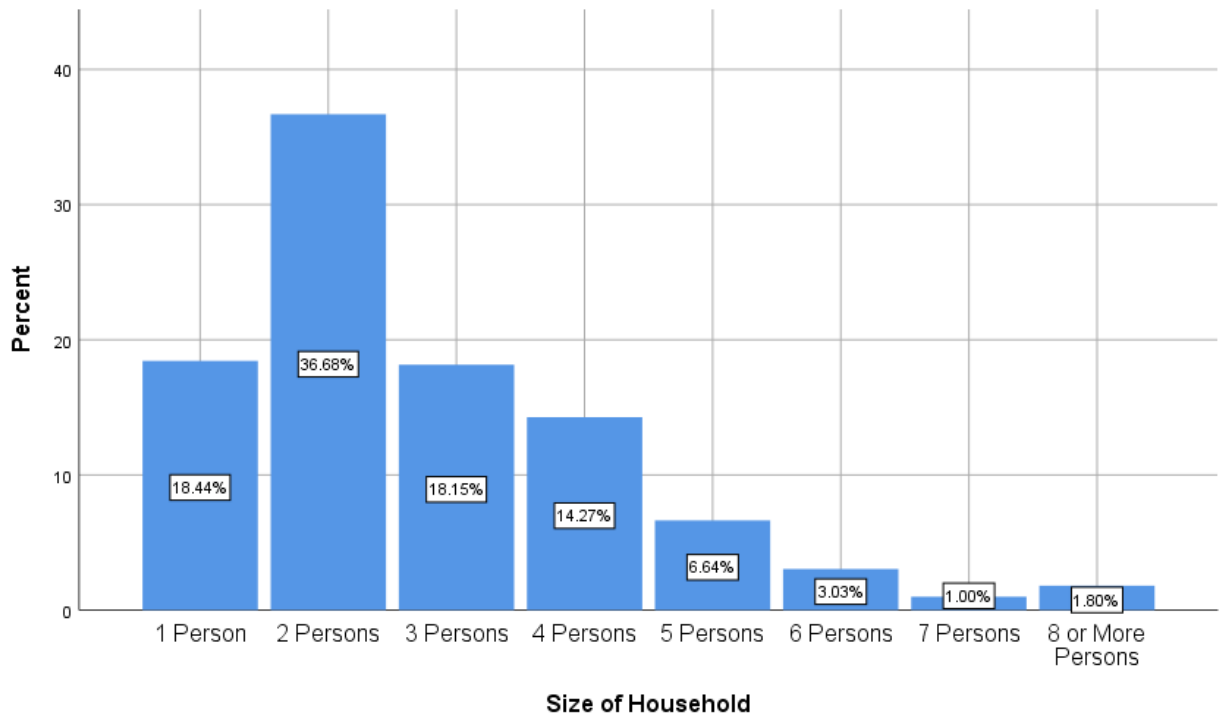
The chart below illustrates the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across Size of Household.

The proportions of households within zones A and B that tend to be one-person households are greater than the proportions found in Zones C and D.



## Size of Household (Per Person)

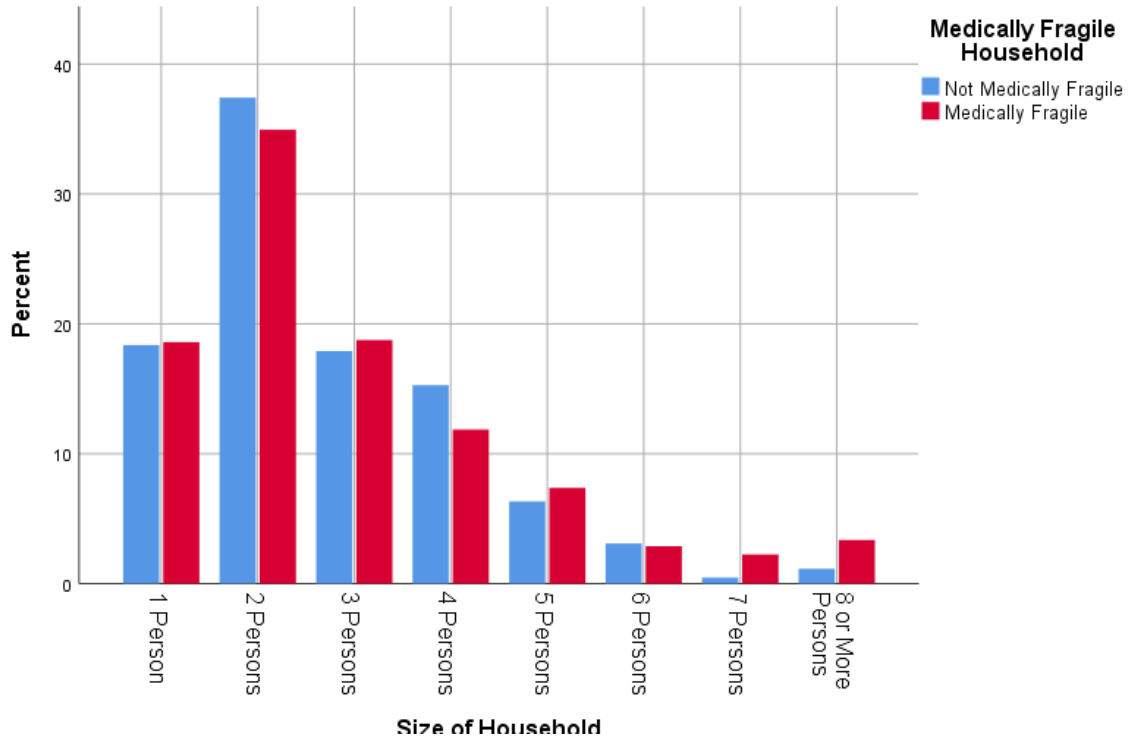
As shown, roughly 55 percent of all households have two or fewer persons living in the household, just over 32 percent have three to four people living in the household, and about 12 percent have five or more people living in the household.



..by..Medically Fragile Household

This chart illustrates the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across Size o Household.

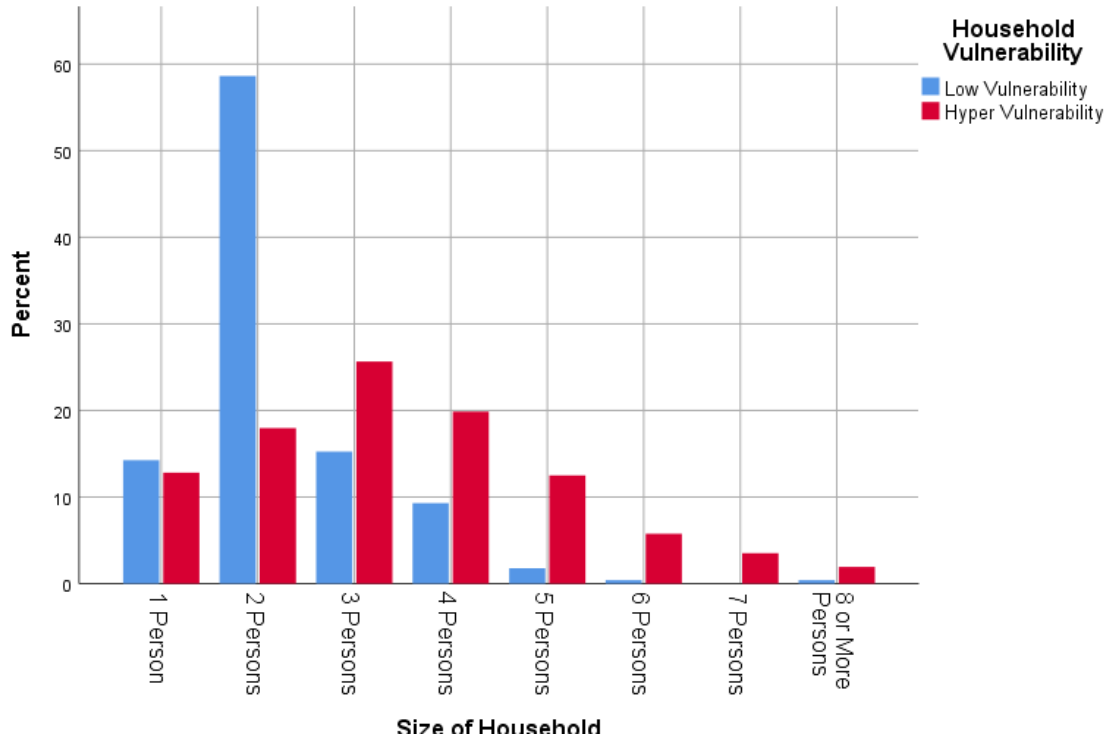
The proportion of medically fragile households that are single person is roughly the same as the proportion for non-medically fragile households. For two person households, the proportion of medically fragile households is less than the proportion of non-medically fragile households.



..by..Household Vulnerability

This chart illustrates the proportions within Household Vulnerability (purposively selected only low and hyper vulnerability households) across Size of Household.

Hyper vulnerable households tend to have more persons living in the household relative to low vulnerability households.

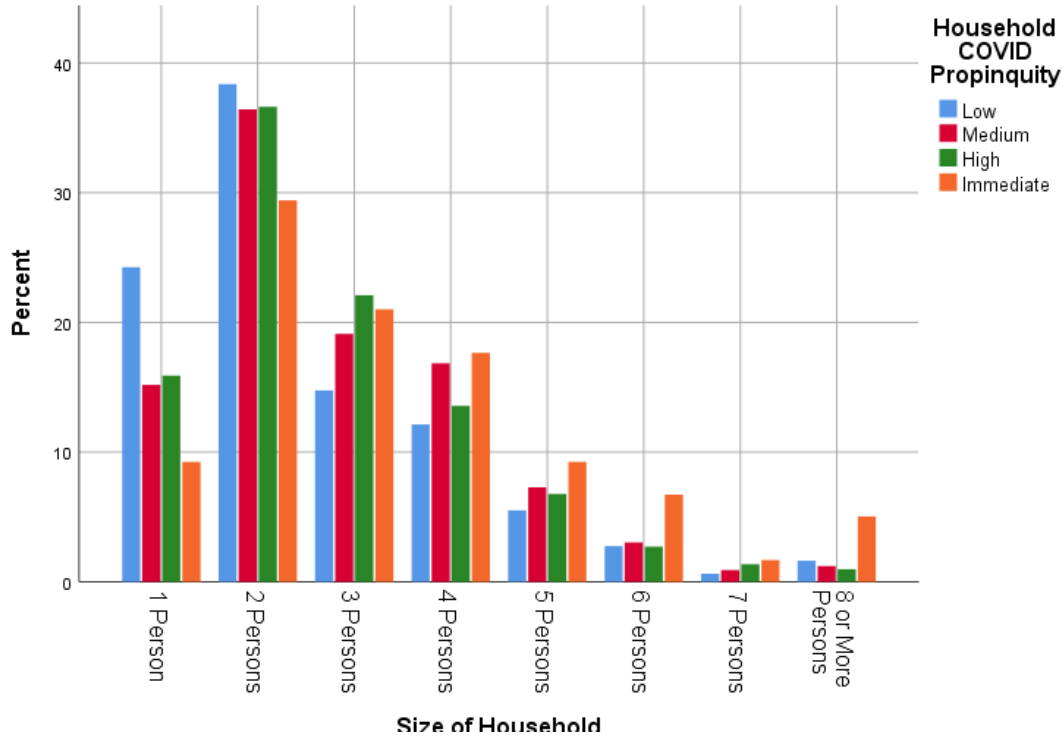




..by..Household COVID Propinquity

The chart below illustrates the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across Size of Household.

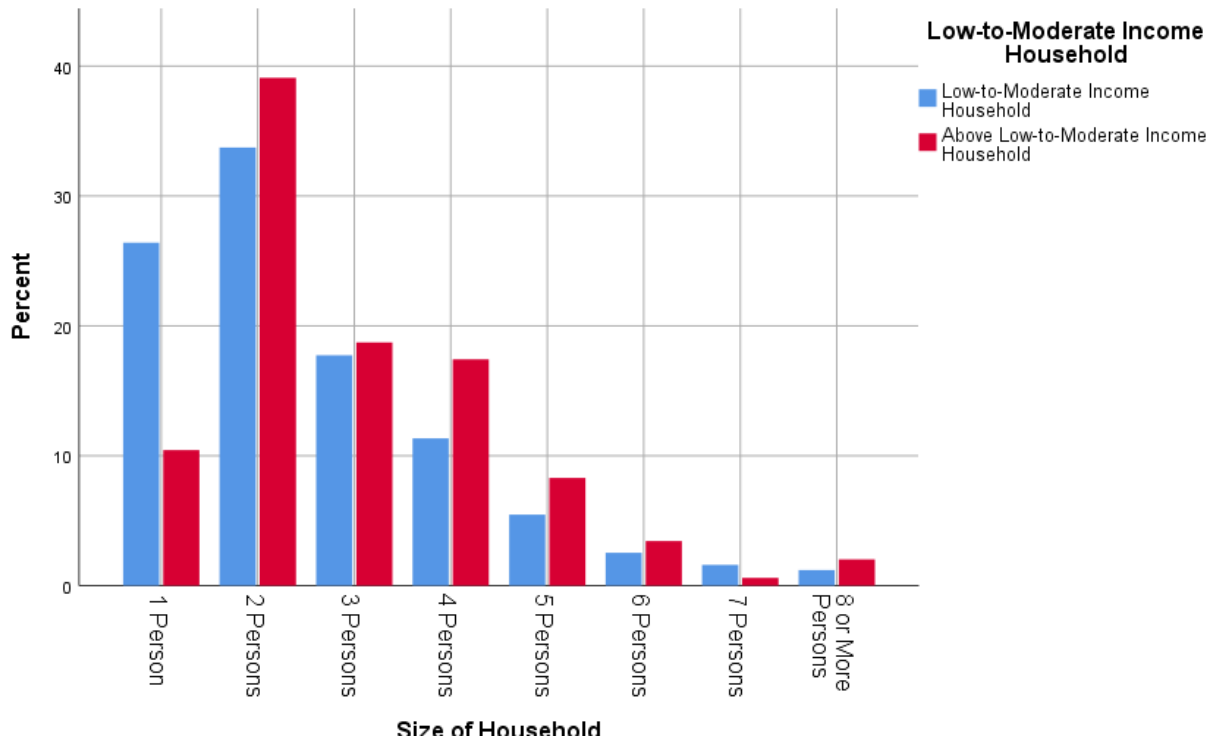
Households with low propinquity tend to be smaller relative to households with immediate propinquity.



..by..Low-to-Moderate Income Household

The chart below illustrates the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) Size of Household.

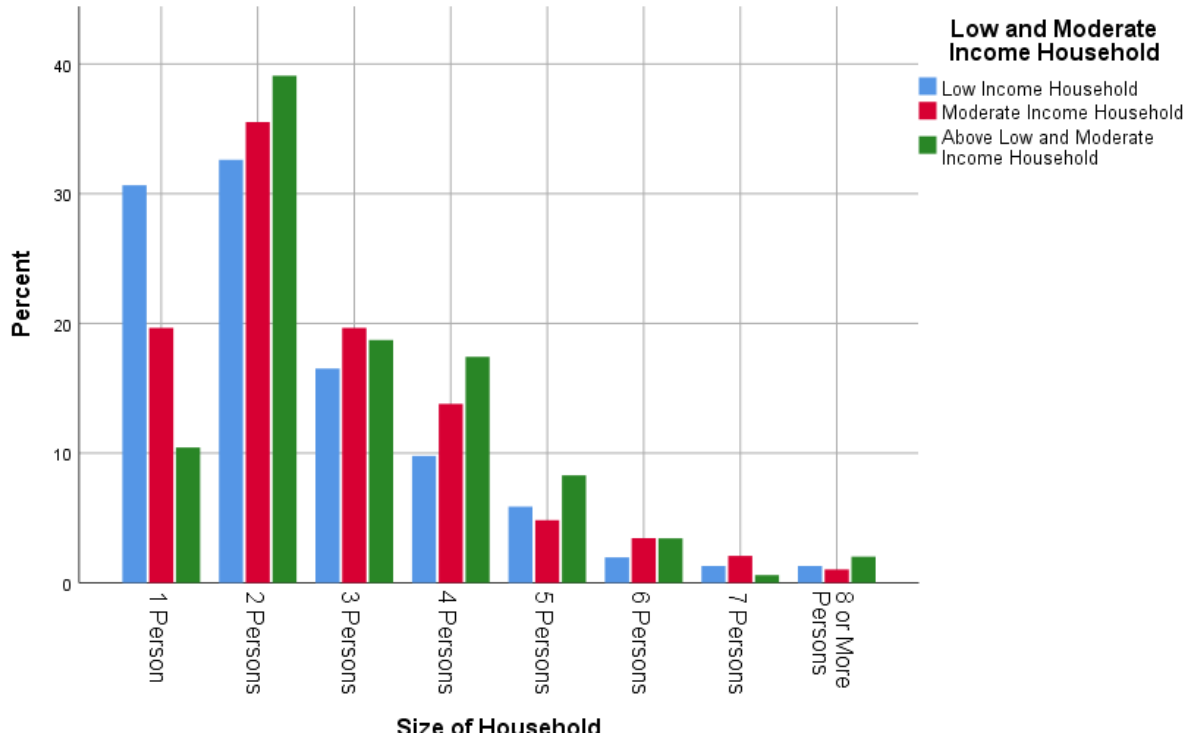
The proportion of LMI household that are single person tend to be greater than the proportion of above LMI households that are single person. However, above LMI is more prevalent relative to LMI within 2-, 3-, 4-, 5-, and 6-person households.



..by..Low and Moderate Income Household

This chart illustrates the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across Size of Household.

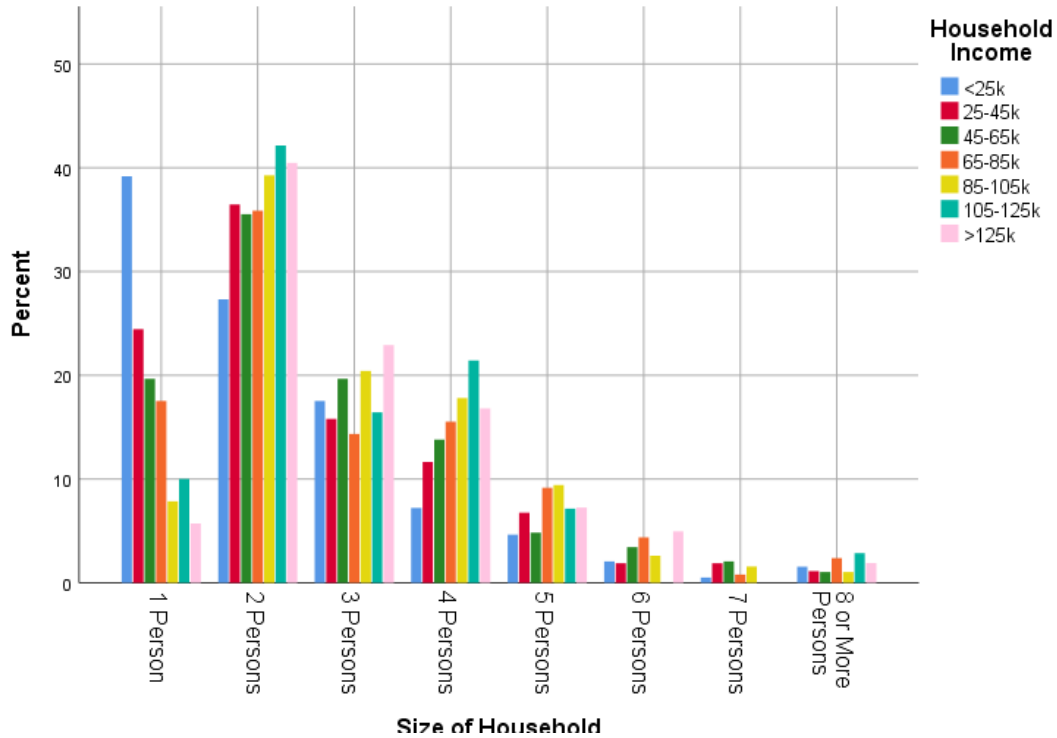
The proportion of low income households that are single person is greater than the proportions of either moderate income and above income households that are single person.



..by..Granulated Household Income

The chart below illustrates the proportions within Household Income (disaggregated into seven household income gradients) across Size of Household.

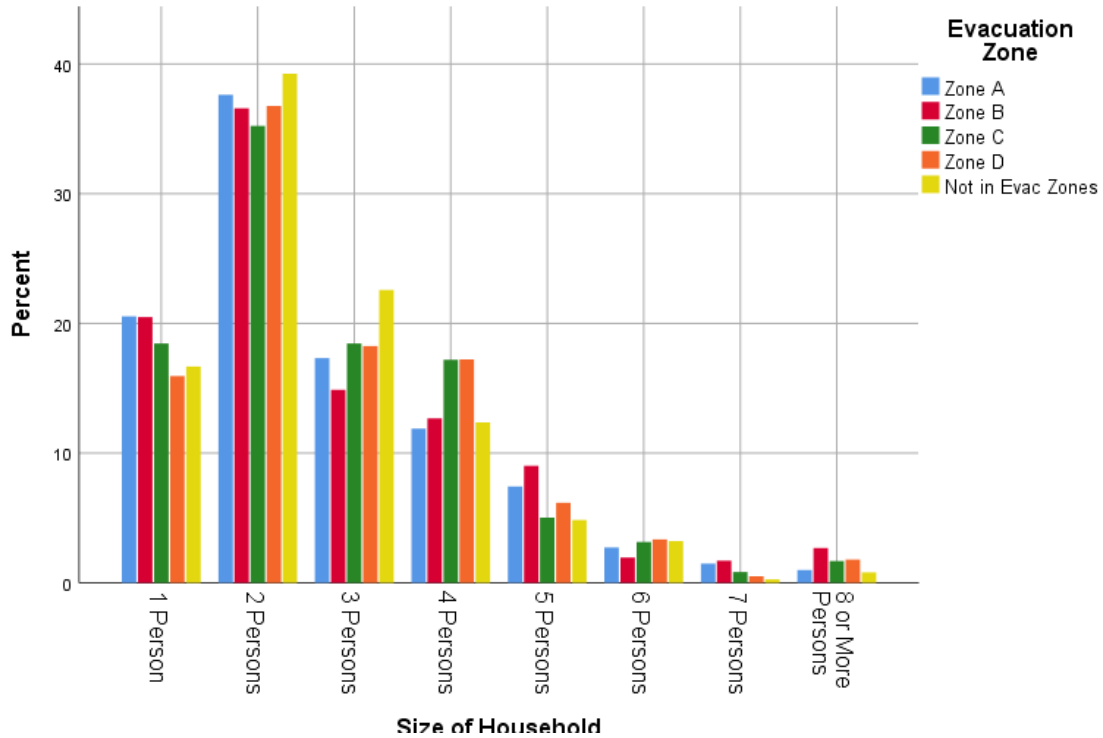
Among households within the lower income categories, a larger proportion is single person (e.g., <25k = 38 percent) relative to the higher income categories (e.g., >125k = 5 percent).



..by..Evacuation Zone

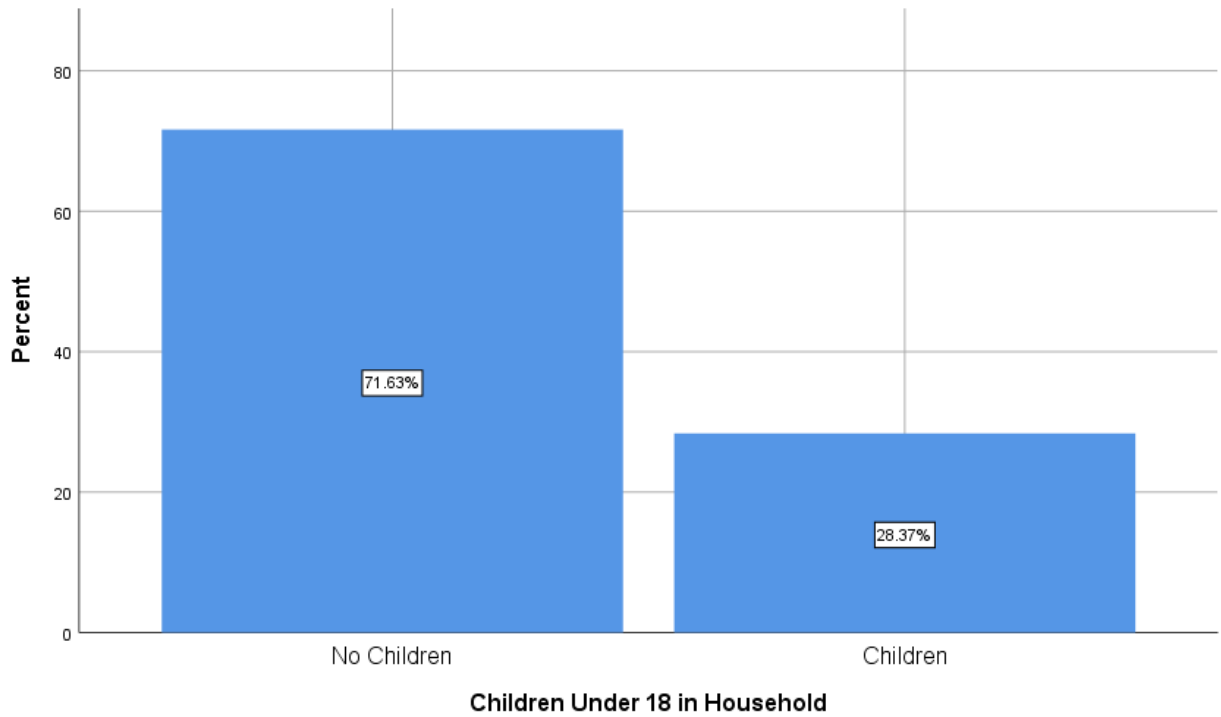
The chart below illustrates the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across Size of Household.

Among households living in both zone A and zone B, a larger proportion is single person (21 percent) relative to the remaining zones.



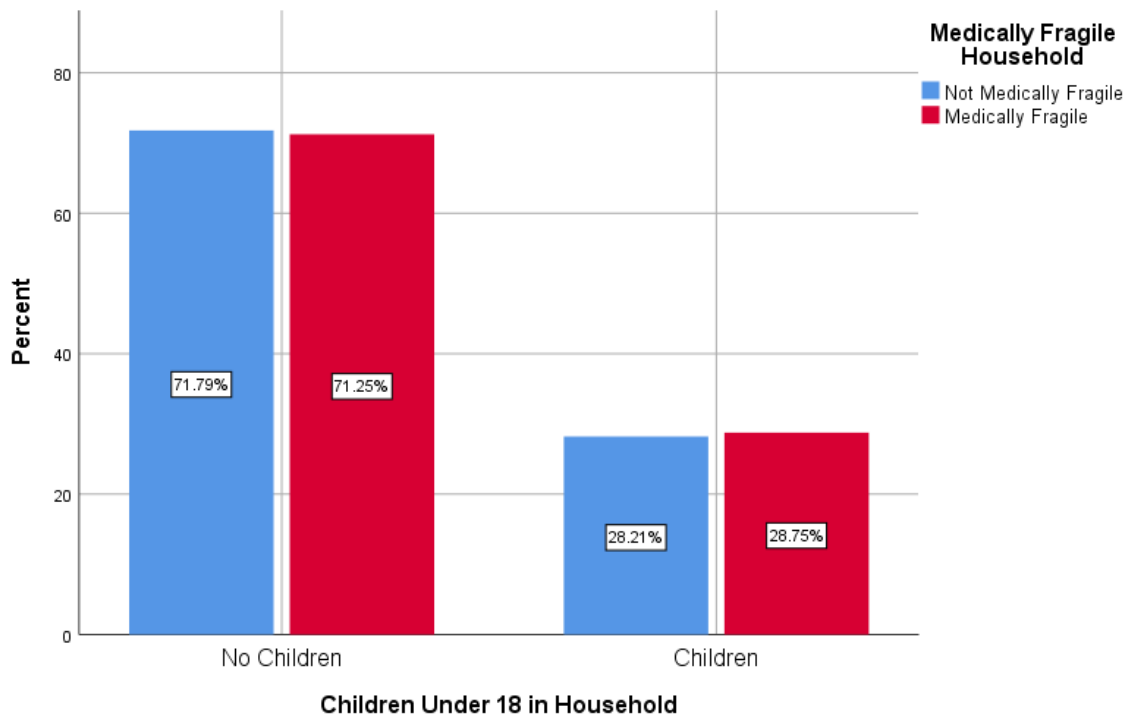
## Children Under 18 in Household

Roughly 28.4 percent of households report having children under 18 years of age as members of the household. Differences between households with children and those without children across the five control variables follow.



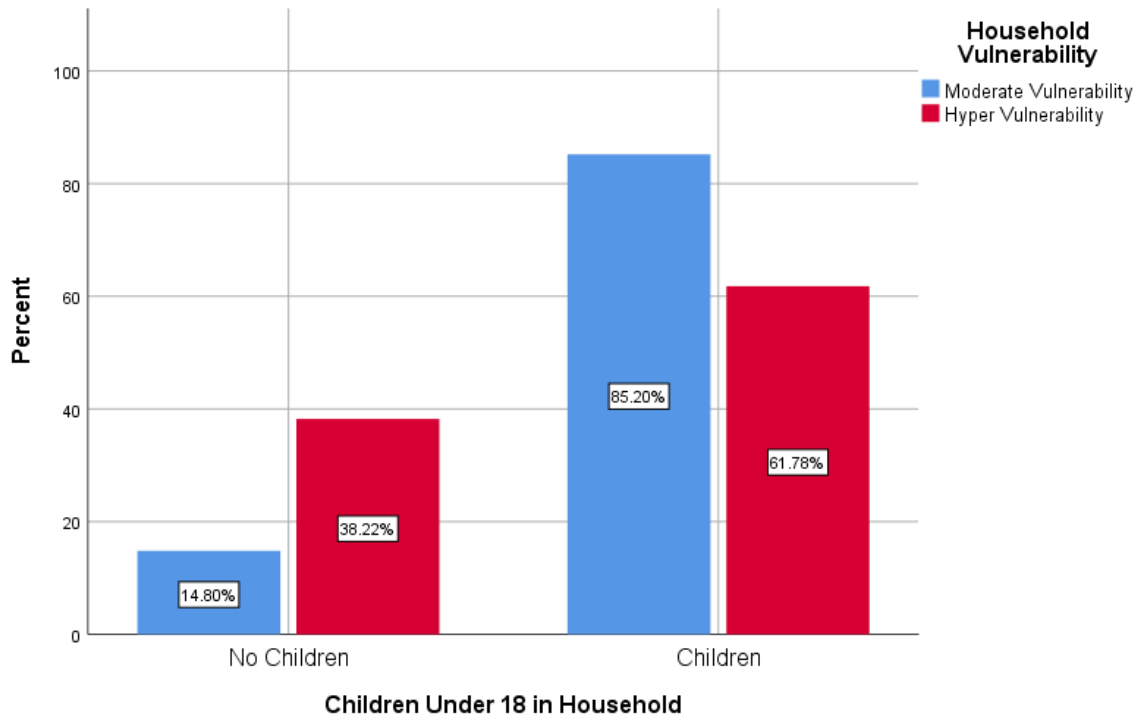
..by..Medically Fragile Household

This chart illustrates the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across Children Under 18 in Household. The proportion of medically fragile households with children is nearly the same of the propulsion of non-medically fragile households with children. There is no appreciable difference; children are eaylly likely to be presnet in medically fragile households as they are in non-medcially fragile households.



..by..Household Vulnerability

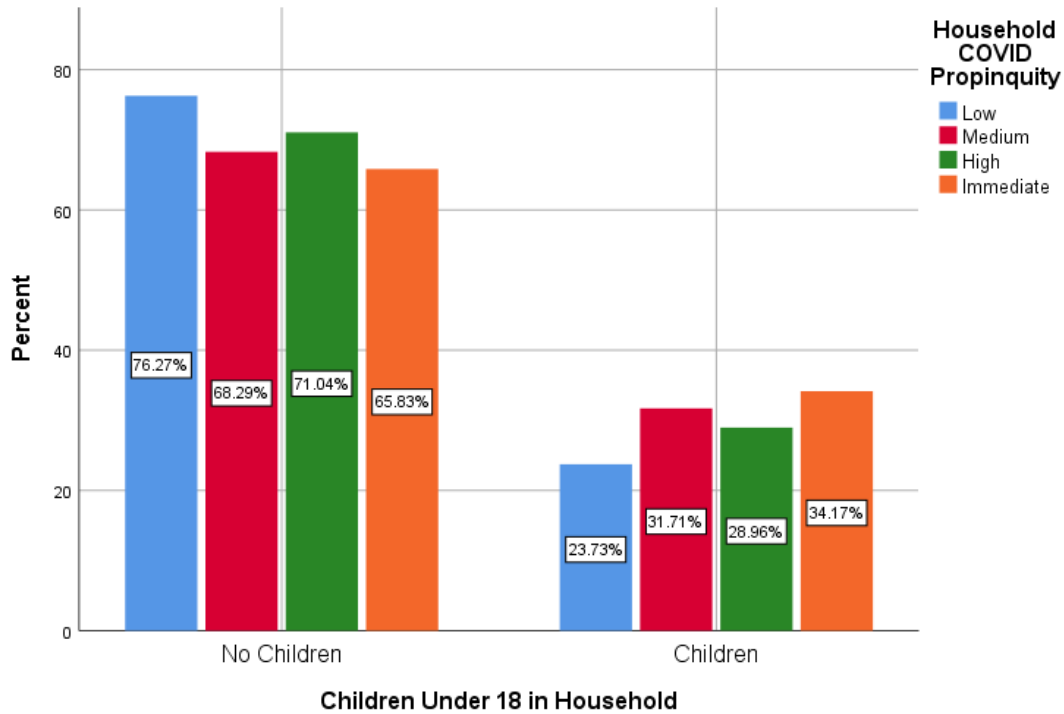
The chart below illustrates *purposively selected* proportions within Household Vulnerability across Children Under 18 in Household. Among the four household vulnerability categories (low, moderate, high, and hyper vulnerability), only moderate and hyper vulnerability have been selected. The exclusion of low and high vulnerability is an artifact of the method used in constructing the variable Household Vulnerability (see Part 2: Methodology). In the measure, low and high vulnerability households cannot have children (thus the bar chart would illustrate 100 percent of low and high vulnerability households as having no children). As shown, the proportion of moderate vulnerable households with children is greater than the proportion of hyper vulnerable households with children.





..by..Household COVID Propinquity

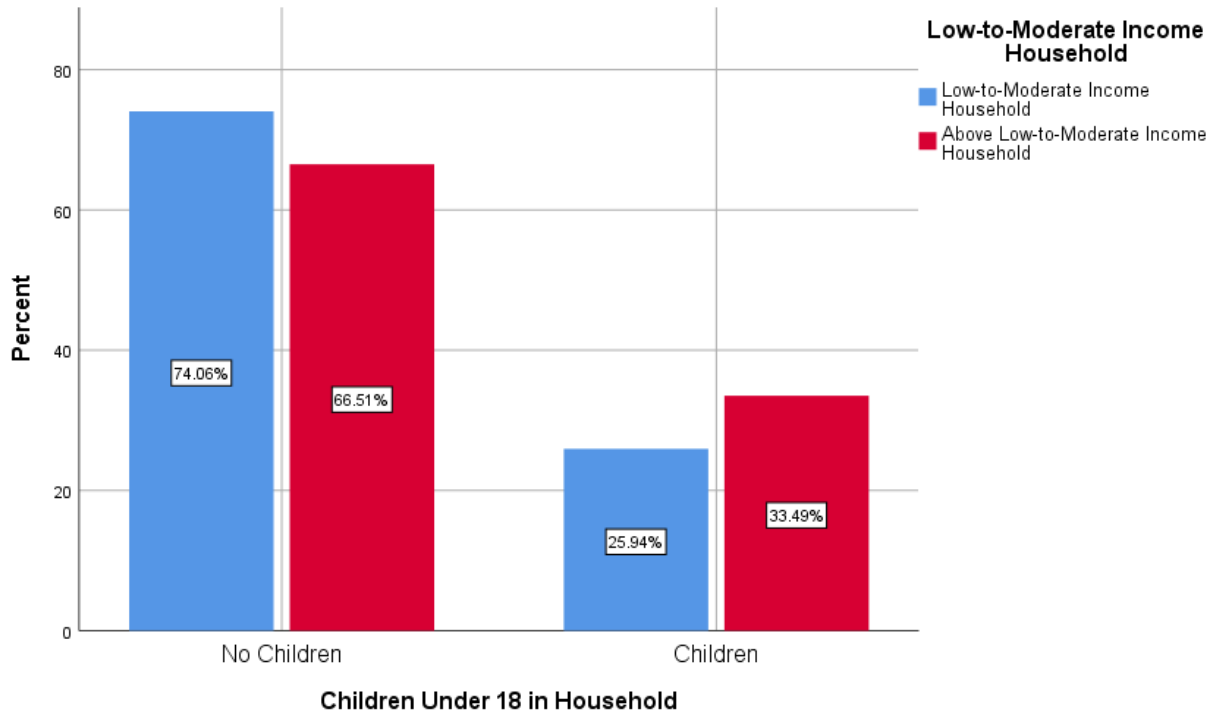
The chart below illustrates the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across the categories within Children Under 18 in Household. Households with low COVID propinquity are more likely to be without children relative to medium, high, and immediate COVID propinquity households. Households with immediate COVID propinquity are more likely to have children relative to high, medium, and low COVID propinquity households.



..by..Low-to-Moderate Income Household

The chart below illustrates the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across the categories within Children Under 18 in Household.

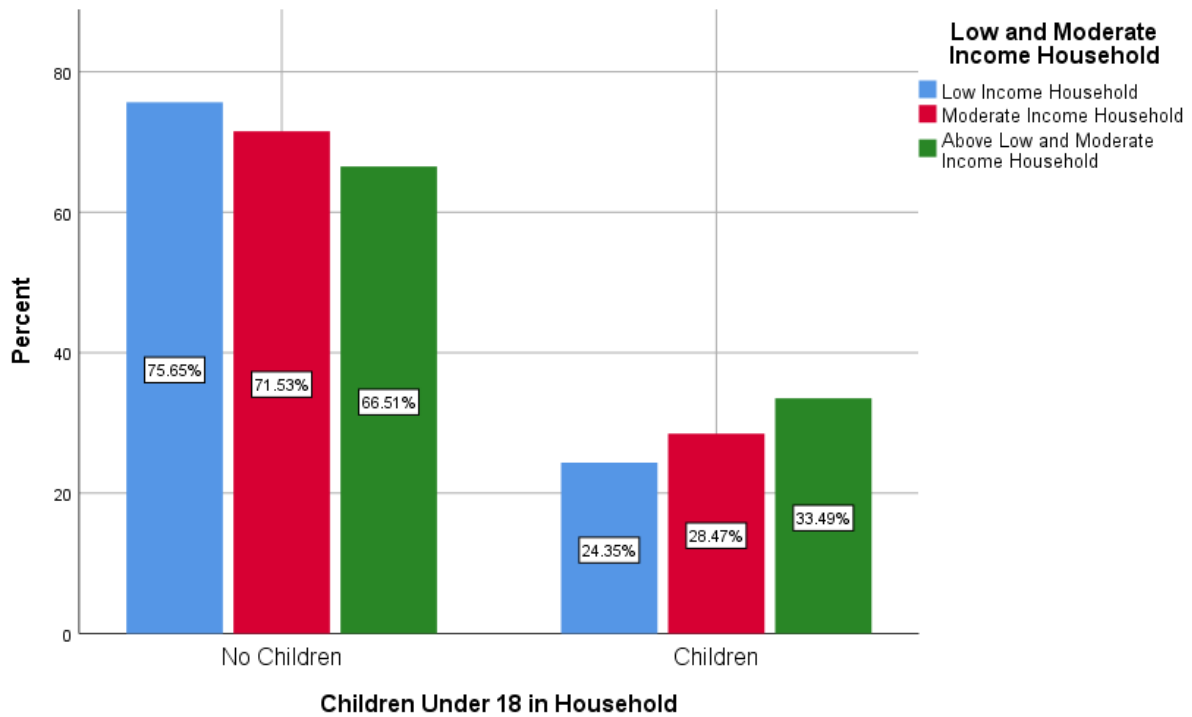
Households with above LMI incomes trend to be more likely to have children relative to households with LMI incomes.



..by..Low and Moderate Income Household

The chart below illustrates the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above low and moderate income households) across the categories within Children Under 18 in Household.

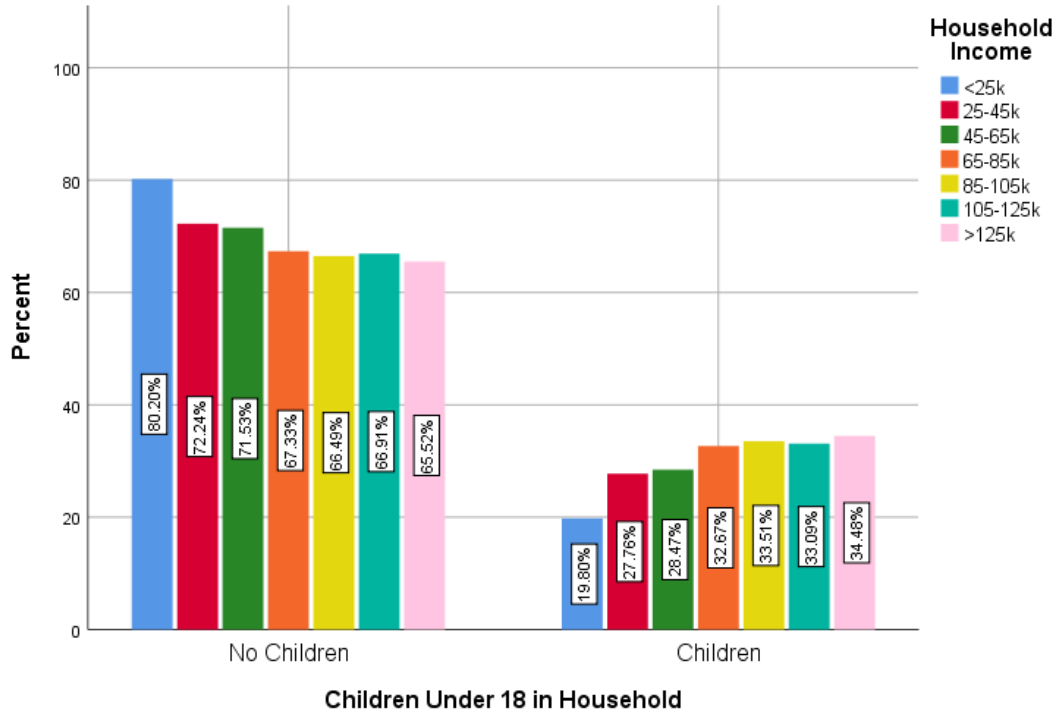
Households with above incomes trend to be more likely to have children relative to households with moderate and low incomes.



..by..Granulated Household Income

This chart illustrates the proportions within Household Income (disaggregated into seven household income gradients) across the categories within Children Under 18 in Household.

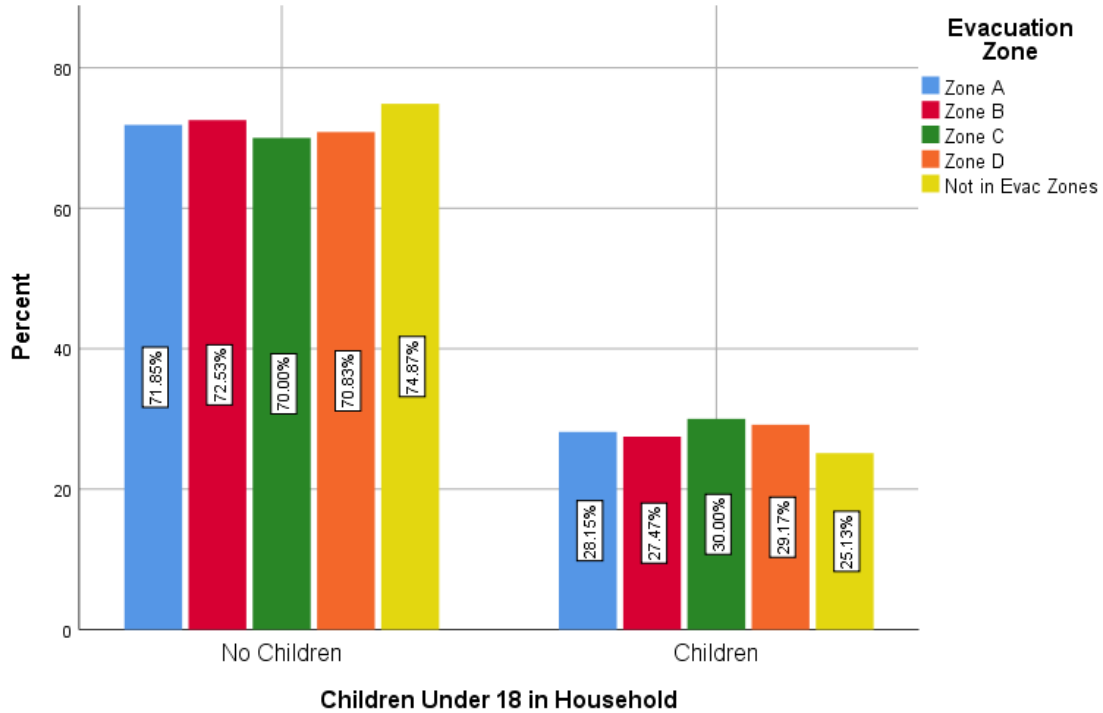
Households with higher incomes trend to be more likely to have children relative to households with lesser incomes.



..by..Evacuation Zone

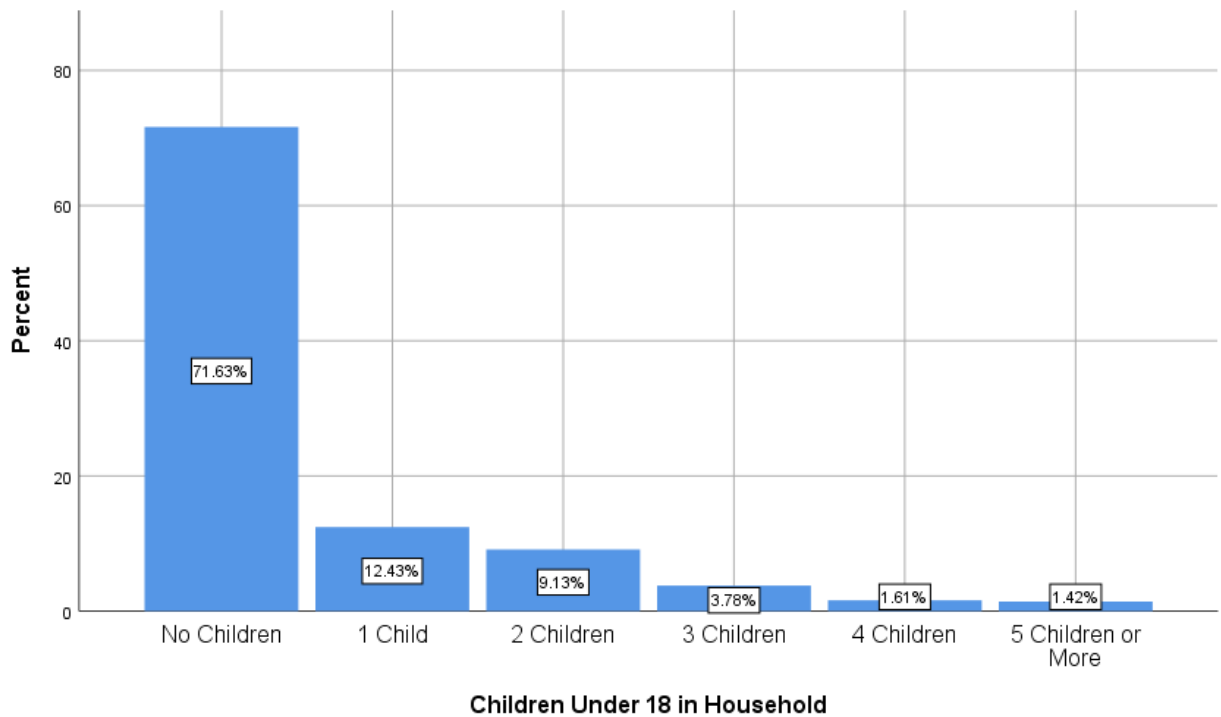
This chart illustrates the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across the categories within Children Under 18 in Household.

There is modest differences across evacuation zones (ranging from 25 to 30 percents) in the likelihood of households having children.



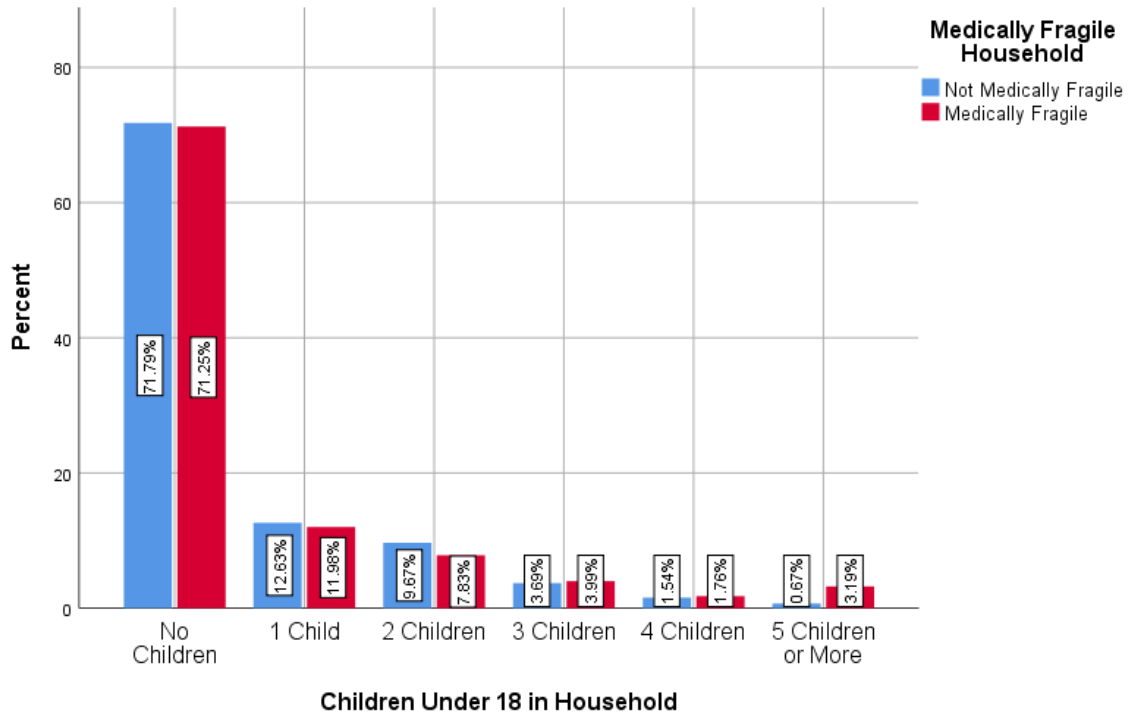
### Children Under 18 in Household (Per Child)

Nearly 72 percent of households report not having a child living in the household. Just over 12 percent of households report having 1 child, about 9 percent of households report having 2 children, about 4 percent of households report having 3 children, about 2 percent report having 4 children and about 1 percent of households report having more than 5 children.



..by..Medically Fragile Household

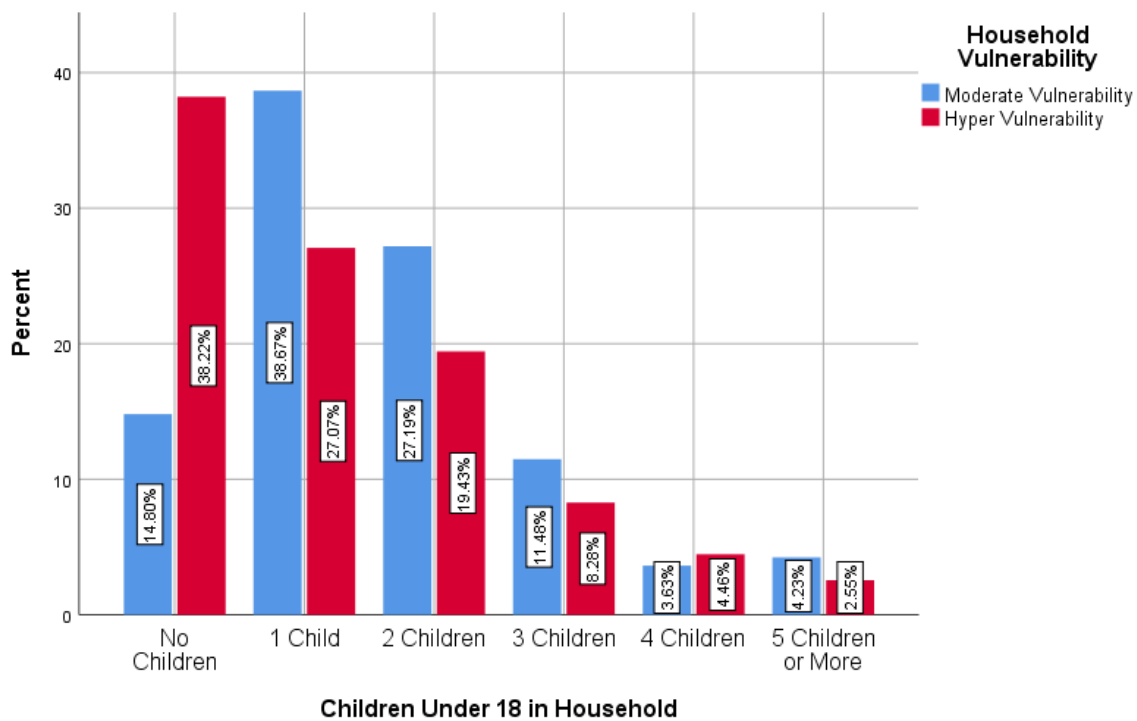
This chart illustrates the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across the number of children in the household. The medical fragility vs the non-medical fragility of a household is not distinguished by the presence of children.



..by..Household Vulnerability

This chart illustrates proportions within Household Vulnerability across the number of Children Under 18 in Household. Among the four household vulnerability categories (low, moderate, high, and hyper vulnerability), only moderate and hyper vulnerability have been *purposively* selected. The exclusion of low and high vulnerability is an artifact of the method used in constructing the variable Household Vulnerability (see Part 2: Methodology). In the measure, low and high vulnerability households cannot have children (thus the bar chart would illustrate 100 percent of low and high vulnerability households as having no children).

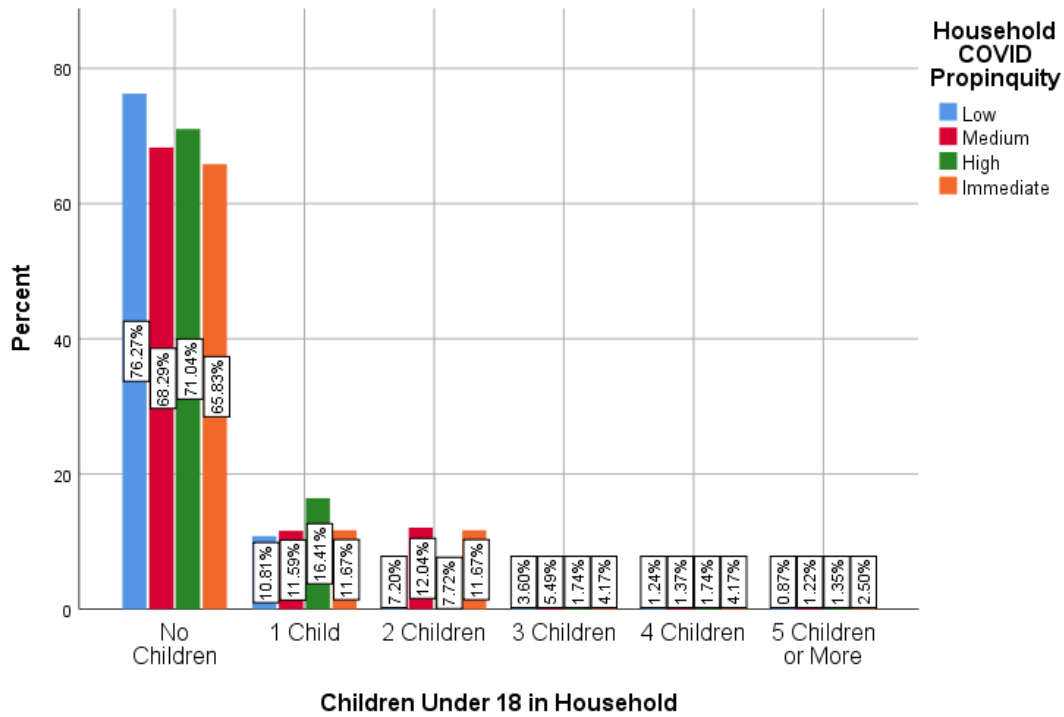
As shown, the proportions of moderate vulnerable households with one, two, and three children are greater than the proportions of hyper vulnerable households with one, two, and three children. Hyper vulnerability households are more likely not to have children relative to moderate vulnerability households.





..by..Household COVID Propinquity

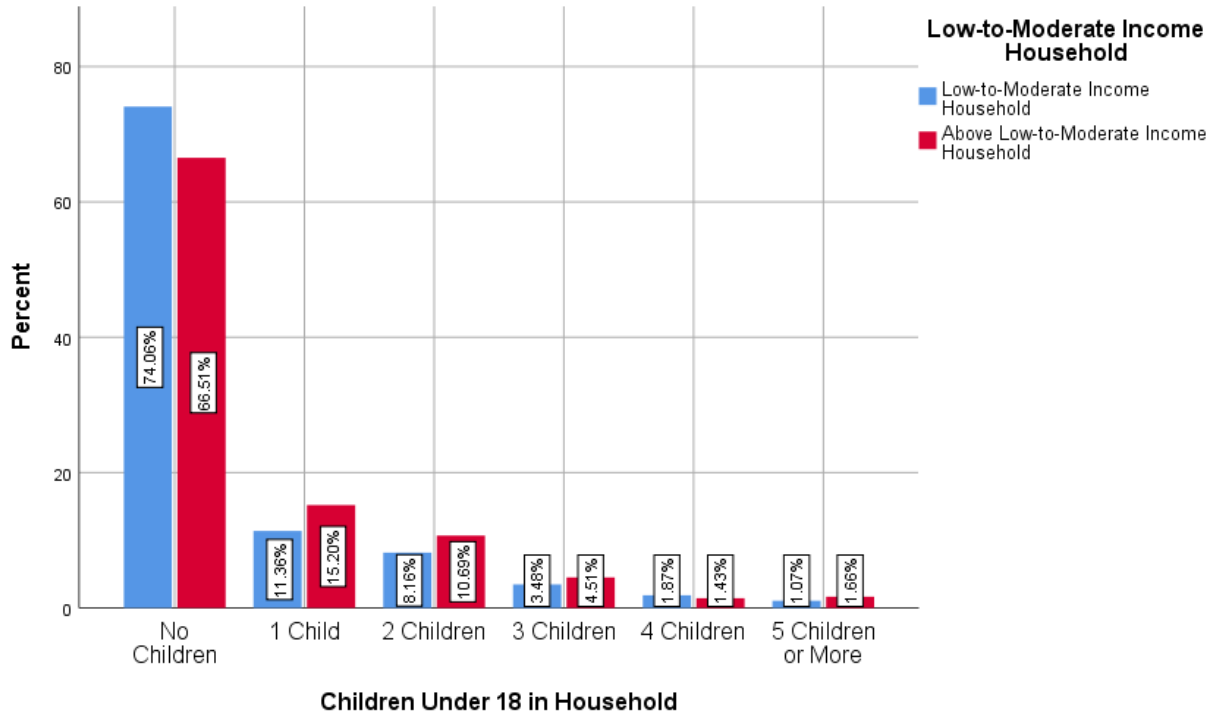
This chart illustrates the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across the number of children in the household. Households with low COVID propinquity are more likely to be without children relative to medium, high, and immediate COVID propinquity households.



..by..Low-to-Moderate Income Household

The chart below illustrates the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across number of children in household.

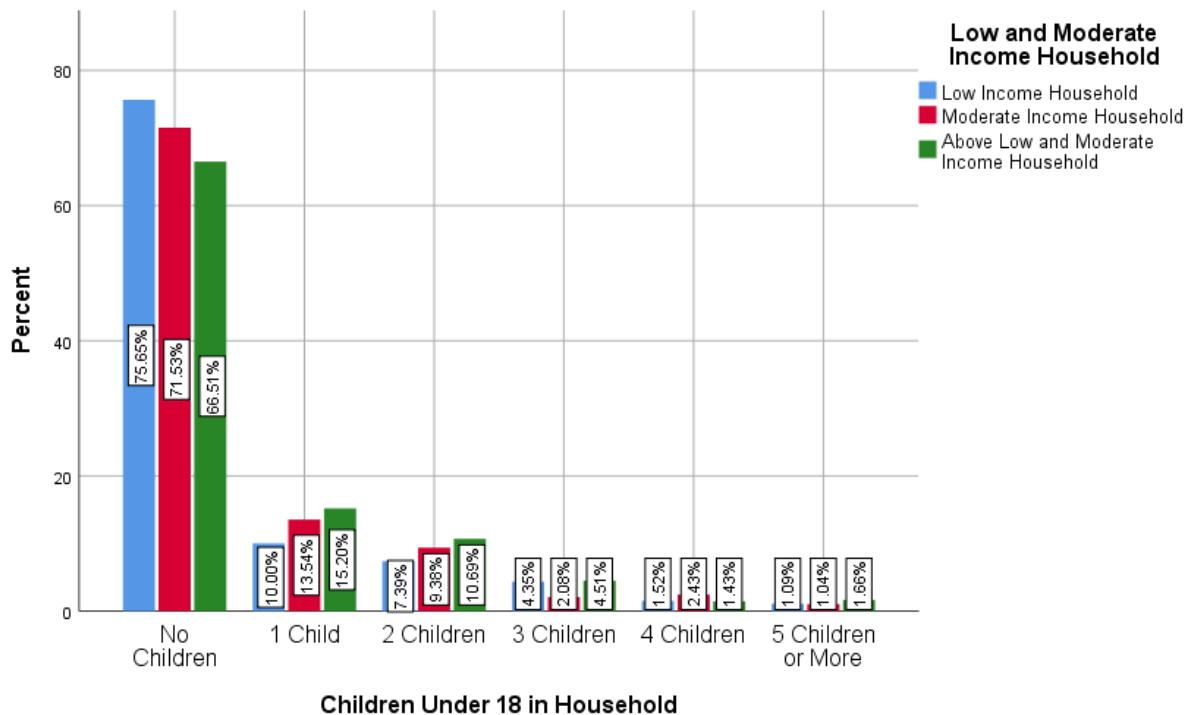
Differences in children in the households exist between households that have low-to-modest income and those that have above low-to-modest income. Roughly 74 percent of low-to-moderate income households do not have children in contrast to approximately 67 percent of above low-to-modest income households reporting no children. Above low-to-moderate income households are more like to have one, two, or three children in the household.



..by..Low and Moderate Income Household

The chart below illustrates the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across the categories within Children Under 18 in Household.

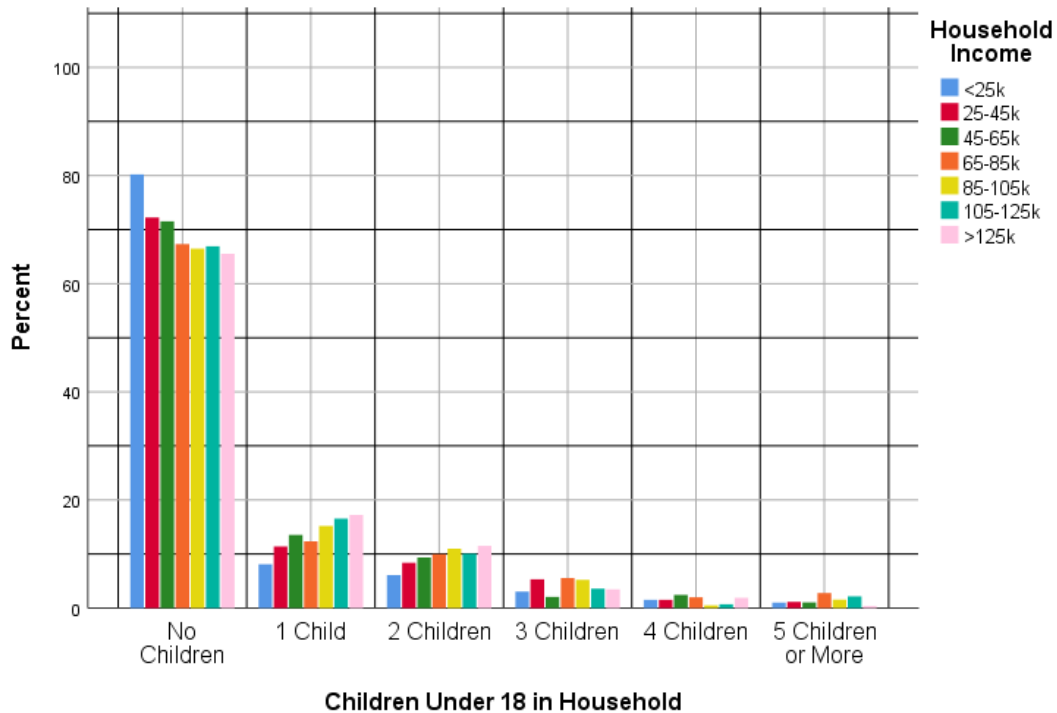
Differences in children in the households exist between households that are low, moderate and above income. For low income households, about 10 percent report having one child, about 9 percent report having 2 children, about 7 percent report having 3 children, and less than 1 percent report having 4 or more children. For moderate income households, about 12 percent report having one child, about 8 percent report having 2 children, about 2 percent report having 3 children, and less than 1 percent report having 4 or more children. For above income households, about 15 percent report having one child, about 10 percent report having 2 children, about 7 percent report having 3 children, and less than 1 percent report having 4 or more children



..by..Granulated Household Income

The chart below illustrates the proportions within Household Income (disaggregated into seven household income gradients) across the categories within Children Under 18 in Household.

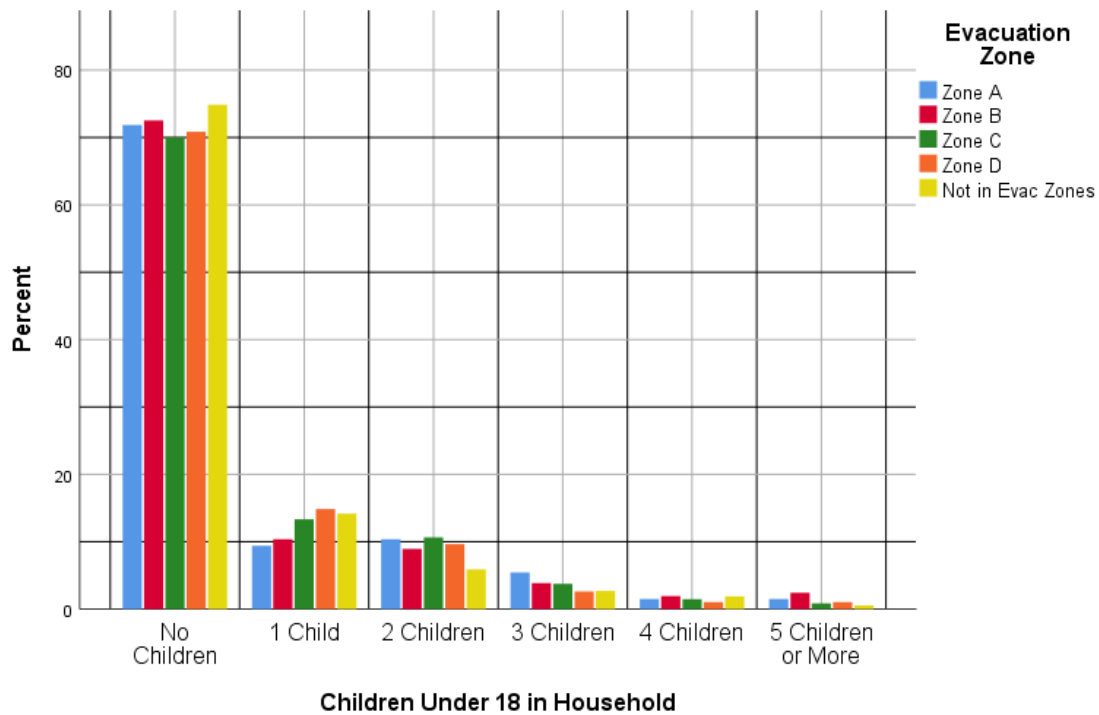
Differences in children in the households exist across the seven income categories. Generally, the proportion of lower income households are more likely not to have children relative to the proportion of higher income households. The inverse relationship is true for households with one or two children.



..by..Evacuation Zone

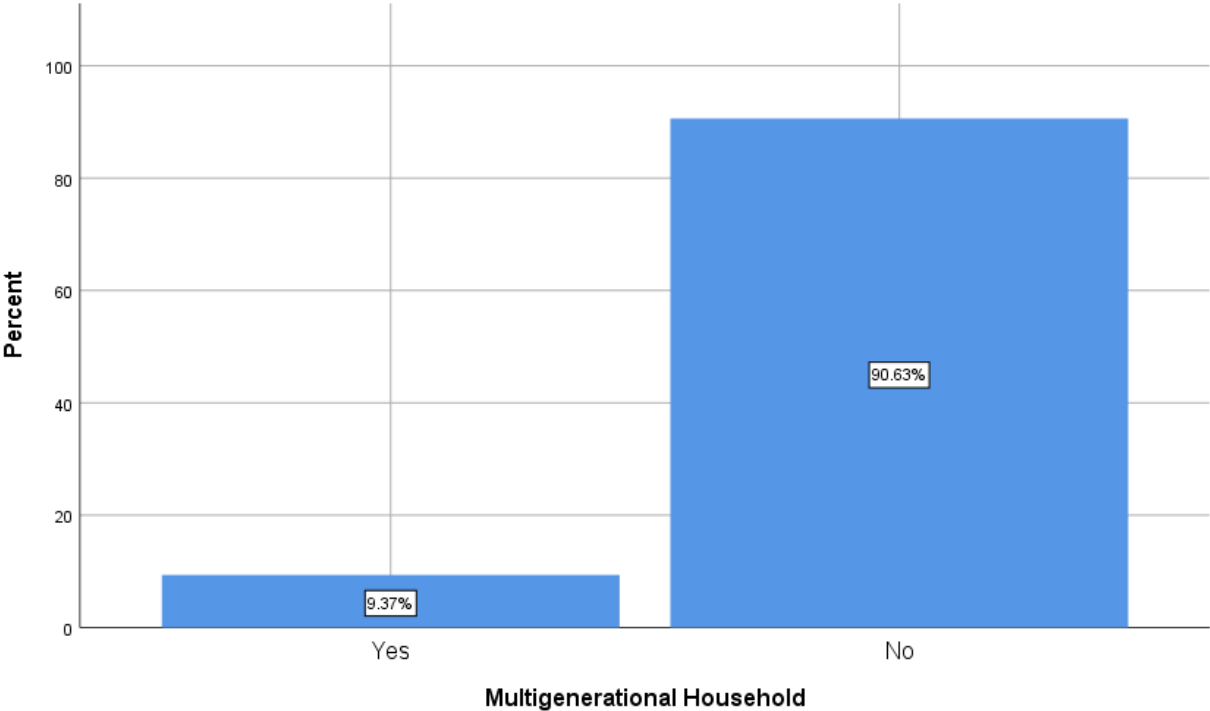
The chart below illustrates the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across the categories within Children Under 18 in Household.

Households in evacuation Zone A are less likely to have children in the household relative to Zones B, C and D.



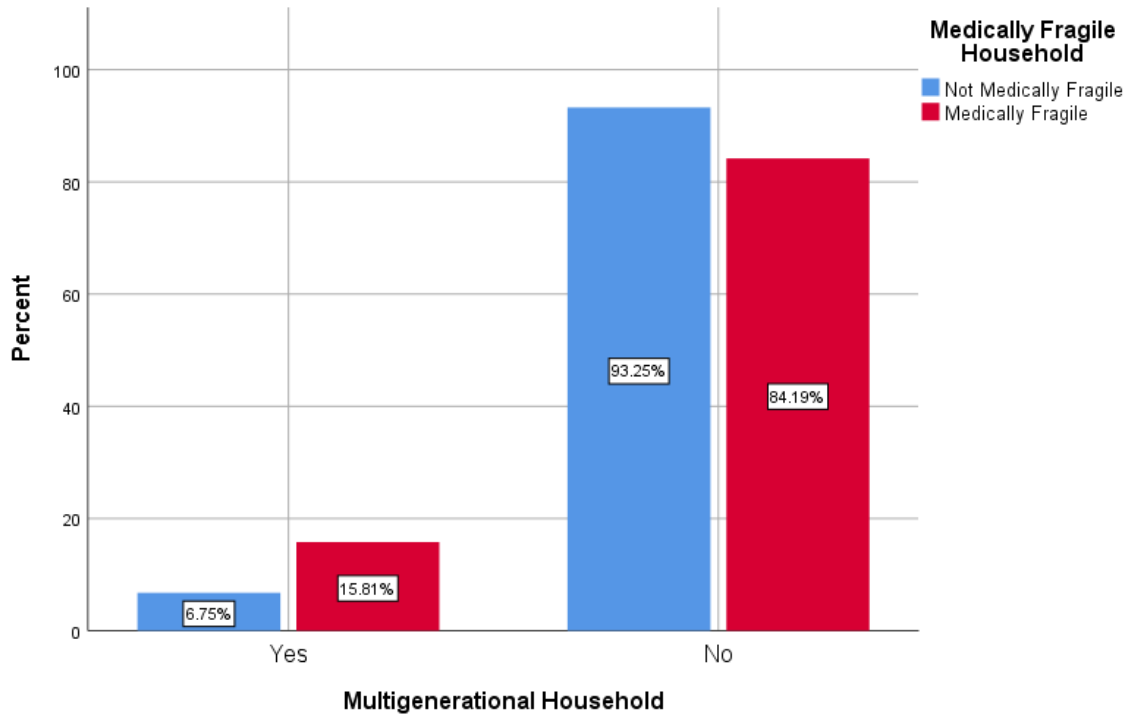
### Multigenerational Household

Approximately 9 percent of households are multigenerational, with both grandparents and grandchildren living under the same roof.



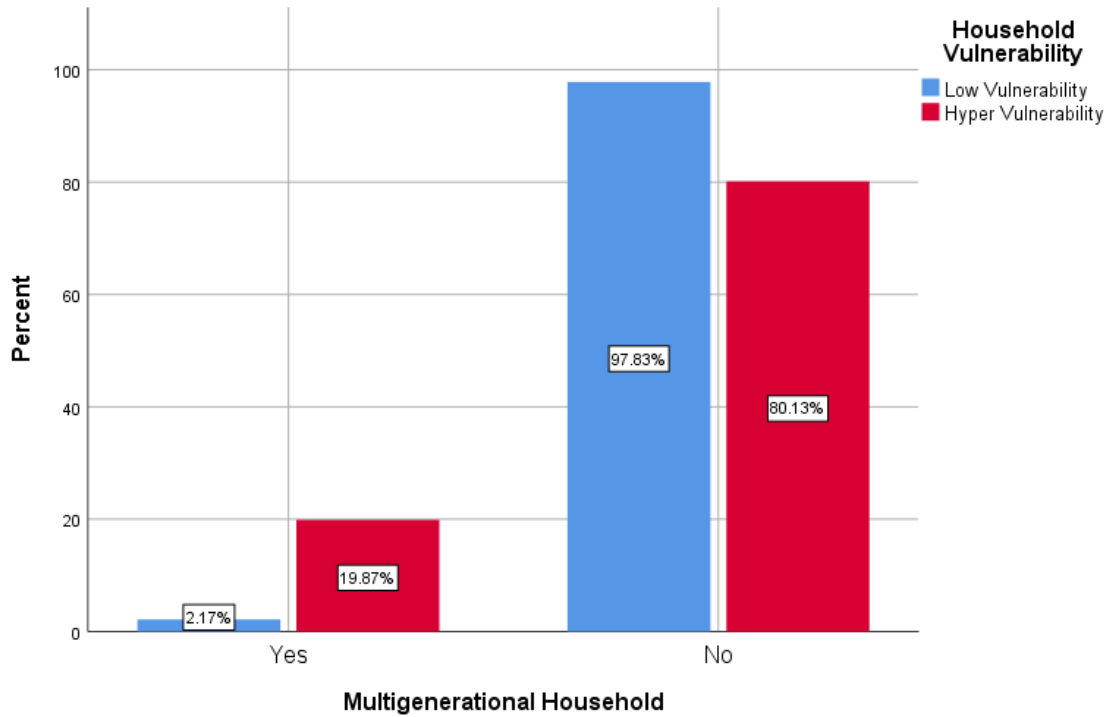
..by..Medically Fragile Household

This chart illustrates the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) that are characterized as multigenerational. Nearly 16 percent of medically fragile households are multigeneration, whereas just under 6 percent of non-medically fragile households are multigenerational.



..by..Household Vulnerability

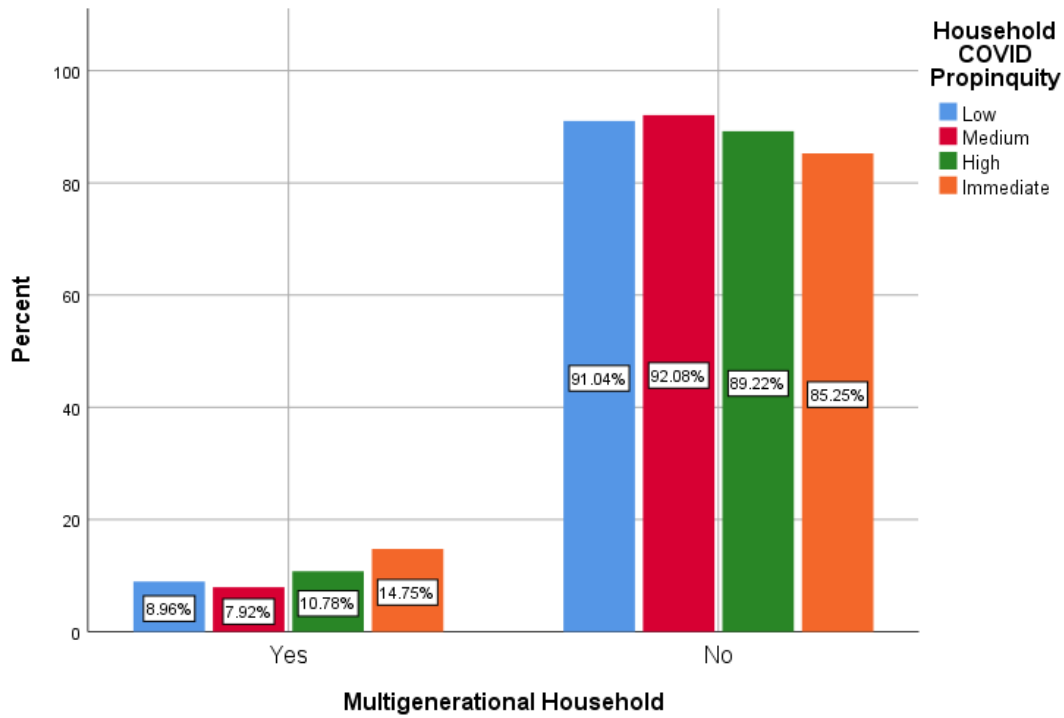
This chart illustrates the proportions within Household Vulnerability (purposively selected only low and hyper vulnerability households) that are characterized as multigenerational. Nearly 20 percent of hyper vulnerable households are multigeneration, whereas roughly 2 percent of low vulnerability households are multigenerational.





..by..Household COVID Propinquity

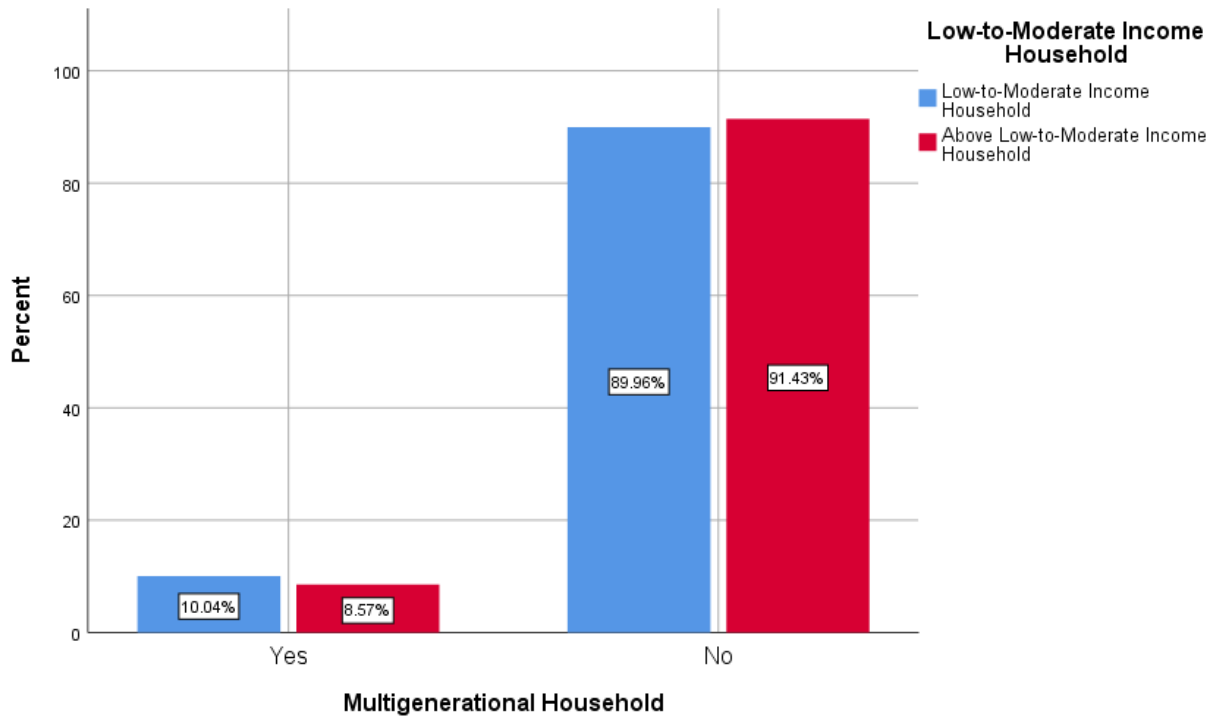
The chart below illustrates the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) that are characterized as multigenerational. Households with immediate COVID propinquity are more likely to be multigenerational relative to low COVID propinquity households (14.8 relative to 9.0 percent).



..by..Low-to-Moderate Income Household

This chart illustrates the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) that are characterized as Multigenerational households.

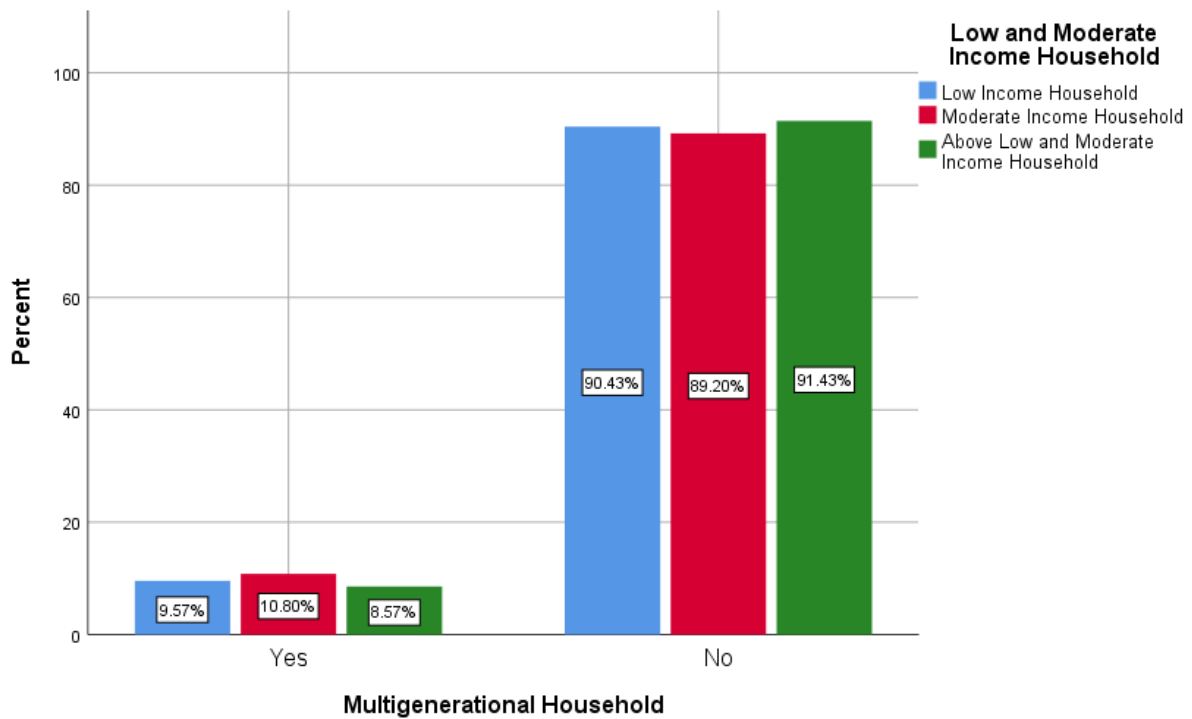
For LMI households, about 10 percent report that their household is multigenerational. This is similar to the 9 percent of above LMI households that report being multigenerational.



..by..Low and Moderate Income Household

The chart below illustrates the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) that are characterized as multigenerational.

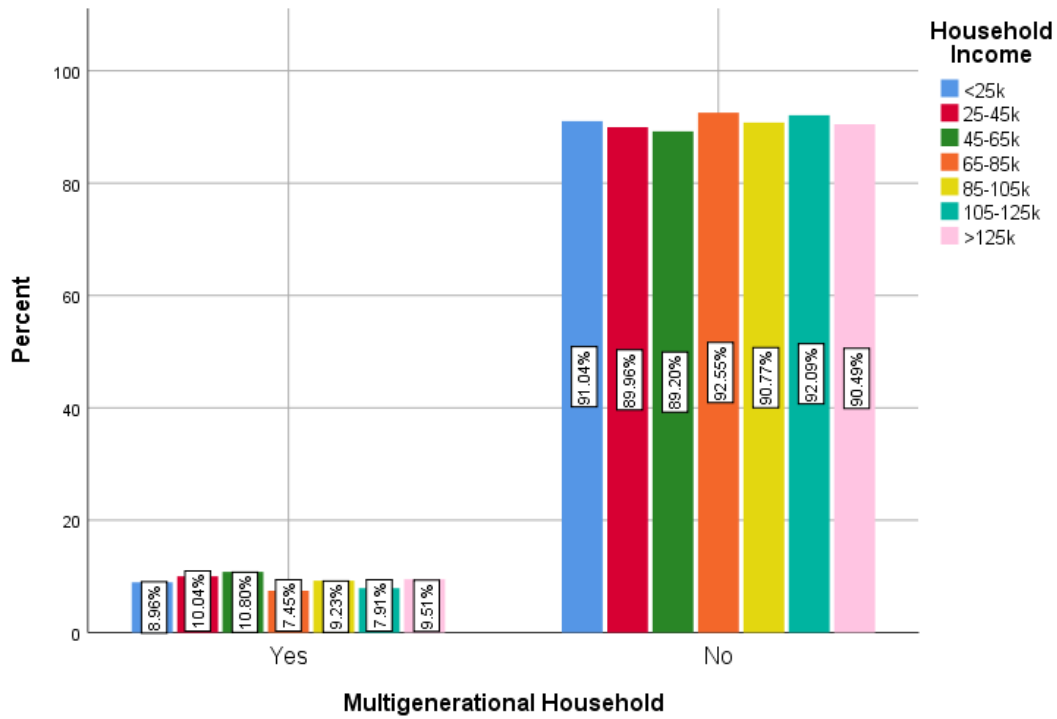
The proportion of households within each income group that are multigenerational is similar, ranging from 8.6 to 10.8 percent.



..by..Granulated Household Income

The chart below illustrates the proportions within Household Income (disaggregated into seven household income gradients) that are characterized as multigenerational.

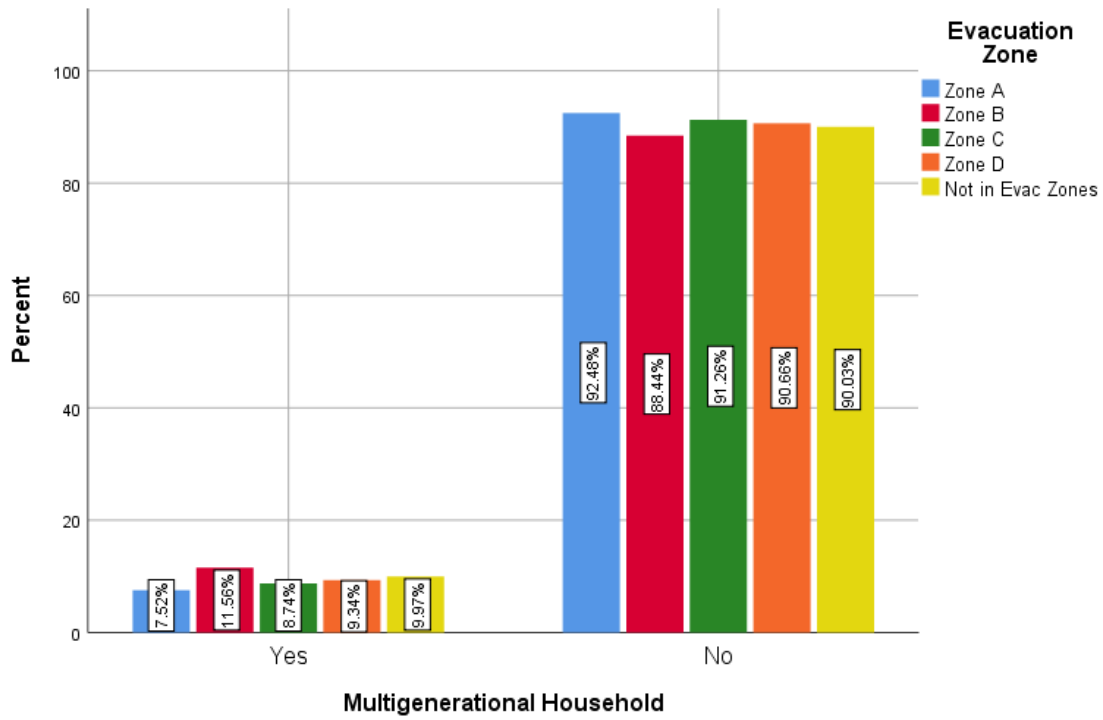
The proportion of households within each income group that are multigenerational is similar, ranging from 7.5 to 10.8 percent.



..by..Evacuation Zone

The chart below illustrates the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) that are characterized as multigenerational.

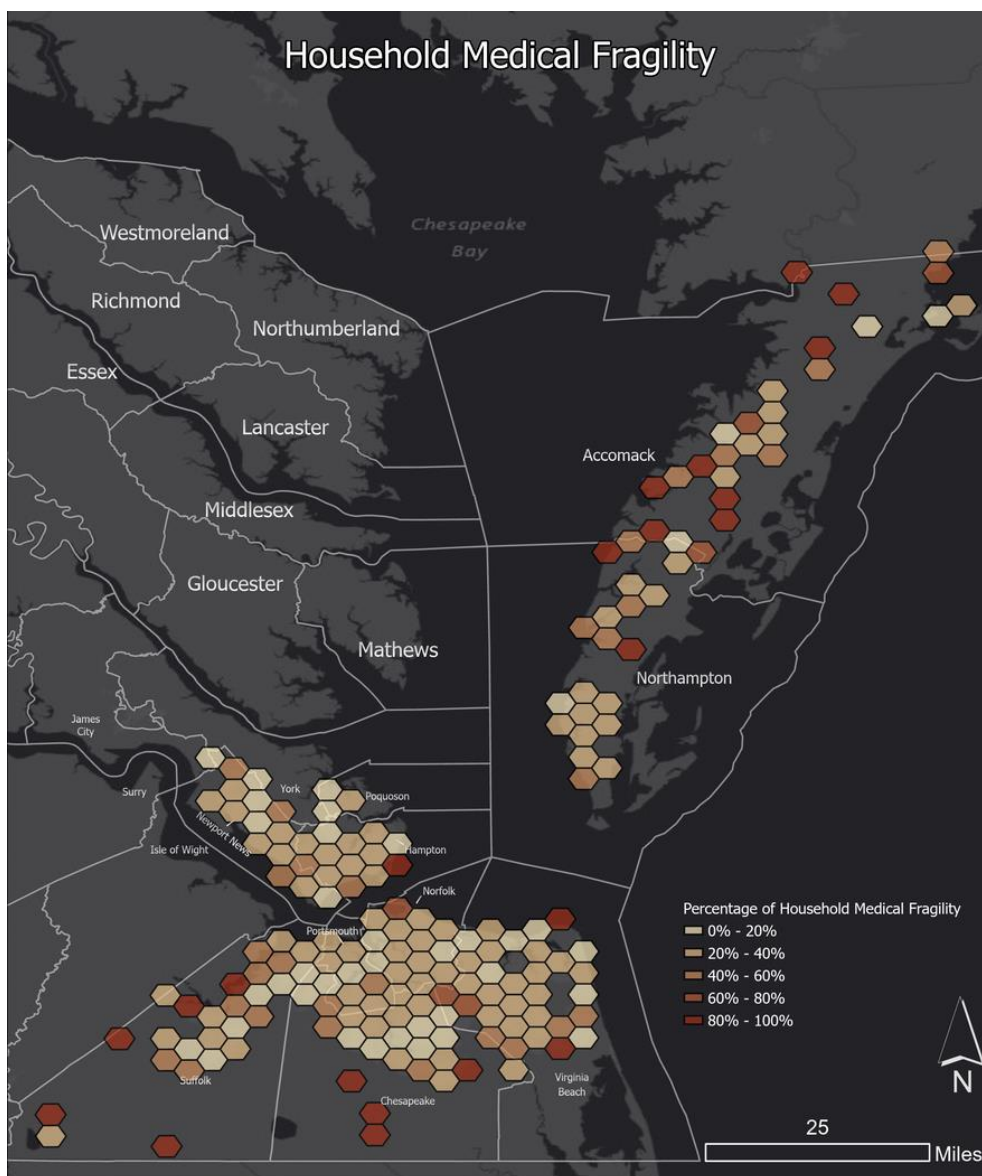
Among households living in Zone B, a larger proportion is multigenerational (11.5 percent) relative to the remaining zones.



## Medically Fragile Household (Map)

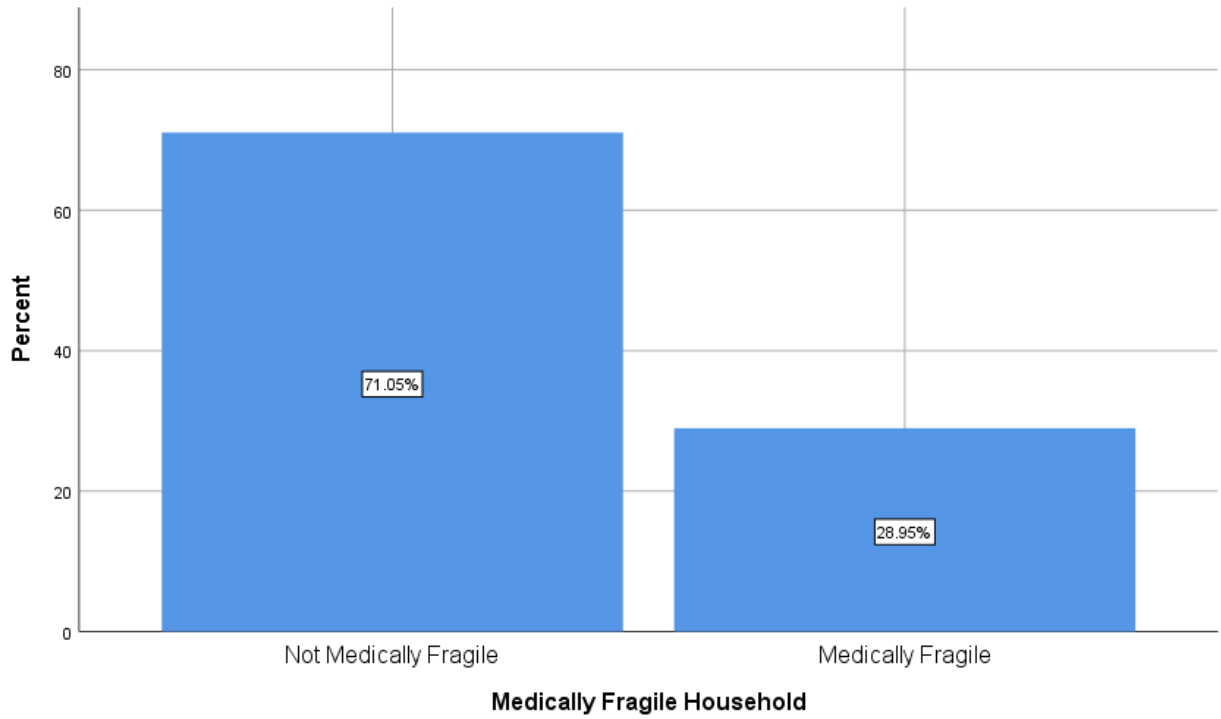
The below hexagonal cluster map illustrates variation in household medical fragility across the study area, specifically the percent of households within hexagonal areas that are identified as medically fragile.

Each polygon contains geolocated study cases. The percent of study case households within a polygon that are 'medically fragile' is associated with a particular color coding; a higher percentage of medically fragile households are associated with darker colors representing the intensity of medical fragility in a spatial sense. As illustrated, several neighborhoods in Accomack, Northampton, Poquoson, Virginia Beach, Chesapeake, and Suffolk have medical fragility.



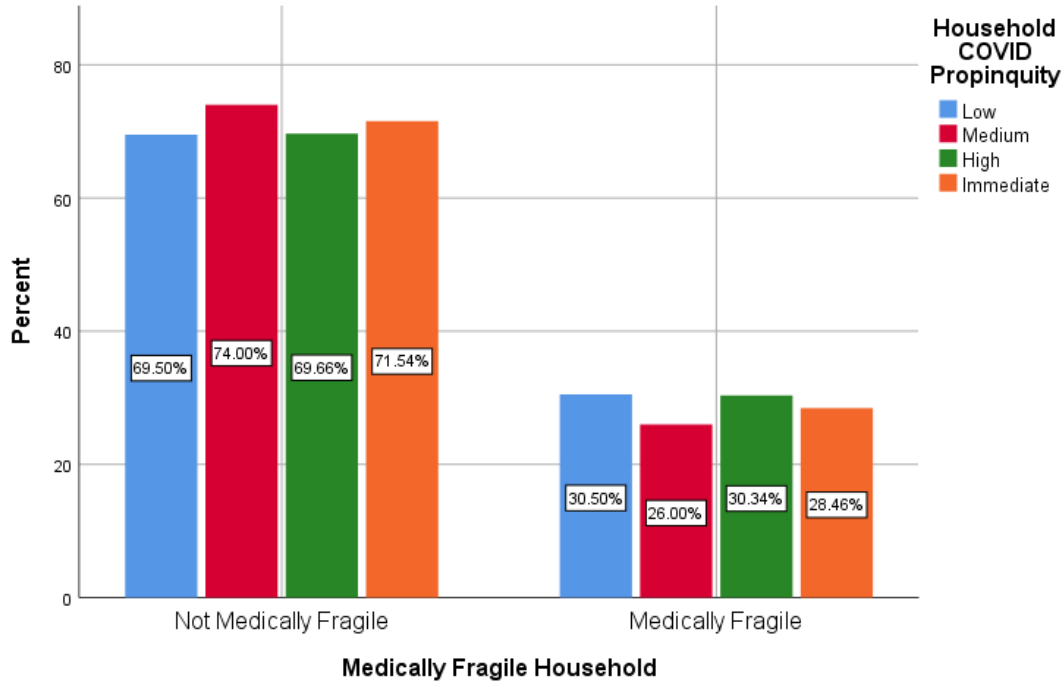
## Medically Fragile Household

This chart illustrates that nearly 29 percent of all Hampton Roads households may be classified as medically fragile.



..by..Household COVID Propinquity

This chart illustrates the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) that are characterized as medically fragile households. The proportions of households that are medically fragile range from 26.0 to 30.5 percent.

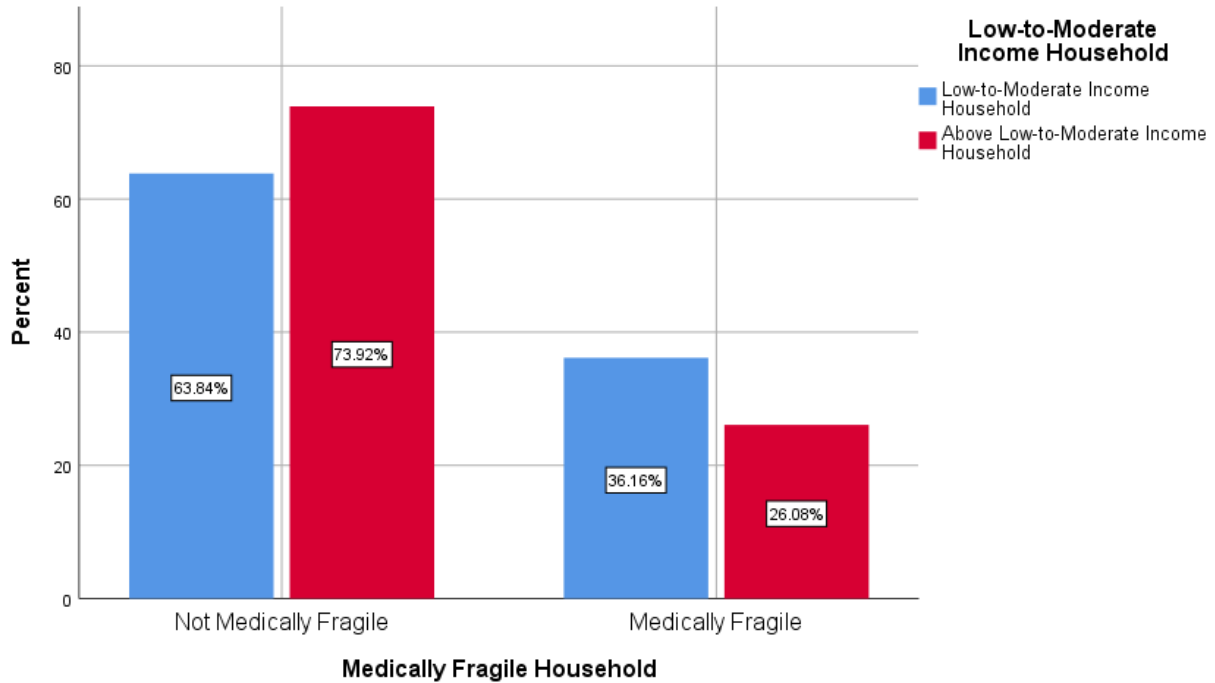




..by..Low-to-Moderate Income Household

The chart below illustrates the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) that are characterized as Medically Fragile Households.

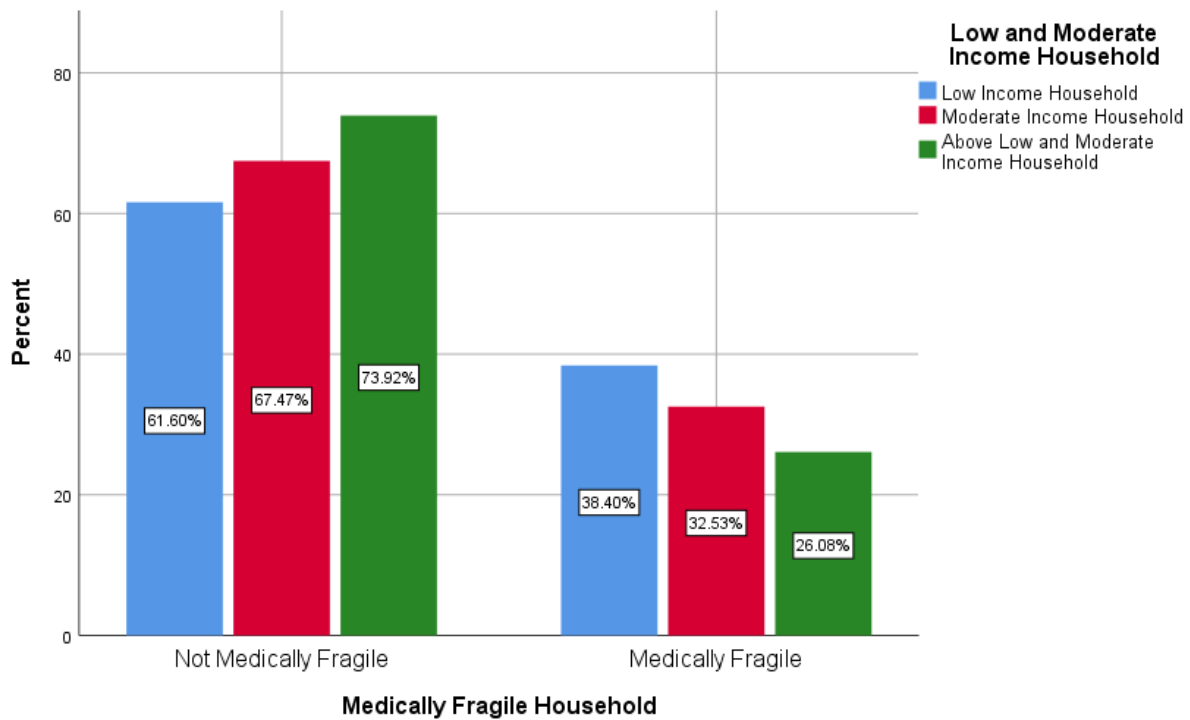
The proportion of LMI households that are medically fragile is greater than the proportion of Above LMI households that are medically fragile (36.1 relative to 26.1 percent).



..by..Low and Moderate Income Household

The chart below illustrates the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) that are characterized as Medically Fragile Households.

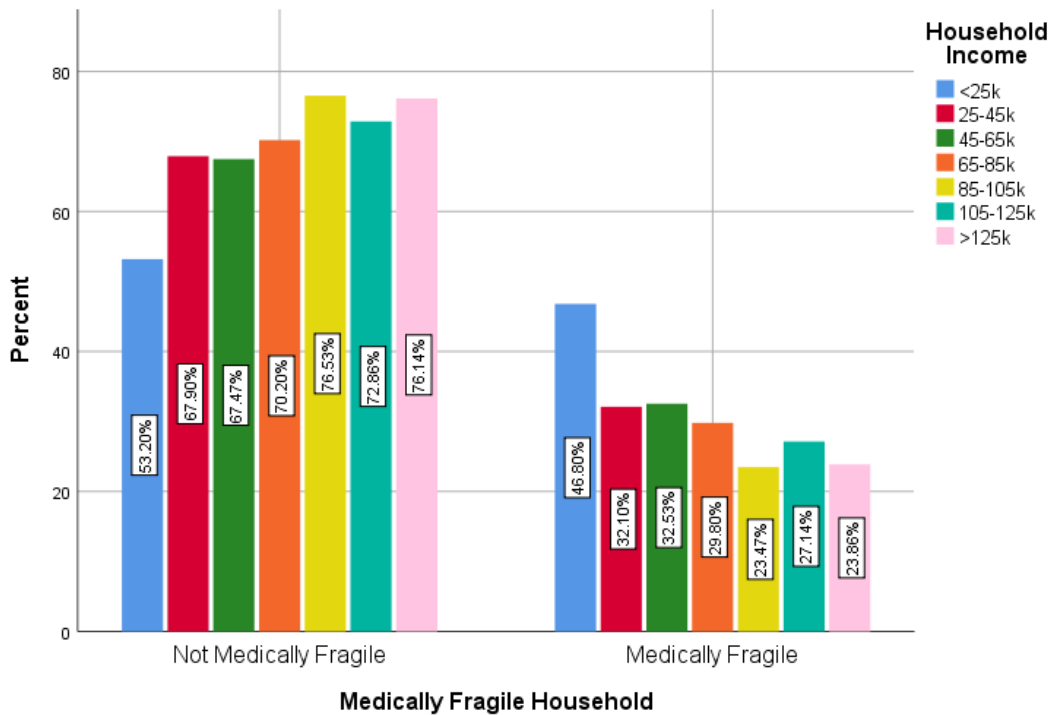
The proportion of Low Income and Moderate Income households that are medically fragile are greater than the proportion of Above Low and Moderate Income households that are medically fragile (38.4 and 32.5 relative to 26.1 percent).



..by..Granulated Household Income

This chart illustrates the proportions within Household Income (disaggregated into seven household income gradients) that are characterized as Medically Fragile Households.

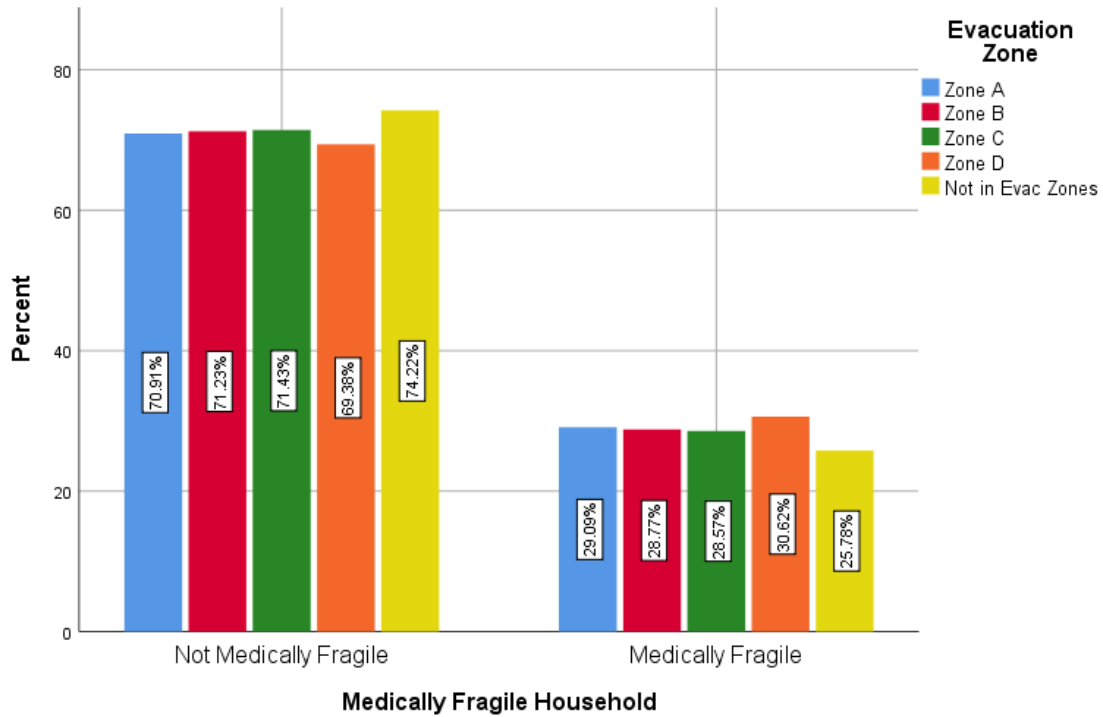
There is a clear association between medical fragility and income. The proportion of several lower income households (e.g., <25k) that are medically fragile is larger than the proportion of other, higher income gradient households.



..by..Evacuation Zone

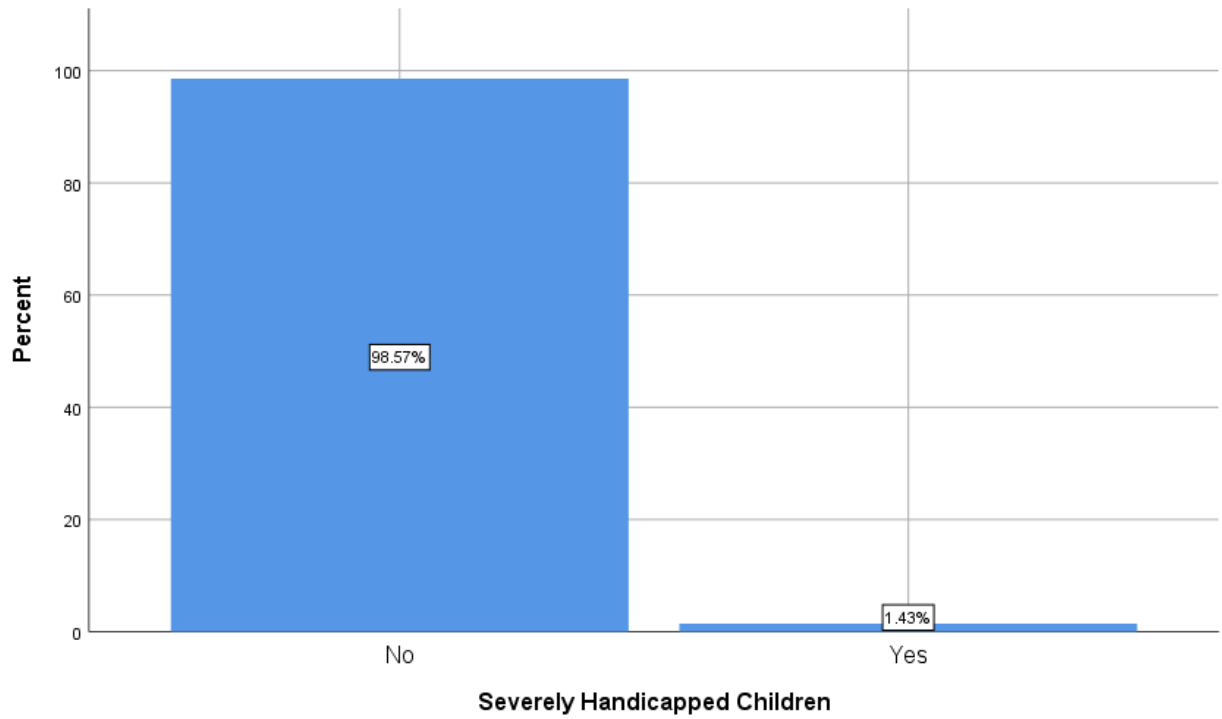
The chart below illustrates the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) that are characterized as Medically Fragile Households.

There is little to no difference across evacuation zones in the likelihood of households having children.



## Severely Handicapped Children

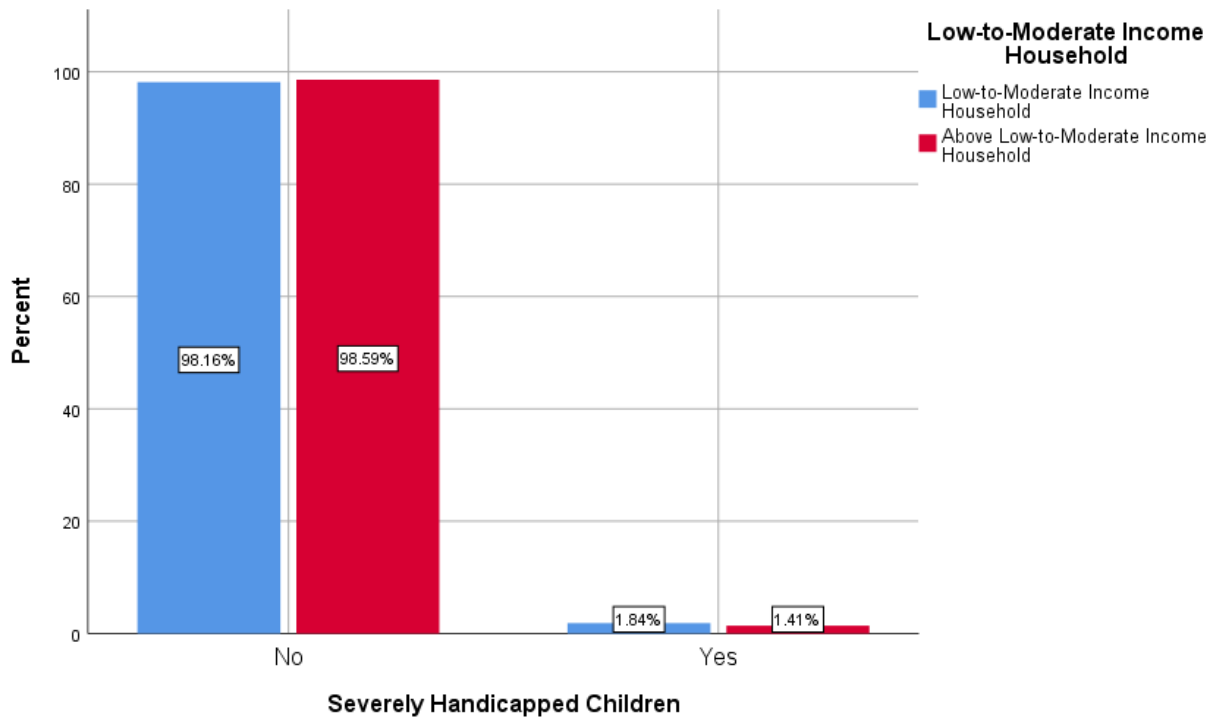
Just over 1 percent of all households report having at least a single severely disabled or handicapped child within the household.



..by..Low-to-Moderate Income Household

The chart below illustrates the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) within the categories for Severely Handicapped Children.

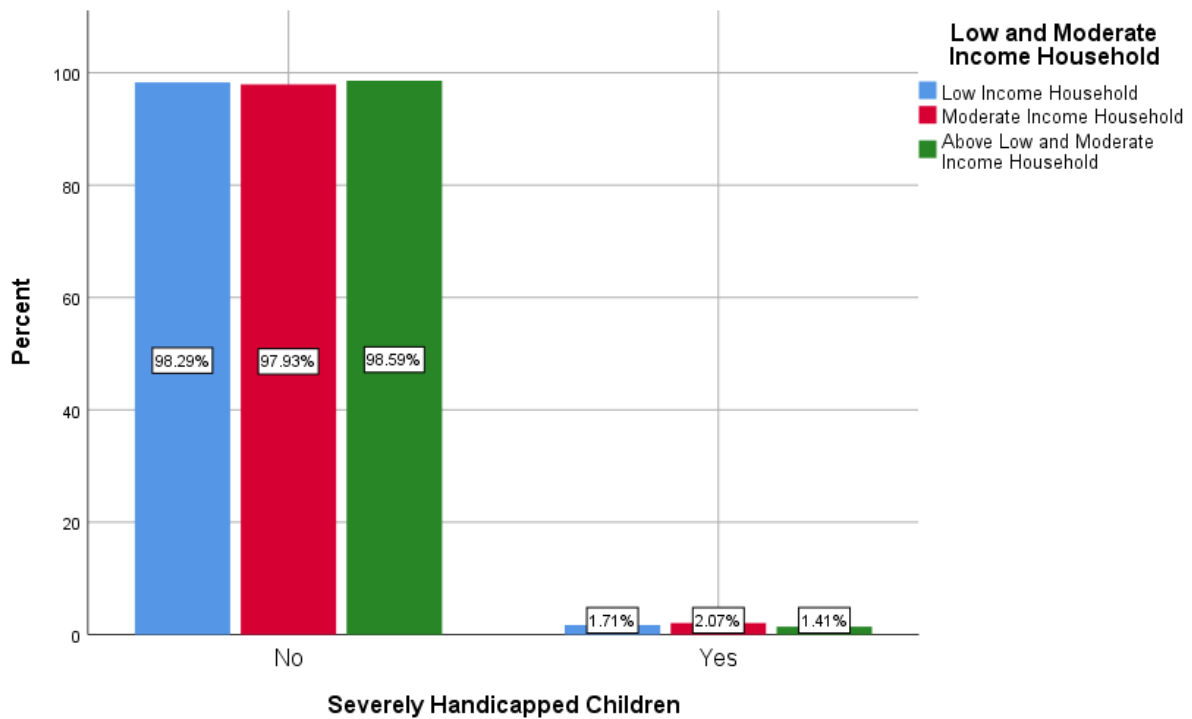
There is little to no difference between income categories in the likelihood of households having severely handicapped children.



..by..Low and Moderate Income Household

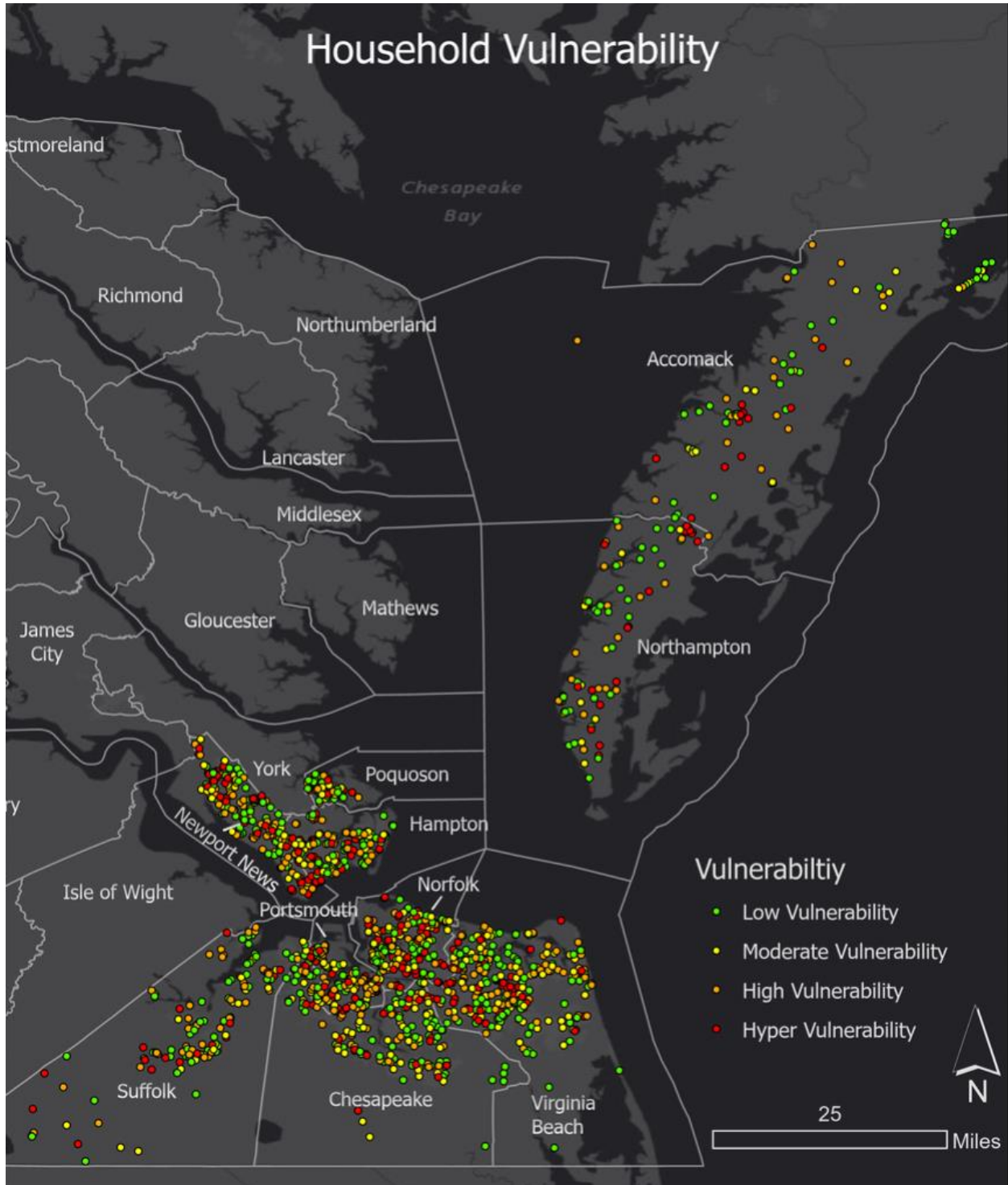
This chart illustrates the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) within the categories for Severely Handicapped Children.

There is little to no difference between income categories in the likelihood of households having severely handicapped children.



## Household Vulnerability (Map)

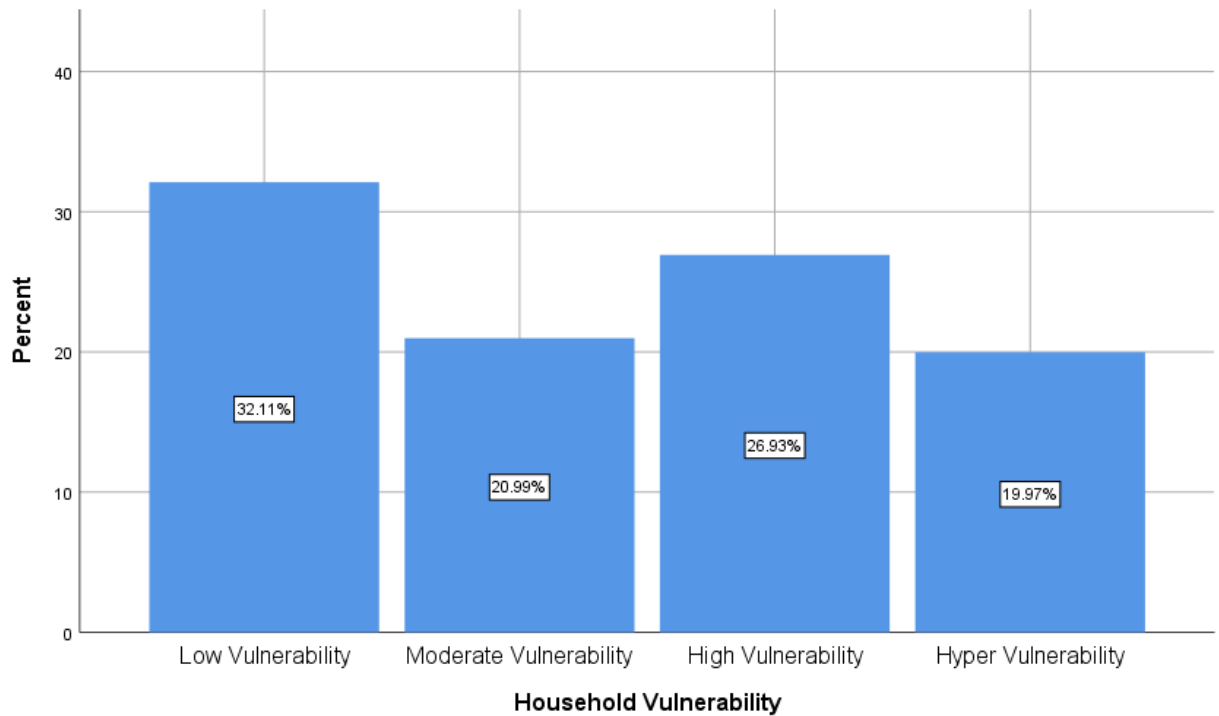
The below map illustrates the variation in household vulnerability across the study area (precise location of geocoded dots are masked to assure anonymity).





## Household Vulnerability

One third of Hampton Road’s households are characterized as low vulnerability. However, two thirds of all households may be characterized as having moderate, high, or hyper vulnerability. One in five households (20.0 percent) are hyper vulnerable.



..by..Household COVID Propinquity

The chart below illustrates the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across the categories within Household Vulnerability.

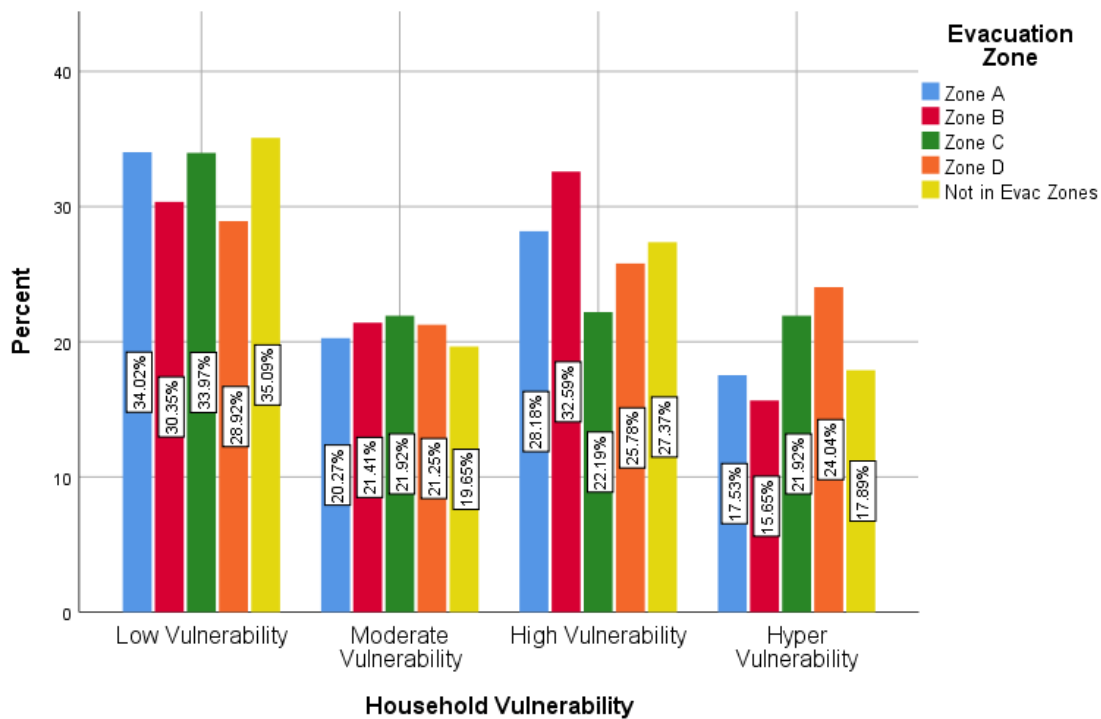
Households with immediate COVID propinquity are least likely to be low vulnerability households, proportionately. Households with immediate COVID propinquity are most likely to be hyper vulnerability households, proportionately.



..by..Evacuation Zone

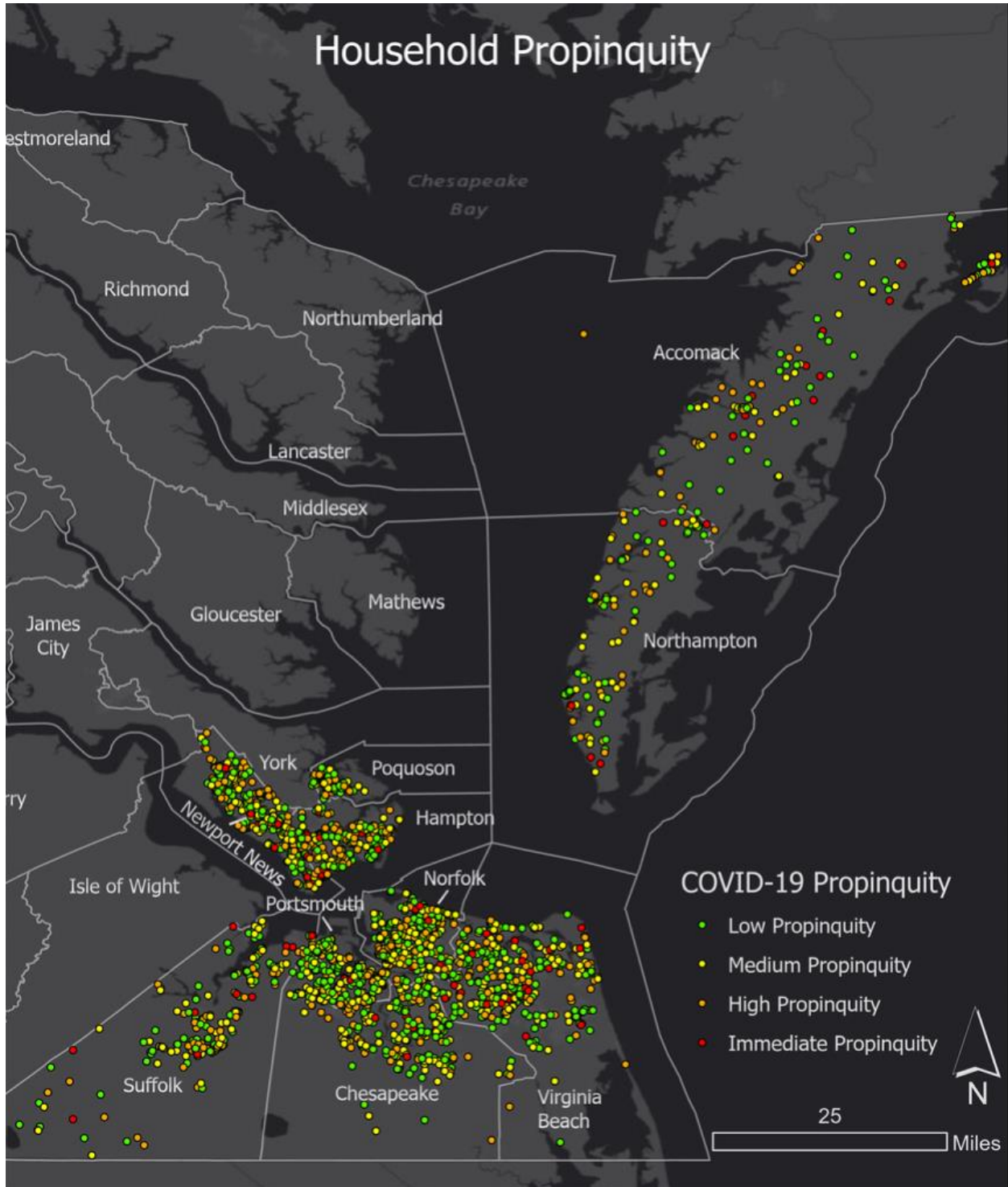
The chart below illustrates the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across the categories within Household Vulnerability.

Nearly 17.6 percent of Evacuation Zone A residents are characterized as hyper vulnerability. This is notable since this report’s measure of vulnerability does not include geographic location. This suggests that nearly 1 in five households currently residing in Evacuation Zone A may be expected to suffer direct impact from wind and flooding and/or will be unable to adequately recover from the storm, thus impacting the wellbeing of all members of the household.



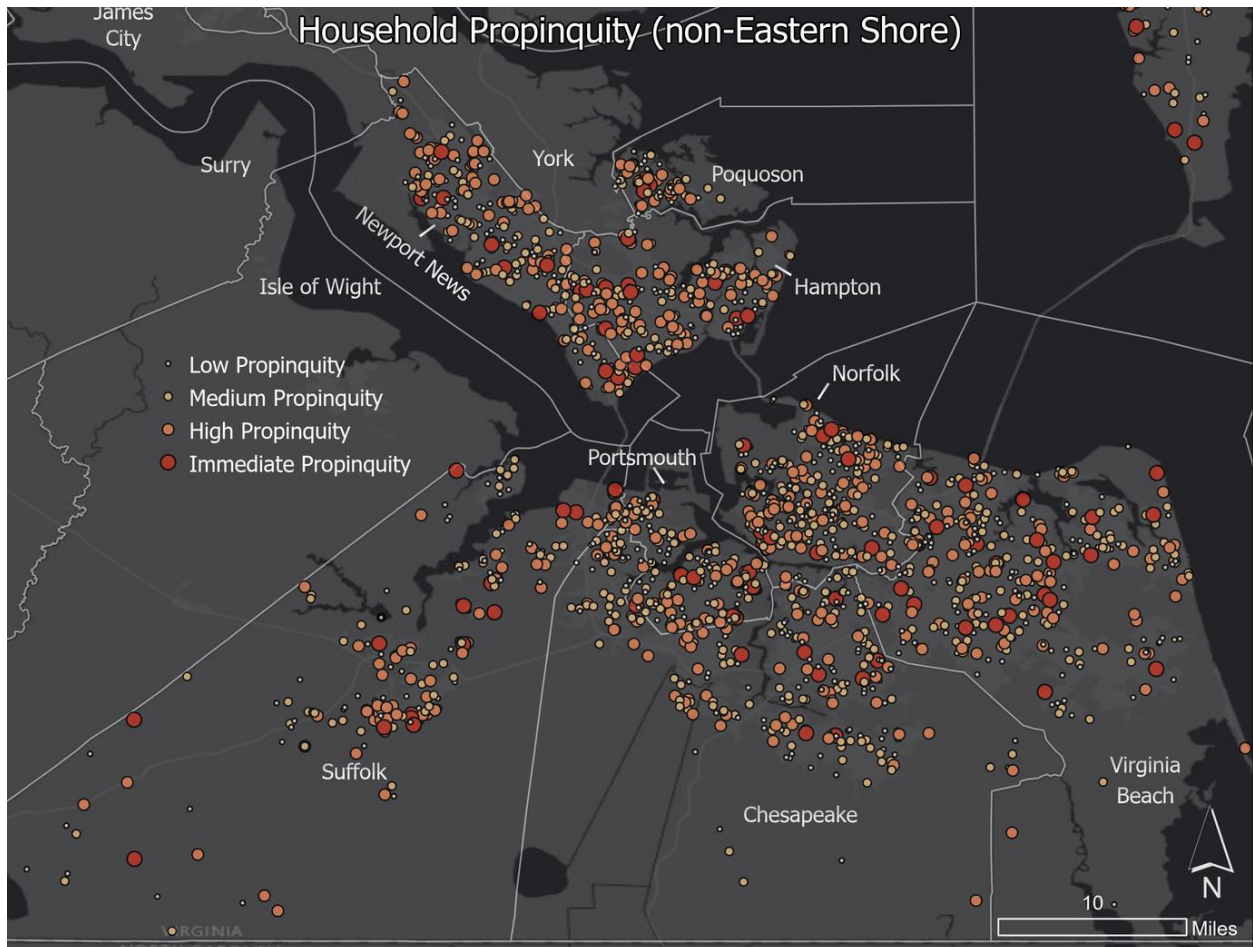
## COVID Propinquity (Map)

The below map illustrates the variation in household COVID propinquity across the study area (precise location of geocoded dots is masked to assure anonymity).



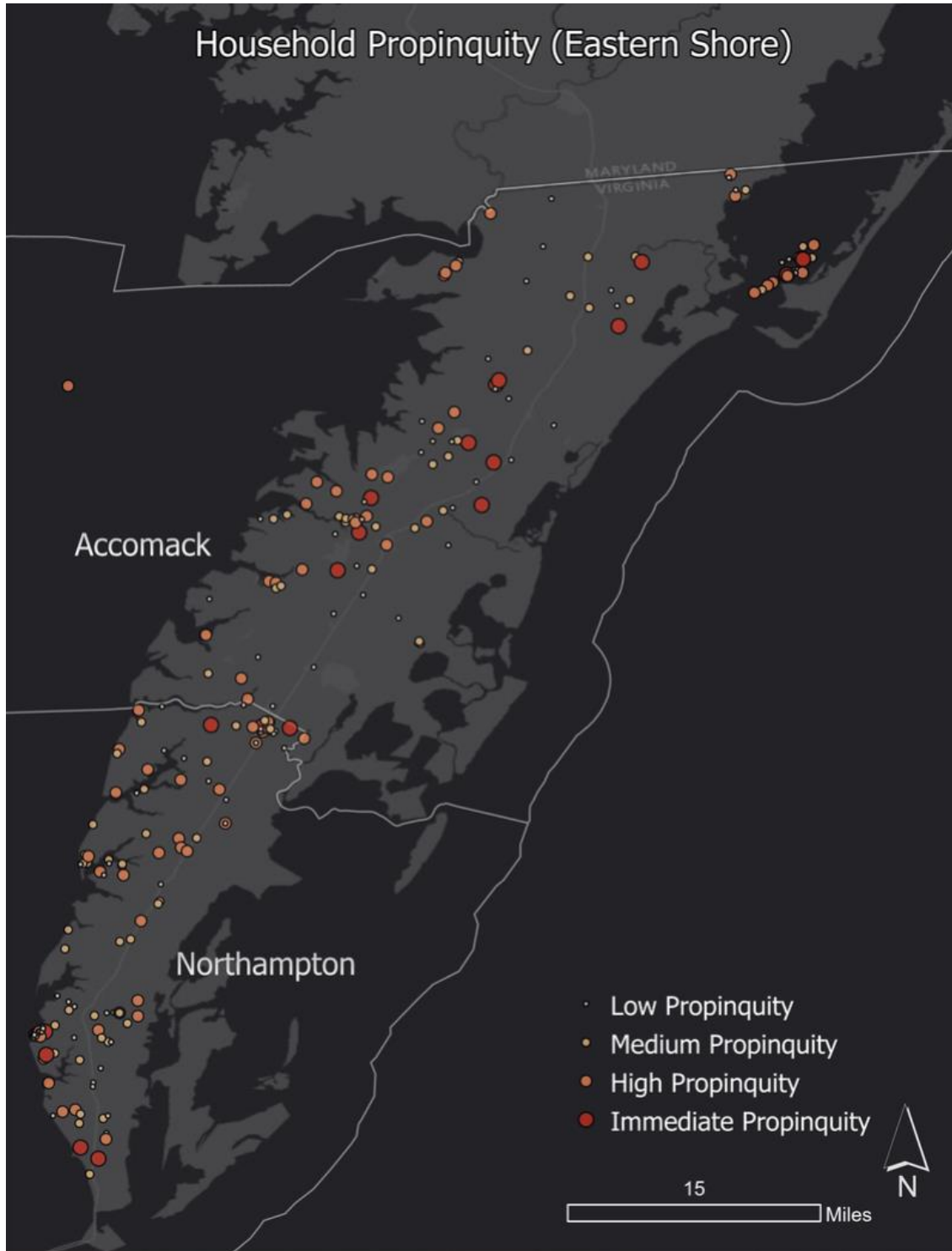
## COVID Propinquity Non Eastern Shore (Map)

The map below illustrates the variation in household COVID propinquity across the Non Eastern Shore portion of the study area (precise location of geocoded dots is masked to assure anonymity).



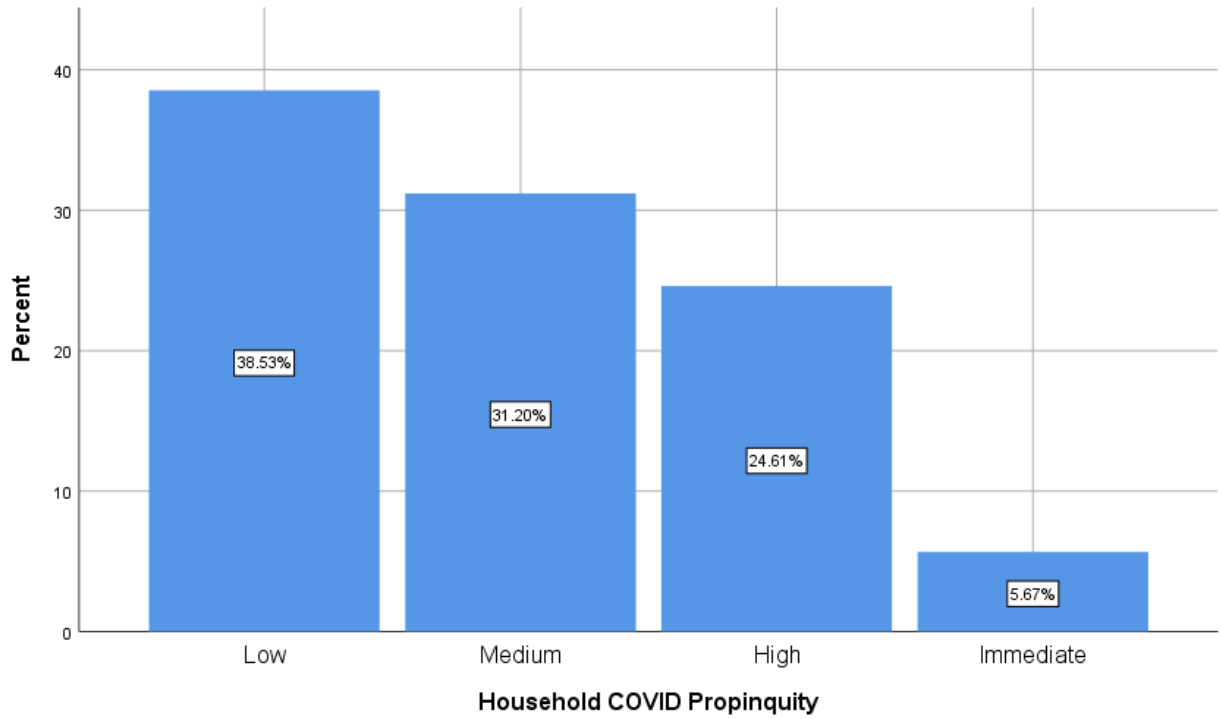
## COVID Propinquity Eastern Shore (Map)

This map illustrates the variation in household COVID propinquity across the Eastern Shore portion of the study area (precise location of geocoded dots is masked to assure anonymity).



## COVID Propinquity

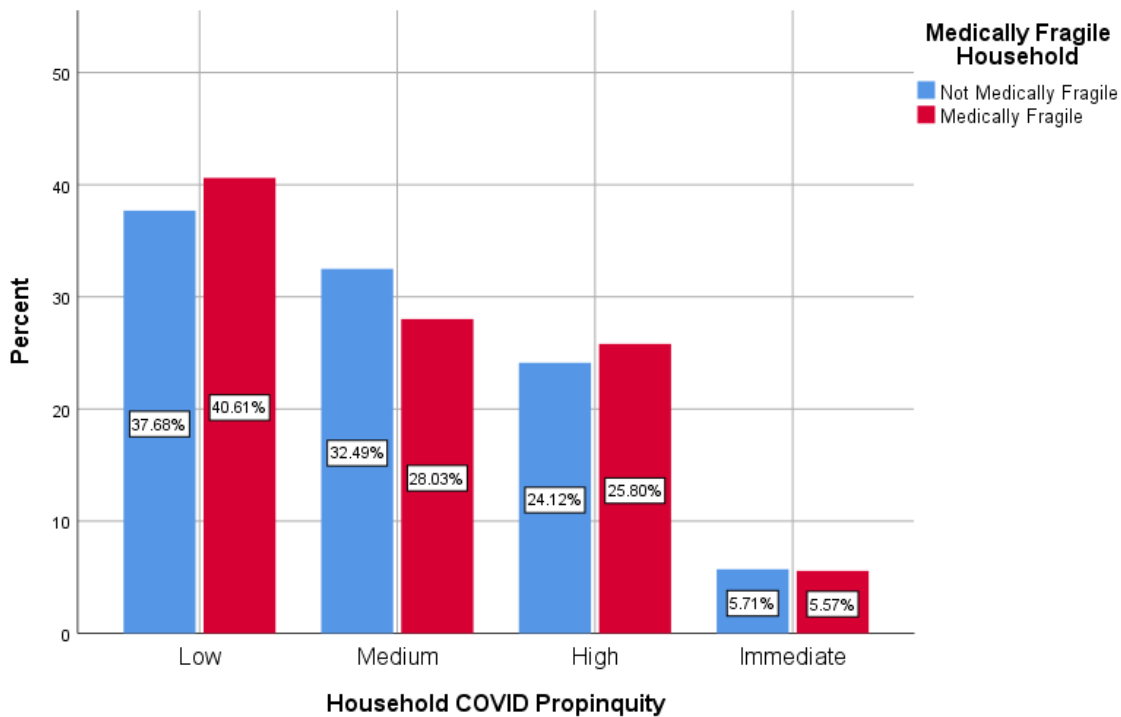
This chart illustrates COVID propinquity. Over 30 percent of all households have high or immediate COVID propinquity.



..by..Medically Fragile Household

The chart below illustrates the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across the categories within Household COVID Propinquity.

There is little difference in the proportions of non-medically fragile households and medically fragile households that have immediate COVID propinquity (about 5.6 percent each). However, the proportion of medically fragile households that have low COVID propinquity is less than non-medically fragile households (37.6 and 40.6 percent, respectively).

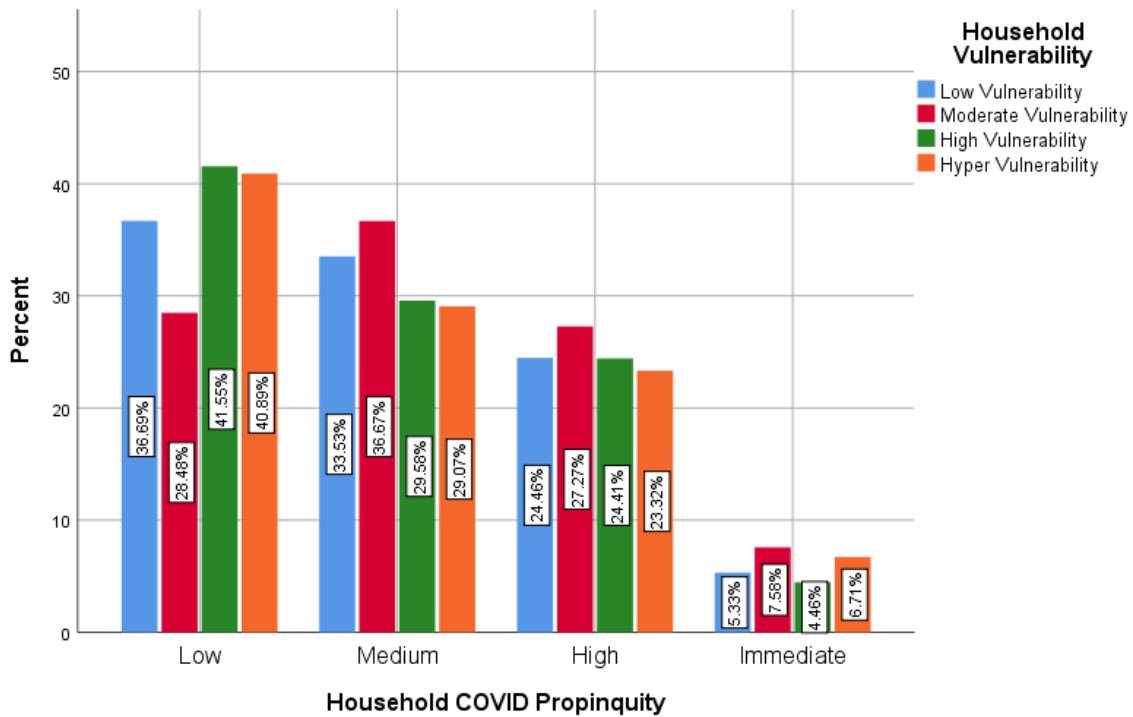




..by..Household Vulnerability

This chart illustrates the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across the categories within Household COVID Propinquity.

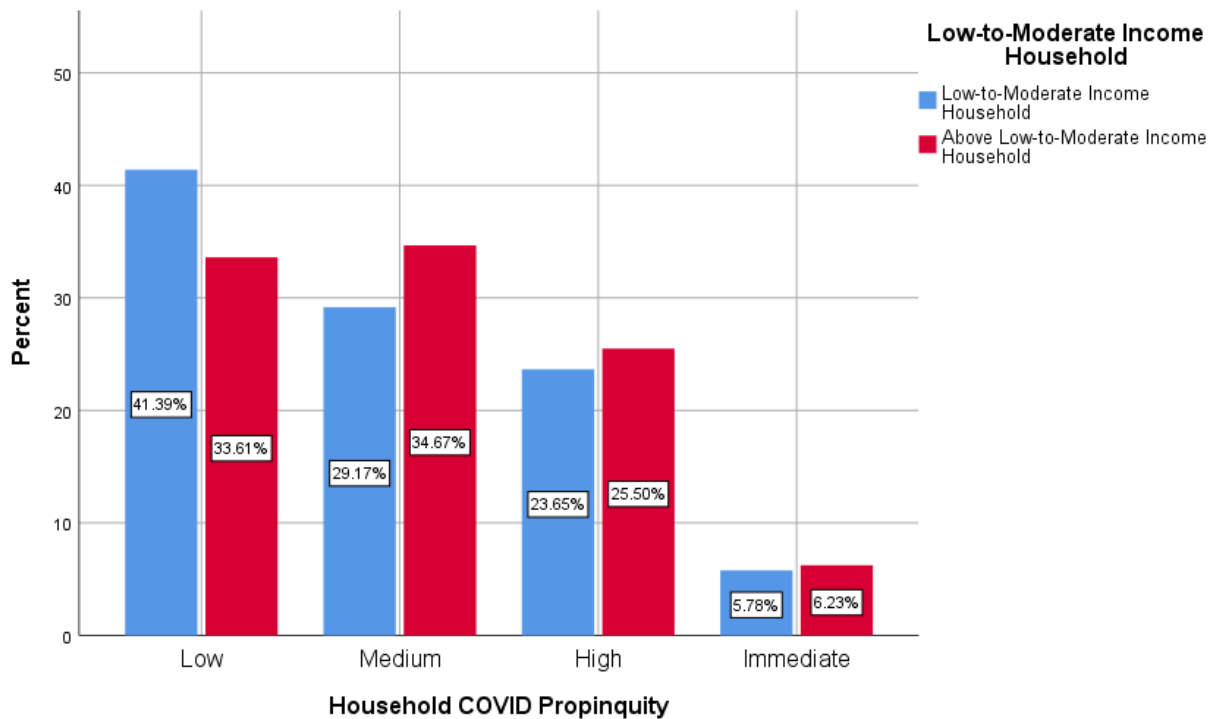
Both high and hyper vulnerability households have the highest proportion of households that are low COVID propinquity (41.5 and 40.9 percent, respectively).



..by..Low-to-Moderate Income Household

The chart below illustrates the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across the categories within Household COVID Propinquity.

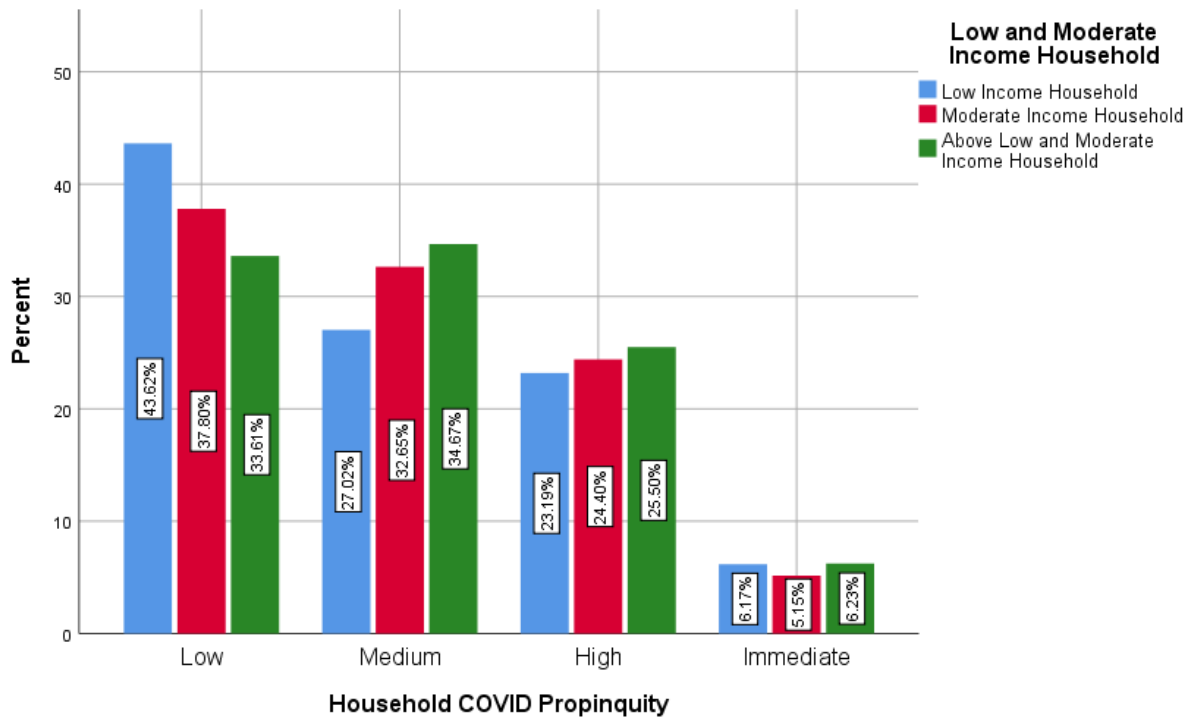
There is slight difference in the proportions of LMI and Above LMI households that have immediate COVID propinquity (about 5.8 and 6.2 percent, respectively). However, the proportion of Above LMI households that have low COVID propinquity is less than LMI households (33.6 and 41.4 percent, respectively).



..by..Low and Moderate Income Household

The chart below illustrates the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across the categories within Household COVID Propinquity.

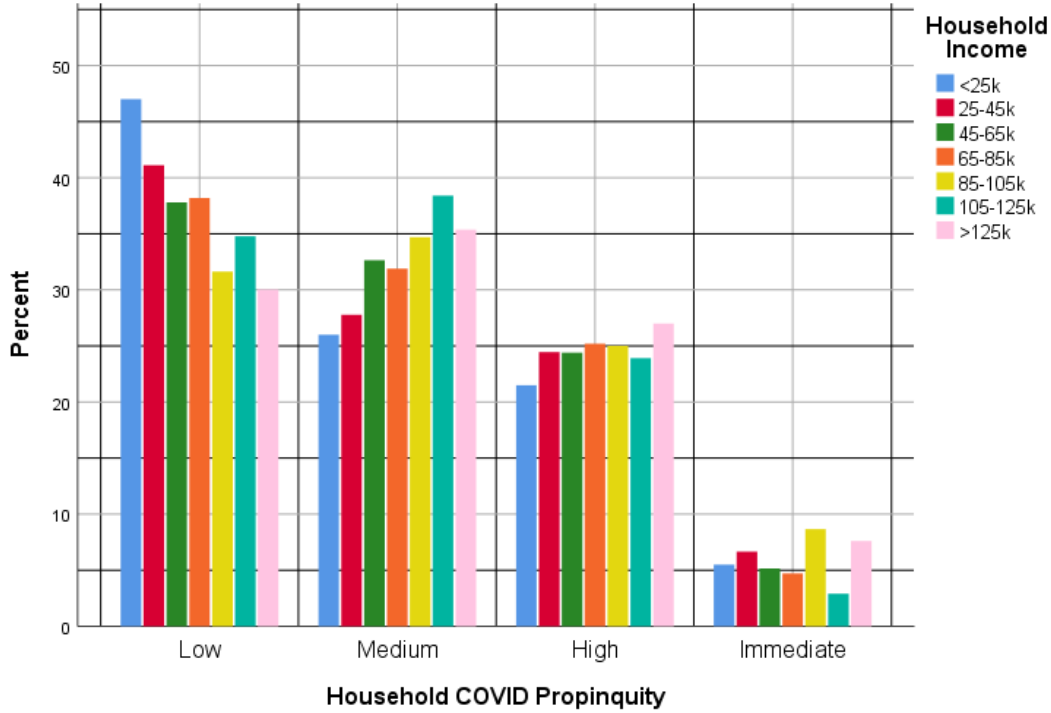
The proportion of Low Income households that have low COVID propinquity is greater than Moderate Income households and Above Income Households (43.6, 37.8, and 33.6 percent, respectively).



..by..Granulated Household Income

The chart below illustrates the proportions within Household Income (disaggregated into seven household income gradients) across the categories within Household COVID Propinquity.

The proportion of lower income households (e.g., <25k) that have low COVID propinquity is greater than any other income increment.

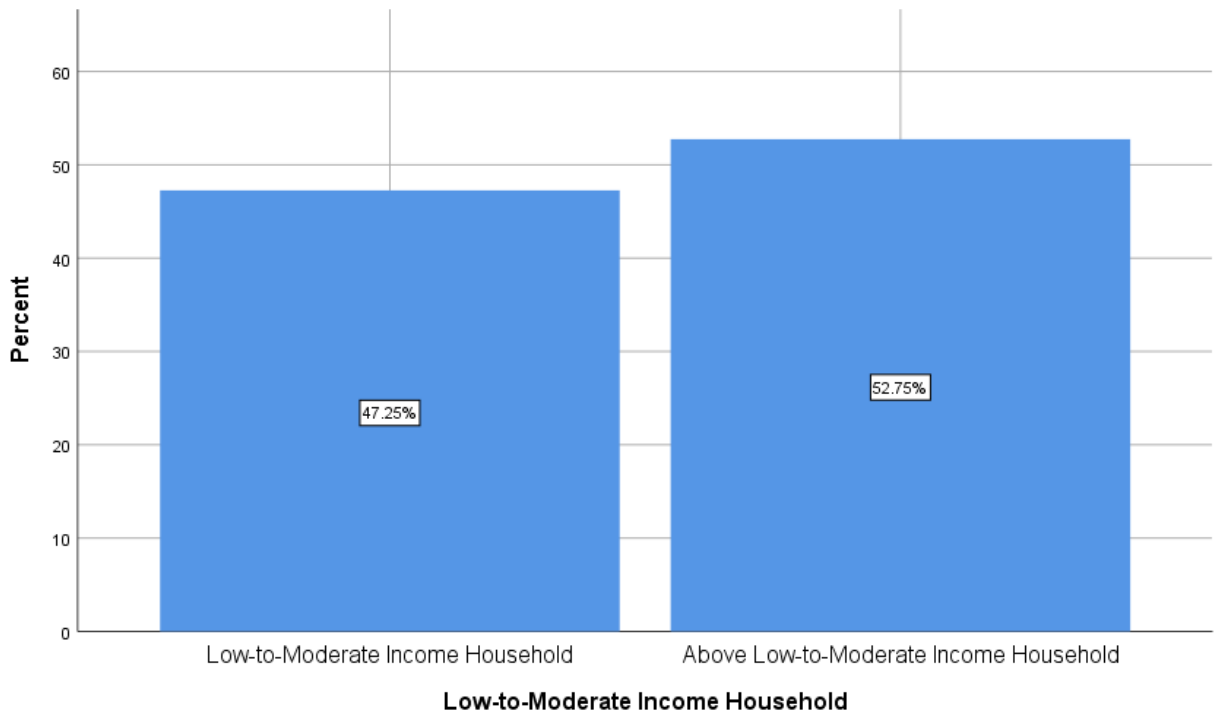


## Household Income Variables (Four Types)

This study contains four household income variables, depending on the number and measurement of attributes (income ranges). The following four bar charts illustrates these four income variables.

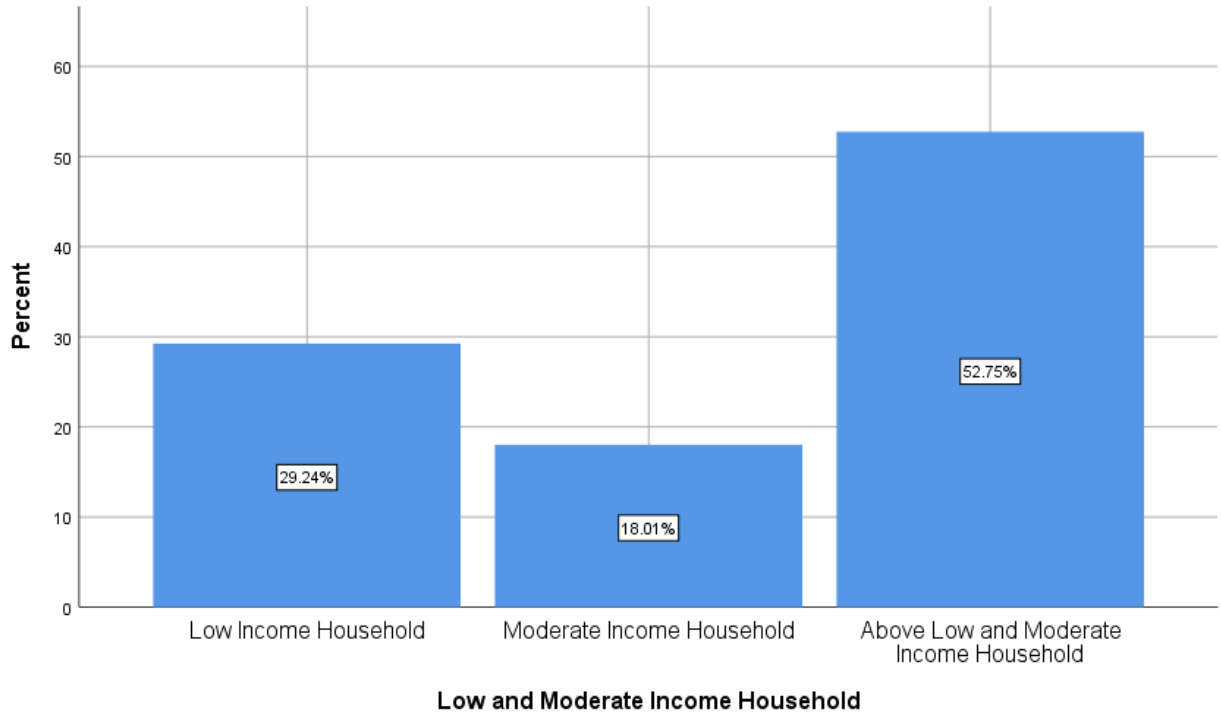
### Low-to-Moderate Income (LMI)

Just above 47 percent of households are classified as Low-to-Moderate Income households.



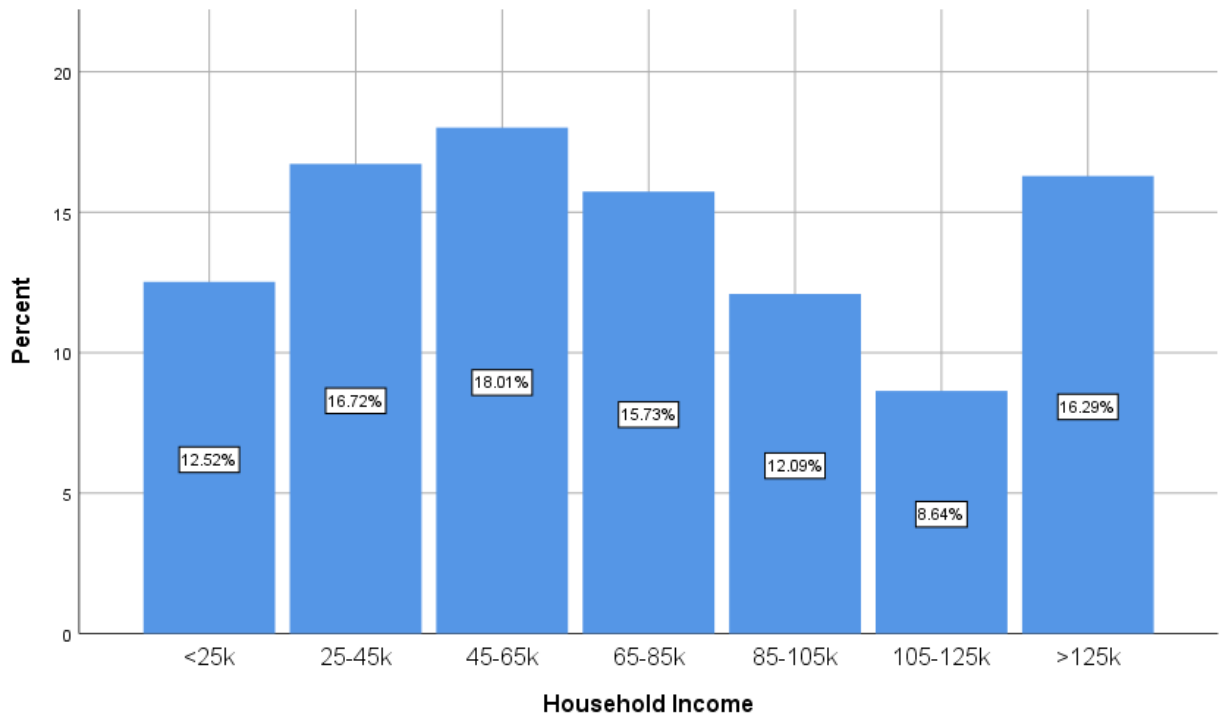
## Low and Moderate Income

Just above 29 percent of households are classified as low income and 18 percent are classified as moderate income.



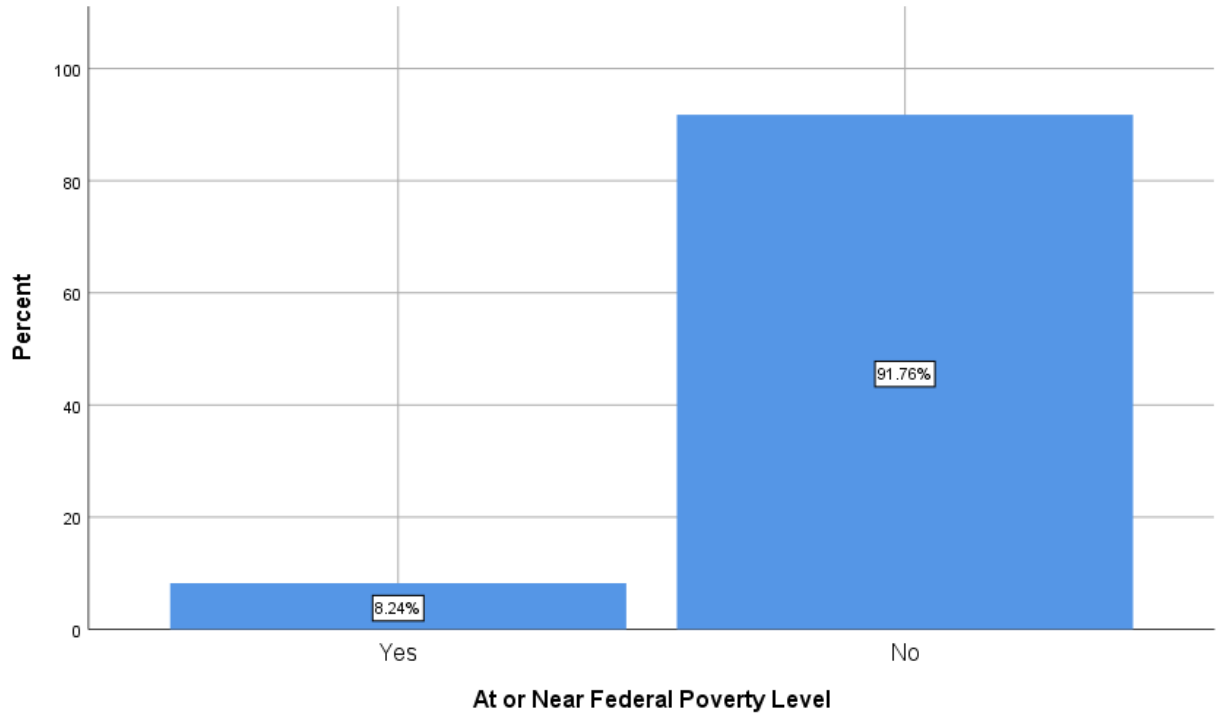
## Granulated Household Income

The distribution of Hampton Roads household incomes is illustrated below. Approximately 12.5 percent of households have an annual household income of less than 25 thousand dollars, while 16.3 percent have incomes above 125 thousand dollars.



## At or Near Federal Poverty Level

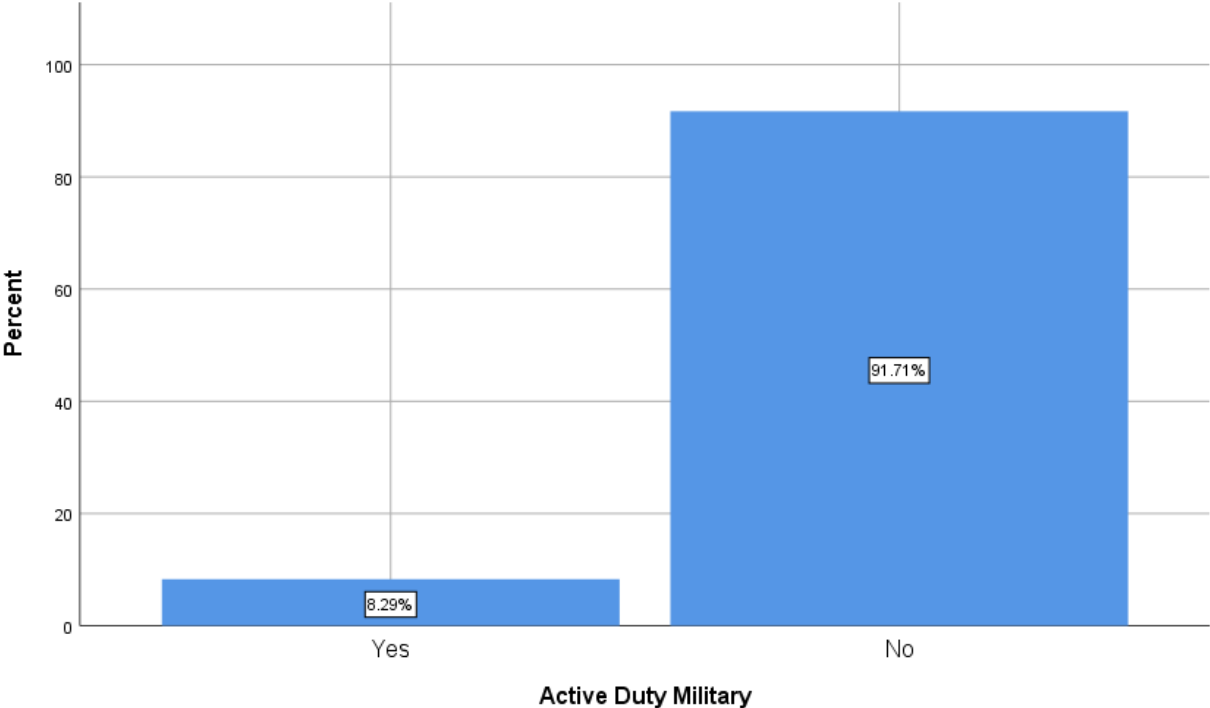
About 8.2 percent of households are at or near the federal poverty level.





Active Duty Military

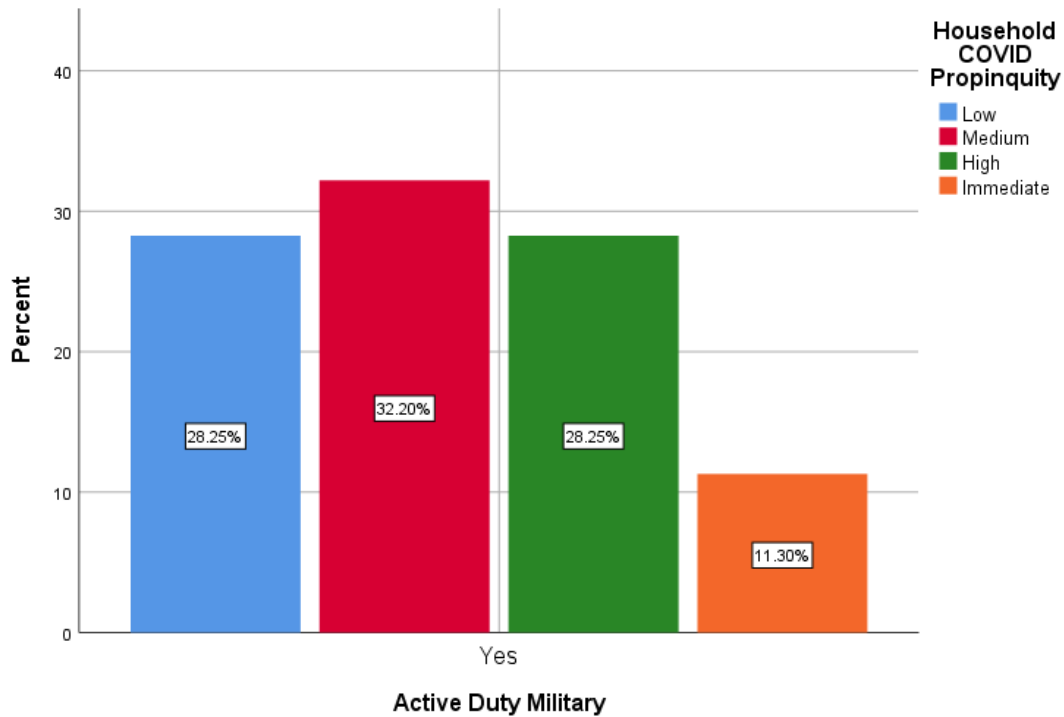
About 8.3 percent of households are active duty military households.



..by..Household COVID Propinquity

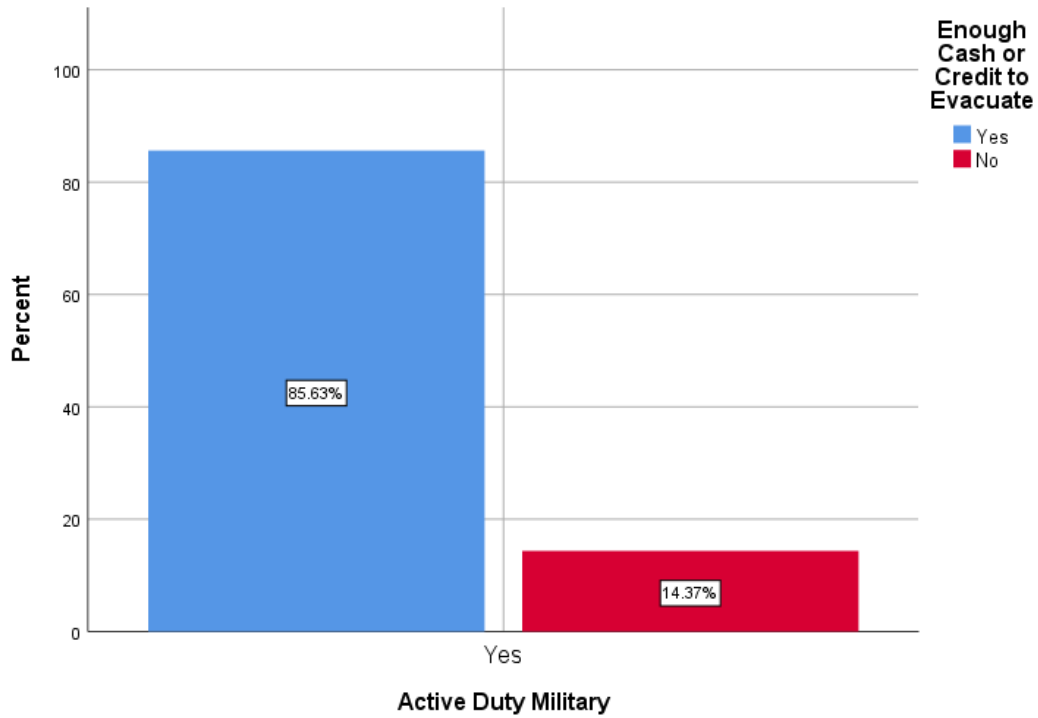
The chart below illustrates the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) that are characterized as Active Duty Military households.

Over 11 percent of active duty military households have immediate household COVID propinquity, while 28.3 and 32.2 percent have high and medium propinquities, respectively.



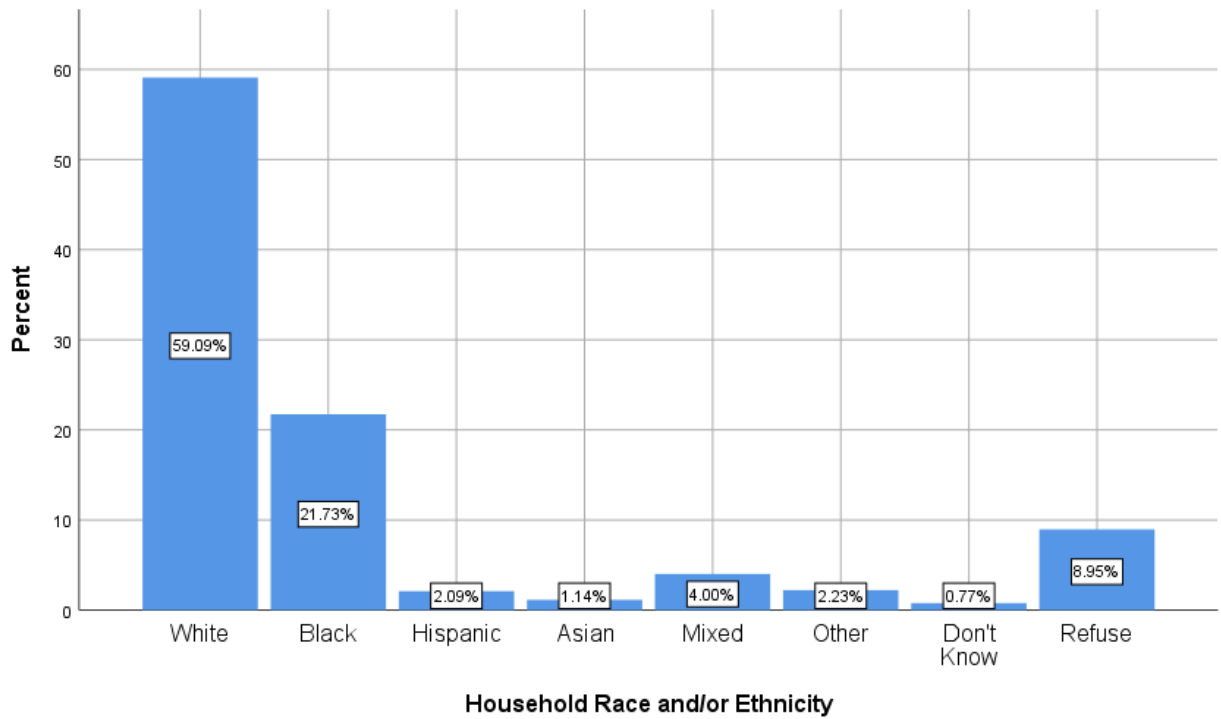
..by..Enough Cash or Credit to Evacuate

As shown, only about 14 percent of active duty military report not having enough cash or credit to support everyone in their household outside of the region for five days. This suggests that a larger percentage of households with active-duty military members have the resources to evacuate outside of the region.



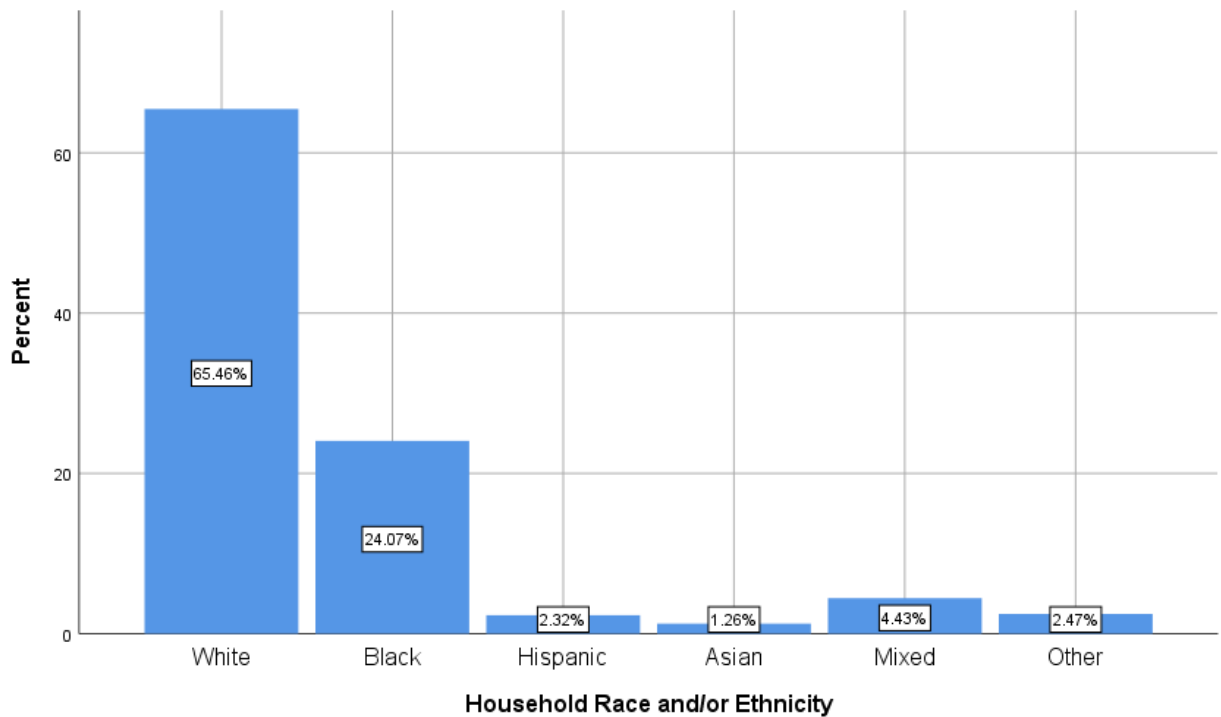
## Household Race and/or Ethnicity (with Refuse)

As shown, more than 59 percent of respondents self-report the race of the household as either White, Anglo, European, or Caucasian. The race of the respondents were as follows: white (59 percent), black (22 percent), mixed (4 percent), Hispanic (2 percent), Asian (1 percent) and about 3 percent of households indicated that they are some other race or don't know their race. These numbers reflect the percentage including those households that either refused (about 9 percent) or reported not knowing (about 1 percent).



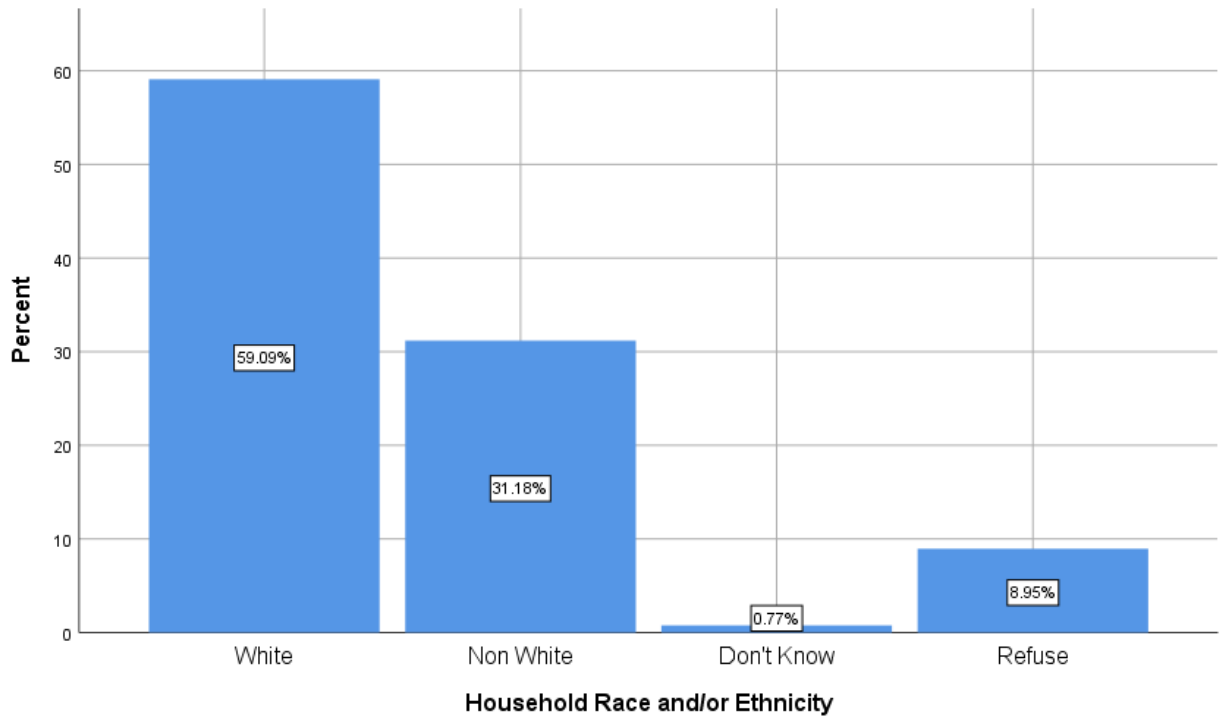
## Household Race and/or Ethnicity (without Refuse)

These numbers, in contrast to the previous bar chart, reflect the percentage excluding those households that either refused or reported not knowing. As shown, more than 65 percent of respondent households self-report the race of the household as either White, Anglo, European, or Caucasian. The race of the respondents were as follows: white (65.5 percent), black (24.1 percent), mixed (4.4 percent), Hispanic (2.3 percent), Asian (1.2 percent) and about 2.5 percent of households indicated that they are some other race or don't know their race.



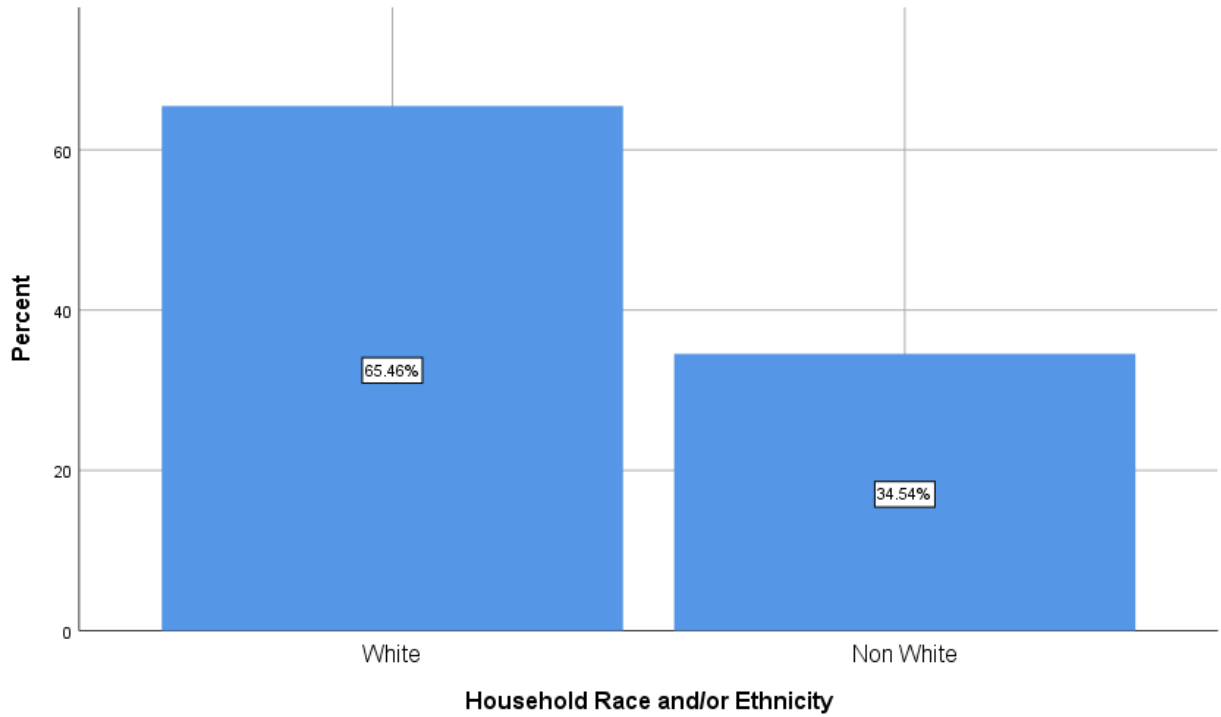
### Household Race and/or Ethnicity (Collapsed with Refuse)

This bar chart illustrates the collapsing of racial and ethnic categories into two broad attributes, White and Non-white. These numbers reflect the percentage including those households that either refused (about 9 percent) or reported not knowing (about 1 percent).



### Household Race and/or Ethnicity (Collapsed without Refuse)

This bar chart illustrates the collapsing of racial and ethnic categories into two broad attributes, White and Non-white. These numbers reflect the percentage excluding those households that either refused or reported not knowing.



## Part 4: Adult Disability & ADL Households

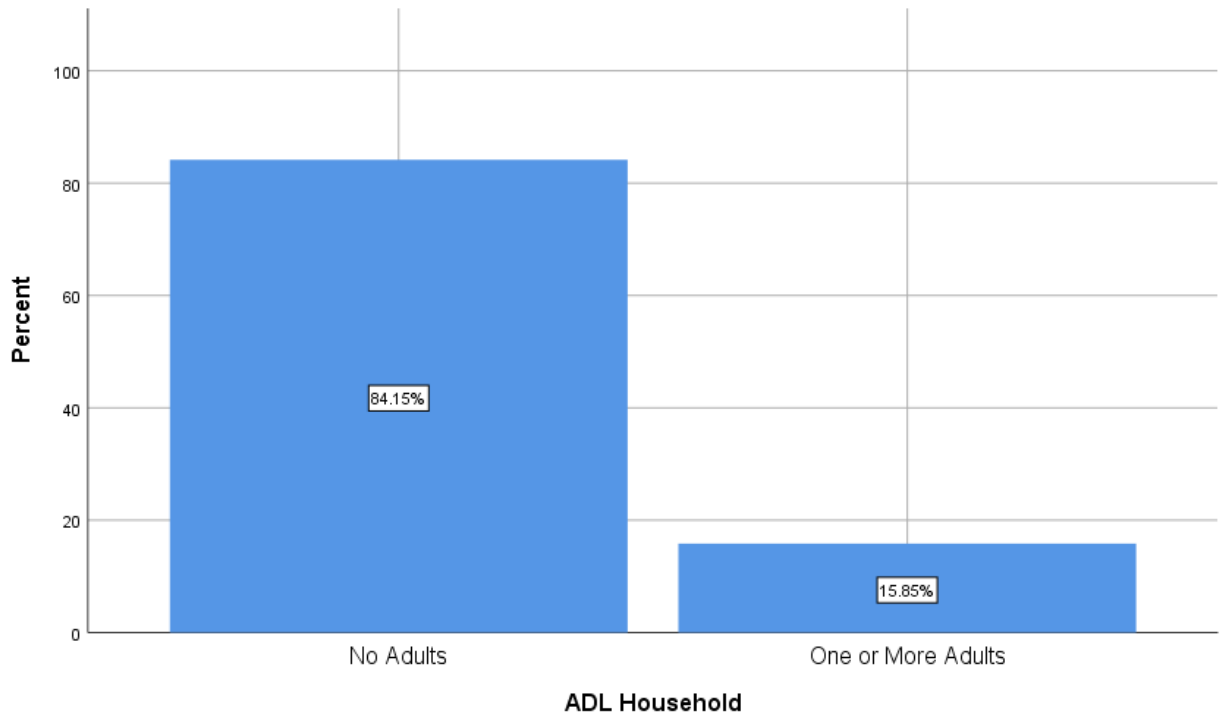
This study has a particular focus on medically fragile populations. It is the understanding of the report's authors that risk perceptions may be markedly different for medically fragile populations. This is true independently for both risk perceptions related to COVID-19 exposure and risk perception related to impending severe storm events. Importantly, for medically fragile populations, these perceived risks may be compounded under the joint occurrence of a hurricane during a COVID-type public health crisis. These risk perceptions are key factors that drive evacuation and sheltering behavior, although these relationships are conditioned by resources.

Within this Part 4, reported are the prevalence of adult disabilities within Hampton Roads households. Adults within the household needing assistance with Activities of Daily Living (ADL) are an indicator of the ability of the household to prepare, manage, and recover from a severe storm event. The presence of an adult household member needing assistance with ADL within households change across household characteristics. In addition, the presence of members with ADL limitations within households is associated with changes in COVID exposure concerns and likelihood of seeking public shelter. Part 4 also reports the prevalence of hearing, sight, and cognitive disability and examines these across income groups.



## Activities of Daily Living (ADL)

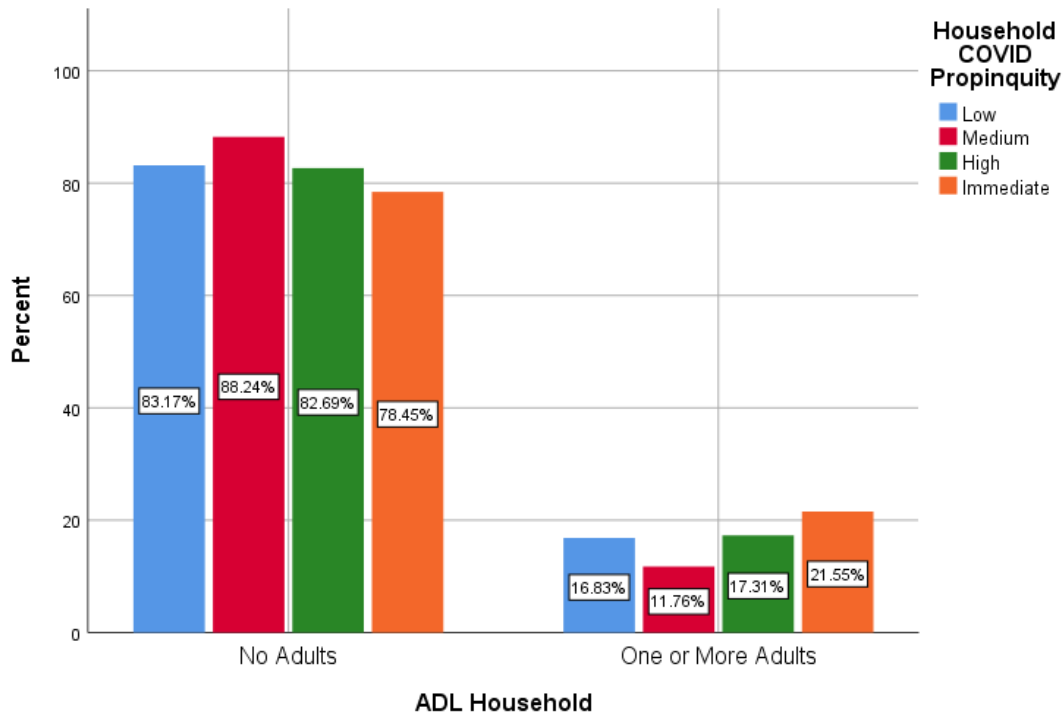
The survey provides insights into the medical fragility and vulnerability of households in Hampton Roads. About 16 percent of all households report having at least one adult member that is dependent upon another to help with normal activities of daily living (ADL) such as bathing, getting dressed, feeding, or following medication schedules.



..by..Household COVID Propinquity

The chart below shows the proportions of households with different COVID propinquity (low, medium, high, and immediate COVID propinquity households) that are characterized as ADL households.

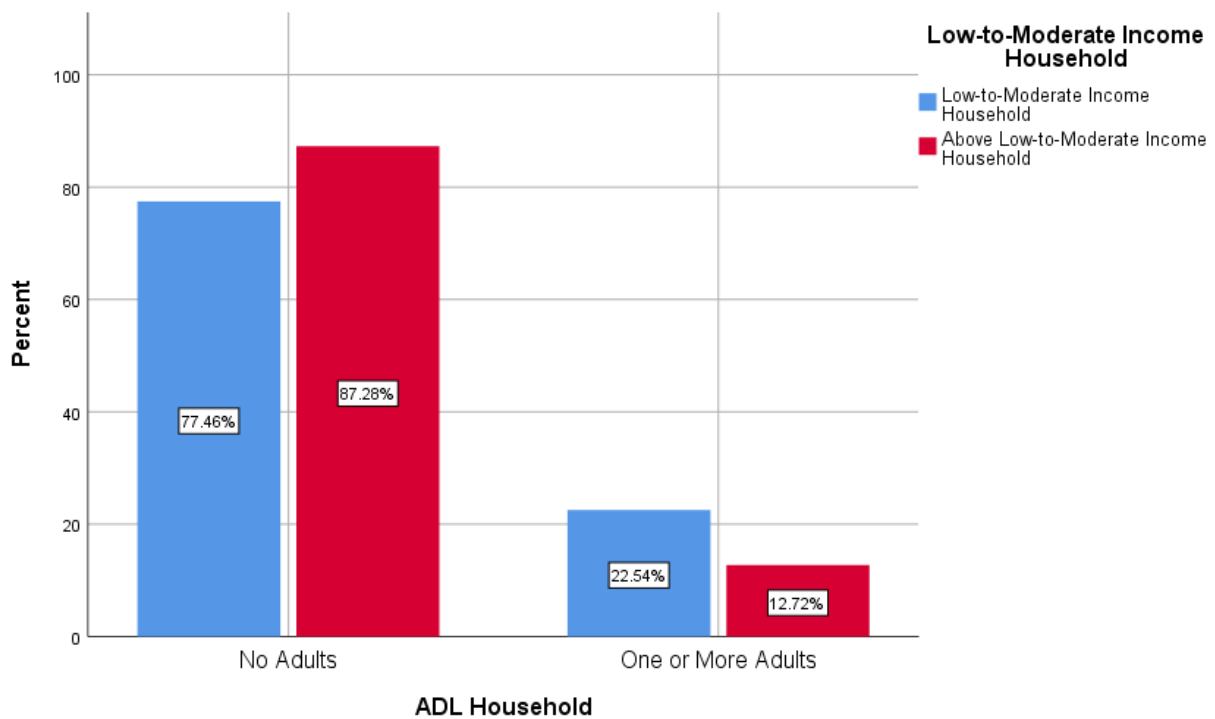
About 17 percent of households with low household COVID propinquity have one or more adults needing ADL support and under 12 percent of households with medium household COVID propinquity have one or more adults needing support. More than 17 percent of high COVID propinquity households have one or more adults with ADL limitations, and almost 22 percent of households with immediate household COVID propinquity have one or more adults needing support with ADL.



..by..Low-to-Moderate Income Household

The chart below illustrates the proportions within Low-to-Moderate Income (LMI) Households (disaggregated into LMI and above LMI households) that are characterized as ADL households.

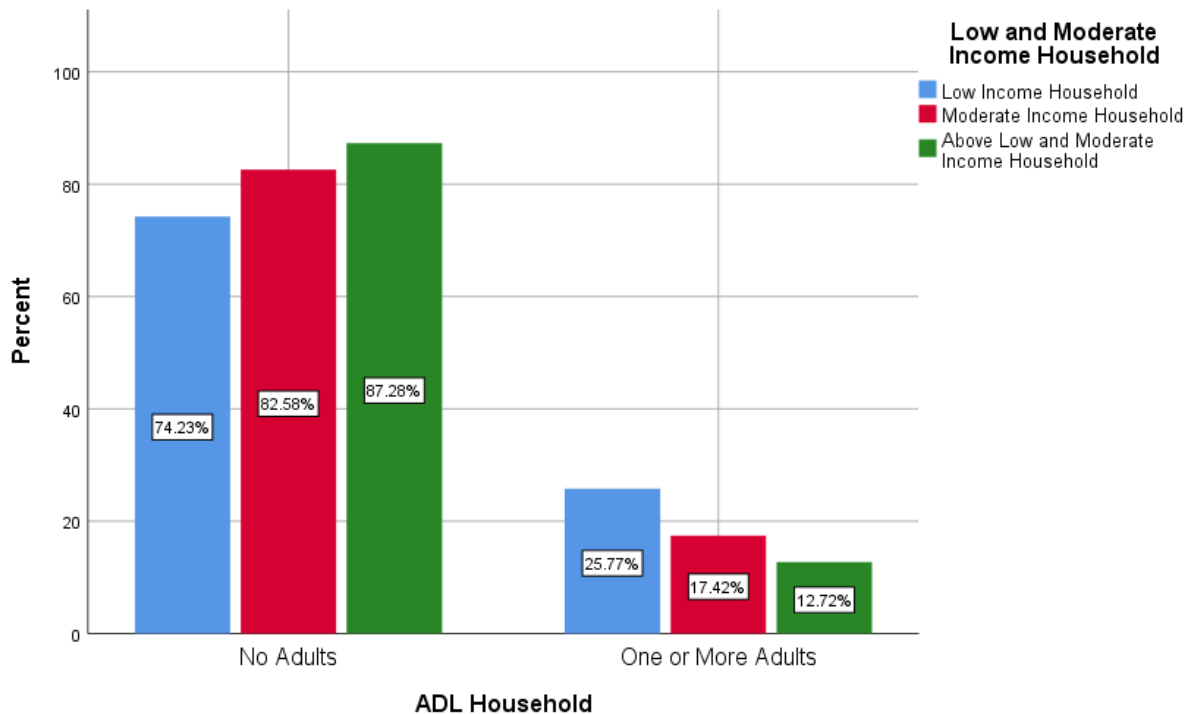
As shown, about 23 percent of low to moderate income households report having one or more adults needing assistance with ADL like bathing, eating and getting dressed. About 13 percent of above low to moderate income households report having one or more adults needing ALD assistance. About 26 percent of low income households report having one or more adults with ADL limitations. About 17 percent of moderate income households and about 13 percent of above moderate income households report having one or more adults needing assistance with daily living activities.



..by..Low and Moderate Income Household

The chart below illustrates the proportions within Low and Moderate Income Households (disaggregated into low income, moderate income, and above low and moderate income) by their characteristics in term of having adult members needing assistance with ADL (ADL household).

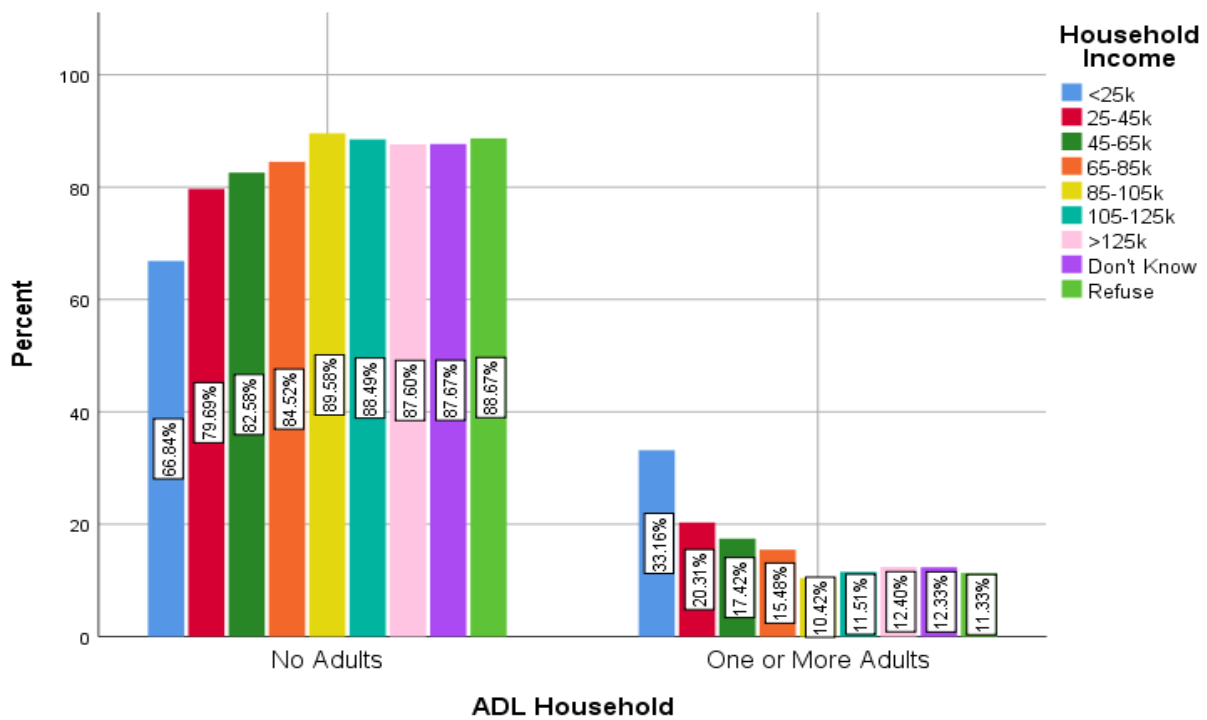
More than a 25 percent of low income households report having one or more adults with ADL limitations requiring others to help with normal daily living activities. More than 17 percent of moderate income households report having at least one adult household member having ADL limitations, and under 13 percent of high income households (above low and moderate income) have one or more adults requiring ADL assistance.



..by..Granulated Household Income

This chart illustrates the proportions of households in different income categories that are characterized as ADL households with adult members needing assistance with activities of daily living.

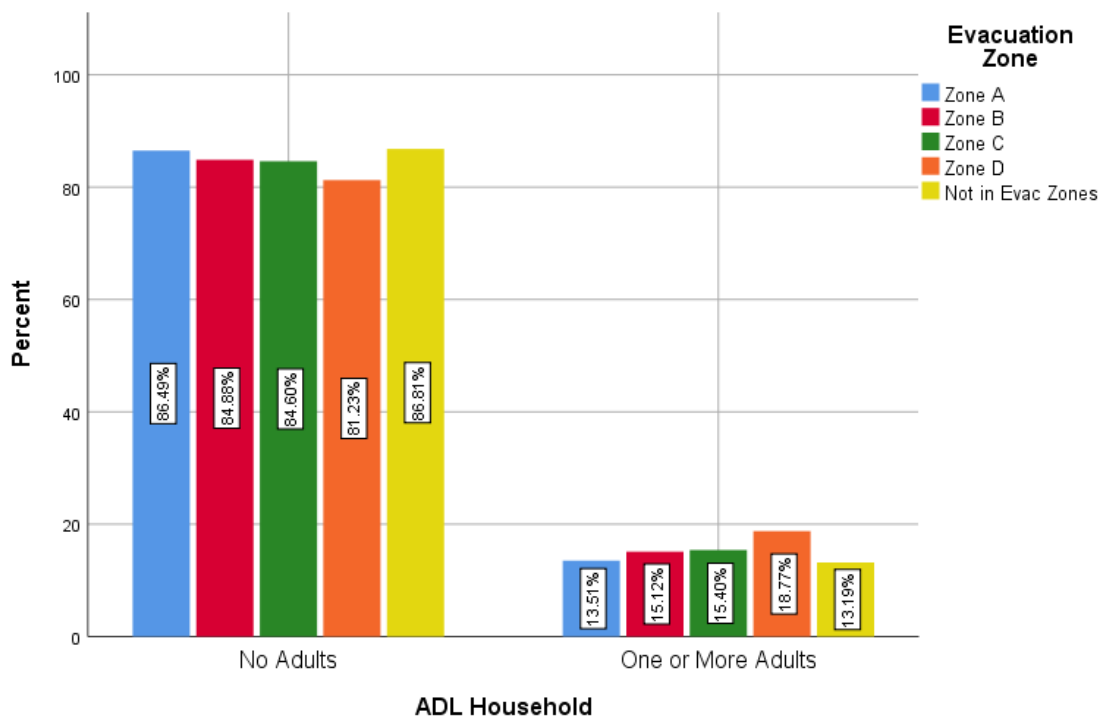
The proportion of lower income households (e.g., less than \$25k) that have one or more ADL adults as part of the household is larger than higher income households. Just over 33 percent of households in the under \$25K category are characterized as ADL households compared to 12 percent of households in the over \$125k category.



..by..Evacuation Zone

The chart below illustrates the proportions of households within specific Evacuation Zones (Zones A-D and areas not within an evacuation zone) that are characterized as ADL households with adult members needing assistance with activities of daily living.

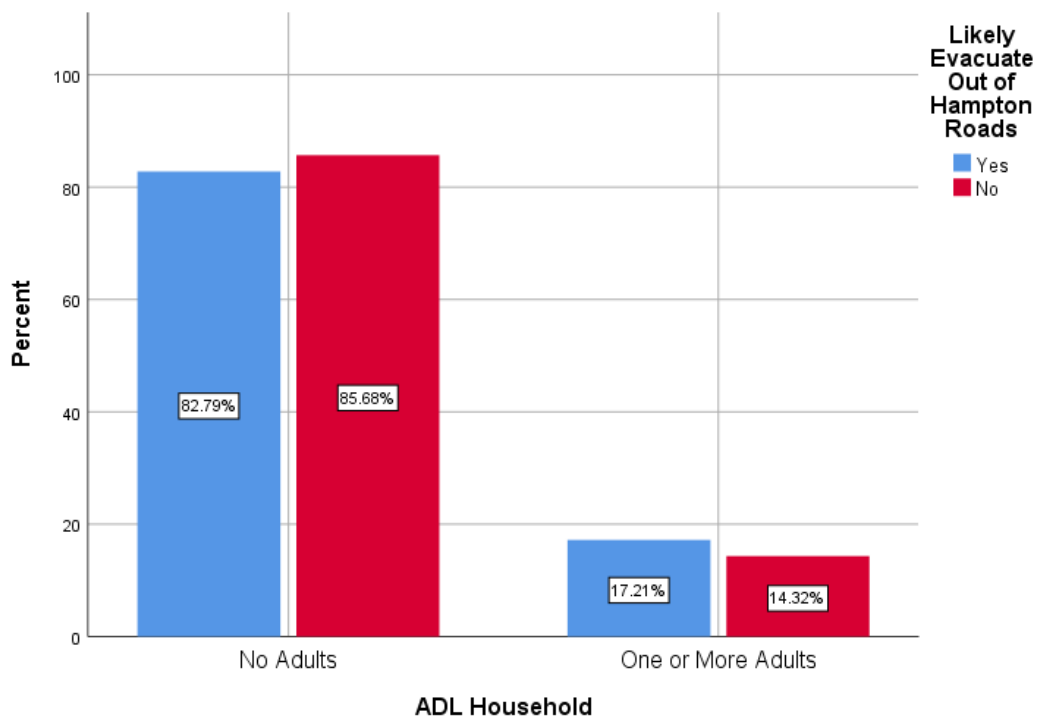
About 14 percent of households residing in Evacuation Zone A are characterized as ADL households, and about 15 percent of households in Evacuation Zones B and C have one or more adults with ADL limitations. Almost 19 percent of households in Evacuation Zone D are ADL households.



..by..Likely Evacuate Out of Hampton Roads

The chart below illustrates the proportions of households that indicated they are likely to evacuate out of Hampton Roads that are characterized as ADL households with adult members needing assistance with activities of daily living.

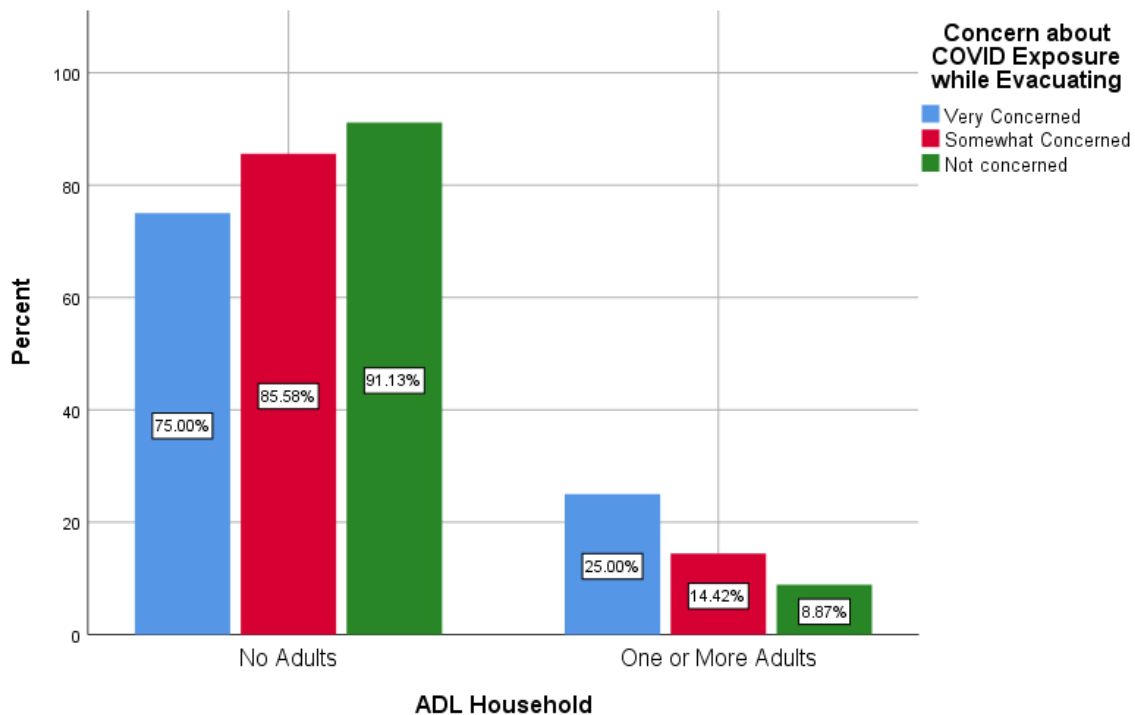
Of the households that indicate they would likely evacuate out of the Hampton Roads region during a significant hurricane event, about 17 percent had at least one dependent adult who requires ADL assistance. In contrast, about 14 percent of households that will not evacuate had one or more adults with ADL limitations.



..by..Concern about COVID Exposure while in Public Shelter

This chart shows the proportions of households concerned about COVID-19 exposure as a reason for not evacuating that are also characterized as ADL households with at least one adult member needing assistance with activities of daily living.

The proportion of households that are very concerned about COVID exposure during an evacuation is greatest among households with one or more adults with ADL limitations. 25 percent of those households that are very concerned about COVID exposure while evacuating are characterized as ADL households, compared to 9 percent of those households that are not concerned about virus exposure while evacuating).

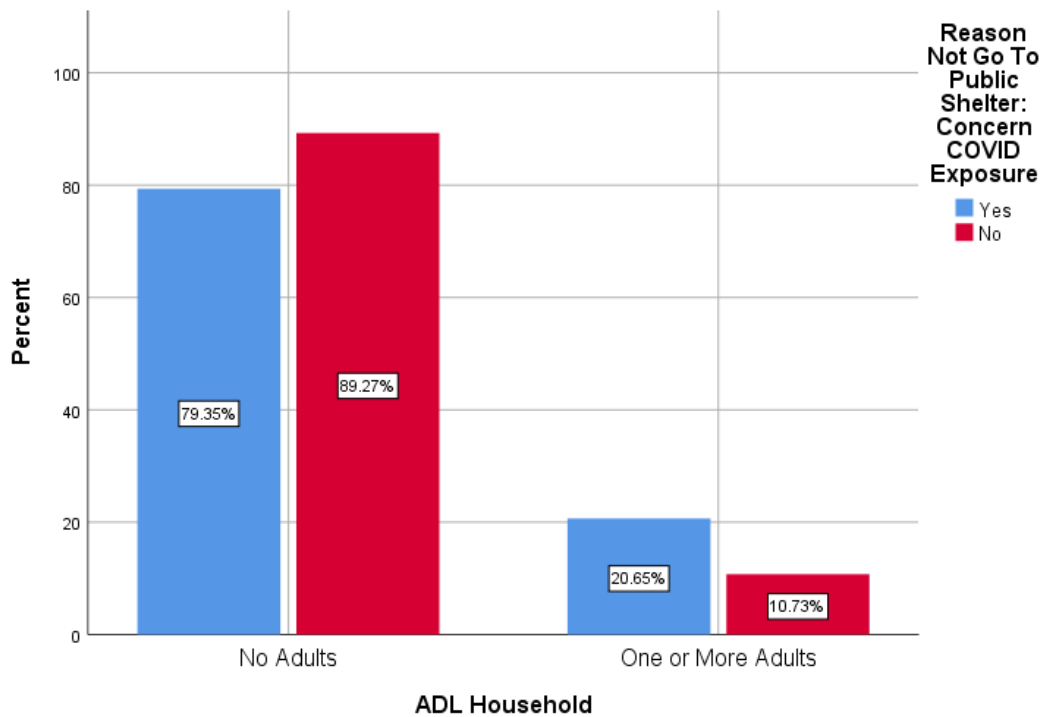




..by..Reason Not Go To Public Shelter: Concern COVID Exposure

The chart below illustrates the proportions of households concerned about COVID-19 exposure as a reason for not going to a public shelter that are also characterized as ADL households with adult members needing assistance with activities of daily living.

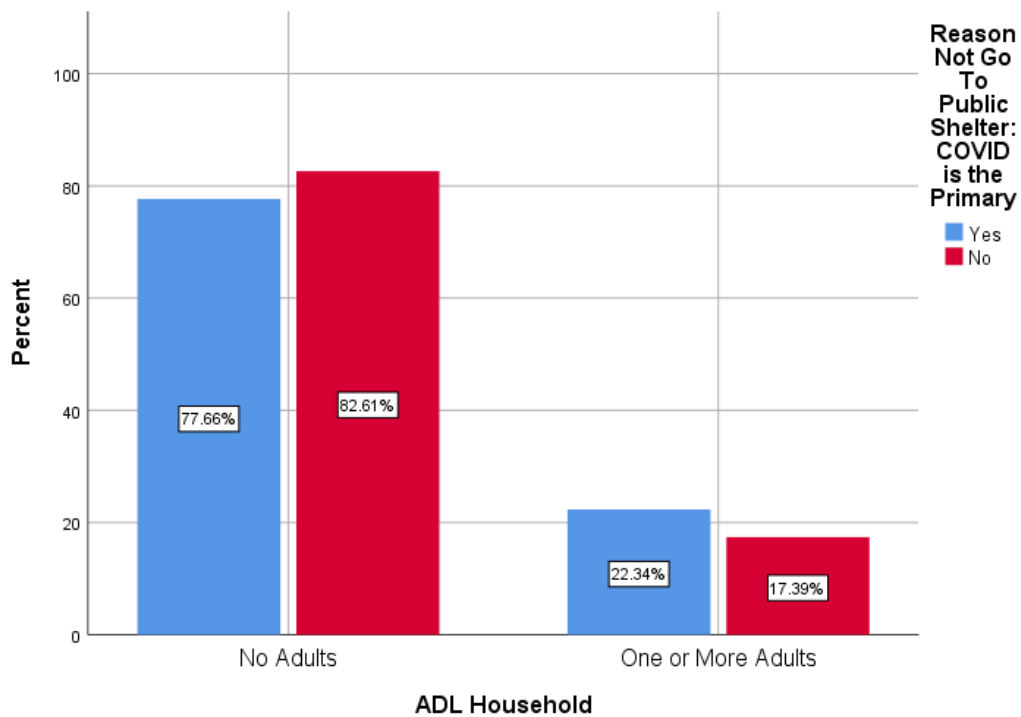
A higher proportion of households that indicate COVID-19 exposure is a reason for not going to a public shelter are characterized as ADL households (21 percent) compared to households that did not express concern for COVID exposure as a reason not to go to a public shelter (11 percent of these households have one or more adult members with ADL limitations).



*..by..Reason Not Go To Public Shelter: COVID is the Primary*

The chart below shows the proportions of households that indicated COVID is the primary reason for not going to a public shelter that are also characterized as ADL households with adult members needing assistance with activities of daily living.

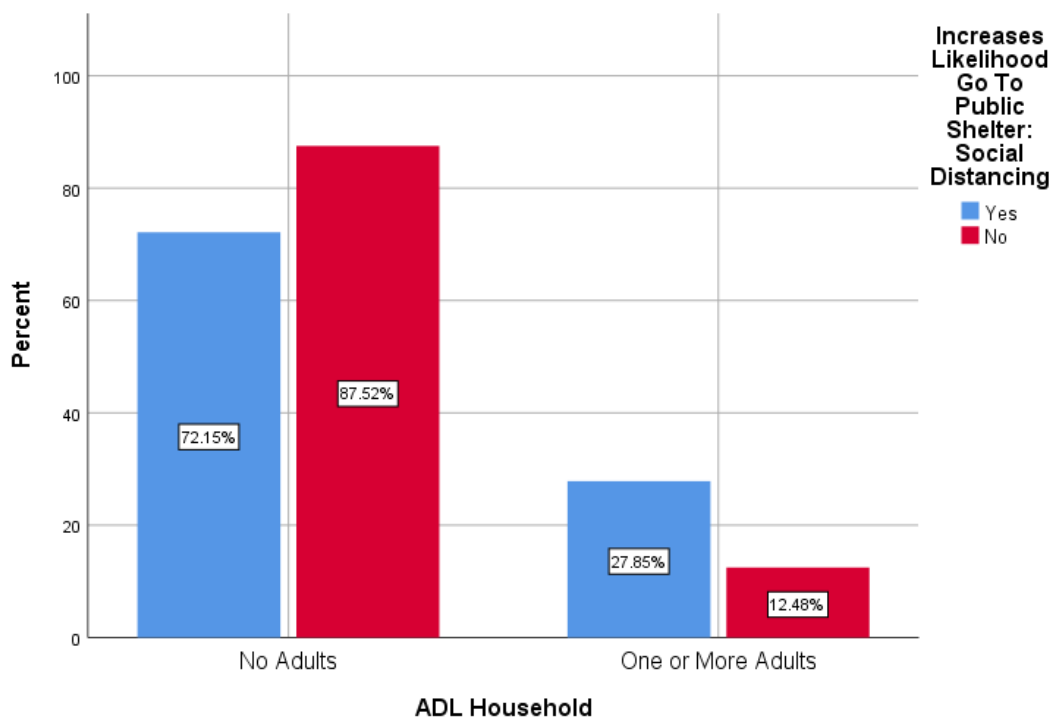
The proportion of households with one or more adults with ADL limitations is higher among households that cite COVID-19 exposure as the primary reason for not going to a public shelter compared to those households that do not cite COVID as the primary reason. More than 22 percent of households that indicated COVID is the primary reason for not going to a public shelter are characterized as ADL households with adult members needing assistance with activities of daily living.



..by..Increases Likelihood Go To Public Shelter: Social Distancing

The chart below illustrates the proportions within households more likely to go to a public shelter if social distancing is practiced in the shelters that are also characterized as ADL households with adult members needing assistance with activities of daily living.

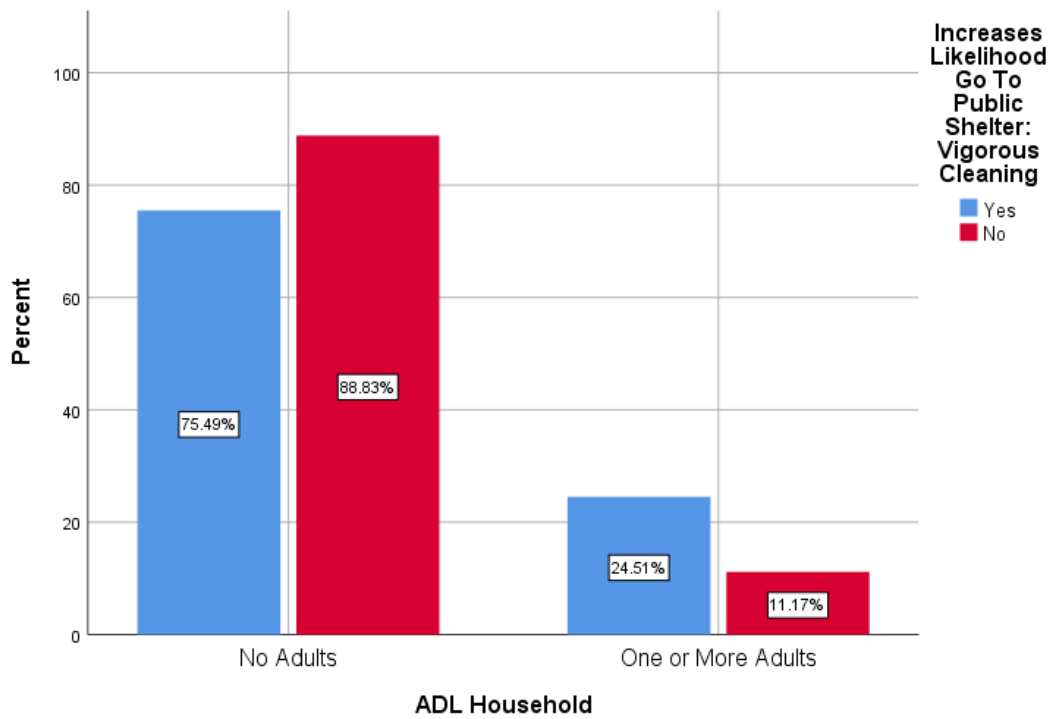
ADL households make up 28 percent of households that indicate greater likelihood to go to a public shelter if there are reductions in the number of people allowed to shelter at a public shelter due to social distancing.



..by..Increases Likelihood Go To Public Shelter: Vigorous Cleaning

This chart illustrates the proportion of households more likely to go to a public shelter if vigorous cleaning is practiced that are characterized as ADL households with adult members needing assistance with activities of daily living.

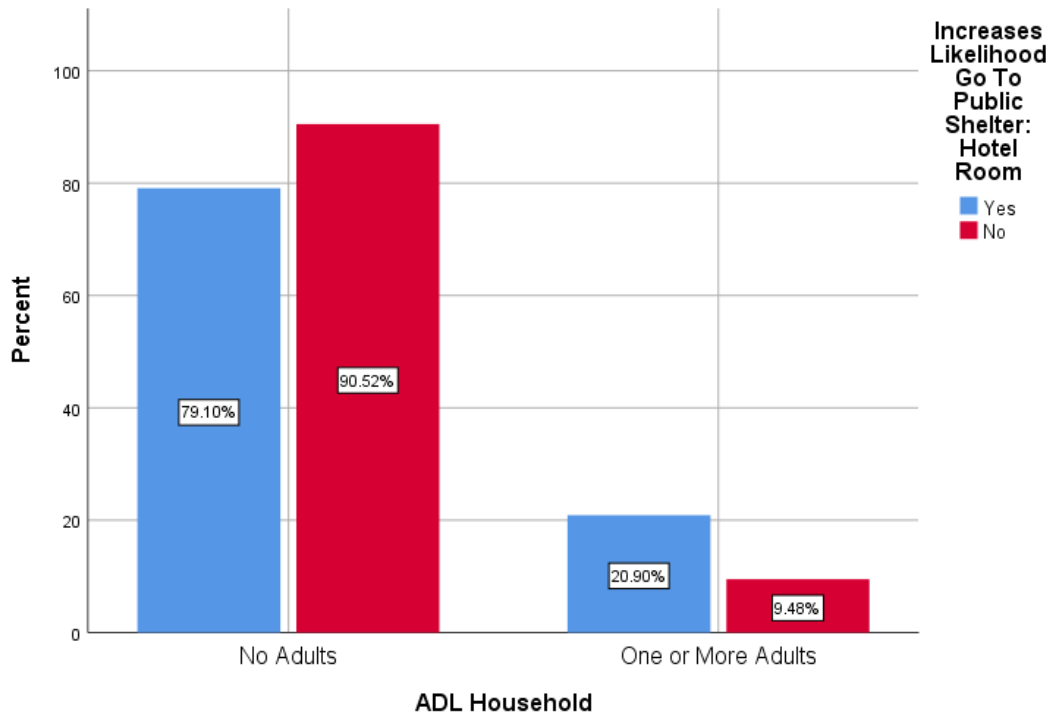
ADL households make up almost 25 percent of households that report being more likely to go to a public shelter if there are vigorous cleaning practices at the public shelter.



..by..Increases Likelihood Go To Public Shelter: Hotel Room

Households surveyed were asked whether they would be most likely to go to a public shelter if it took the form of a hotel room. The chart below shows the proportion of households according to their response to this question and whether their household had at least one adult member needing assistance with activities of daily living.

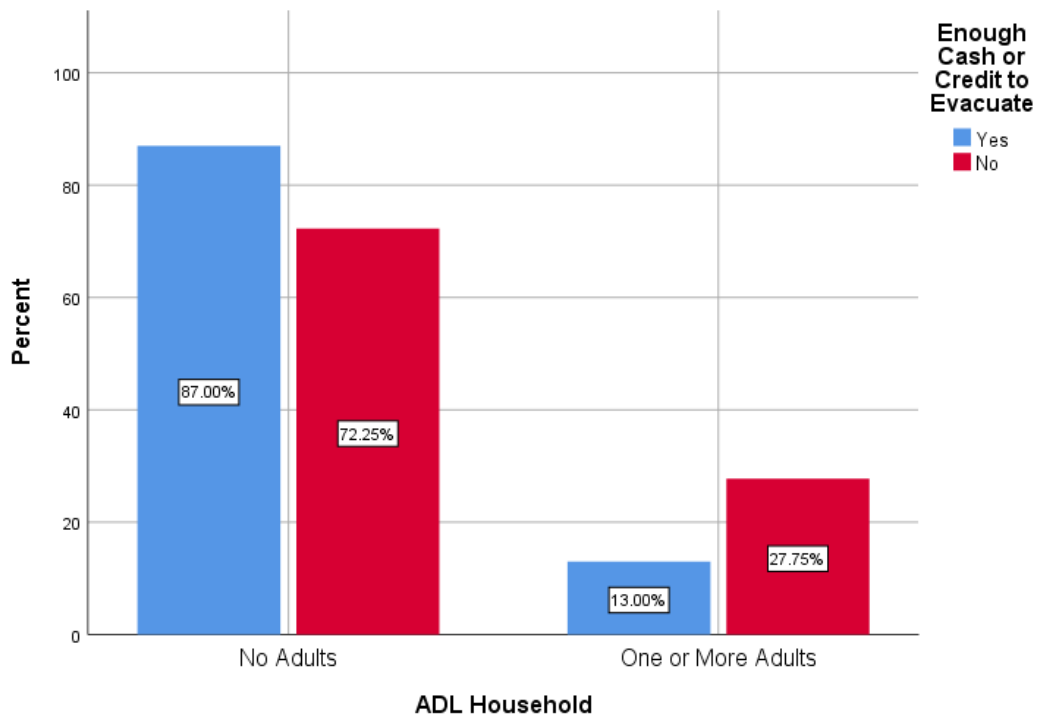
ADL households comprise almost 21 percent of households that report being more likely to go to a public shelter if their city offers a hotel room as a shelter.



..by..Enough Cash or Credit to Evacuate

The next chart shows the proportion of households with enough cash or credit to evacuate that are characterized as ADL households with adult members needing assistance with activities of daily living.

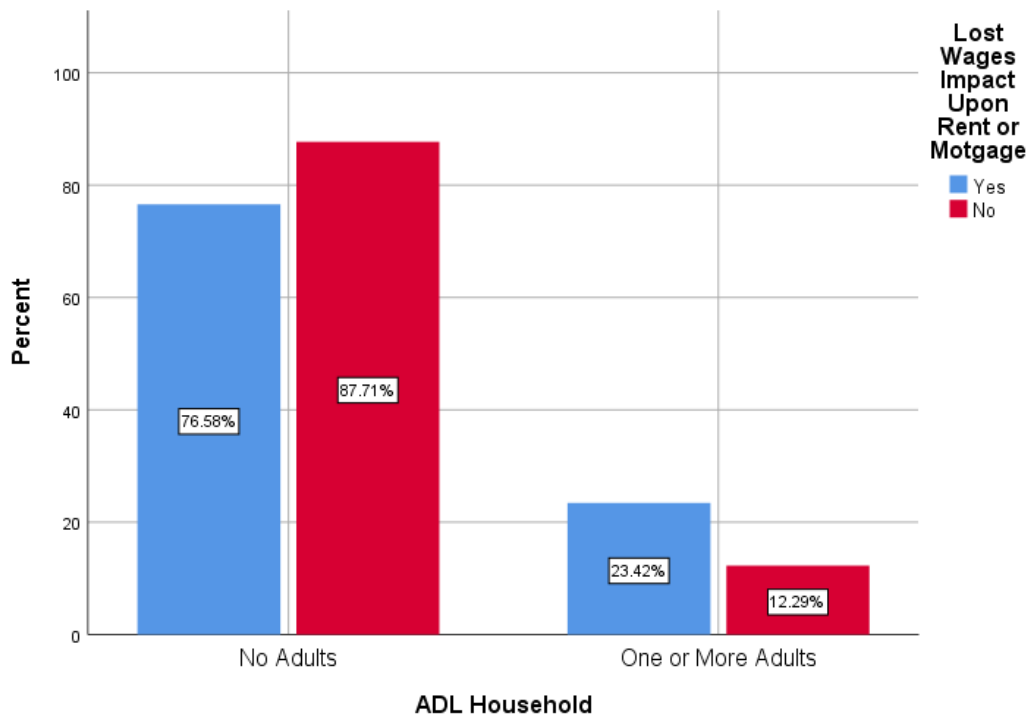
ADL households with one or more adults needing assistance with daily living activities comprise 13 percent of households that report having enough cash or credit to evacuate. ADL households indicate they do not have enough cash or credit to evacuate their households with at least one dependent adult who requires assistance for activities of daily living. This could be due to the additional costs and resources associated with assisting household members who need additional support for special mental and physical needs.



..by..Lost Wages Impact Upon Rent or Motgage

The chart below illustrates the proportions of households experiencing lost wages impacts on rent or mortgages that are characterized as ADL households with one or more adults needing assistance with ADL.

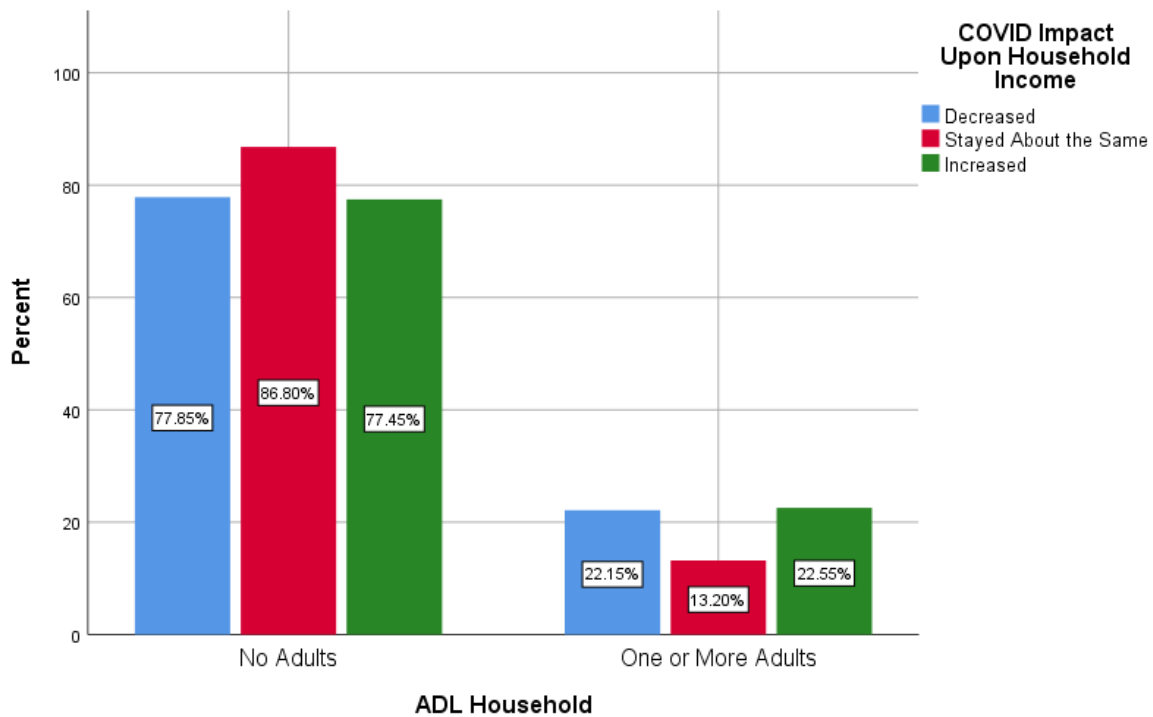
A greater proportion of ADL households comprise those households that state loss of a week's pay would make it difficult to make the rent of mortgage at the end of the month is higher among households. Specifically, ADL households comprise over 23 percent of households for whom loss of a week's wages would have a negative impact on the ability to pay the rent or mortgage.



..by..COVID Impact Upon Household Income

This chart illustrates the proportions of households whose incomes are impacted by the COVID pandemic that are also characterized as ADL Households.

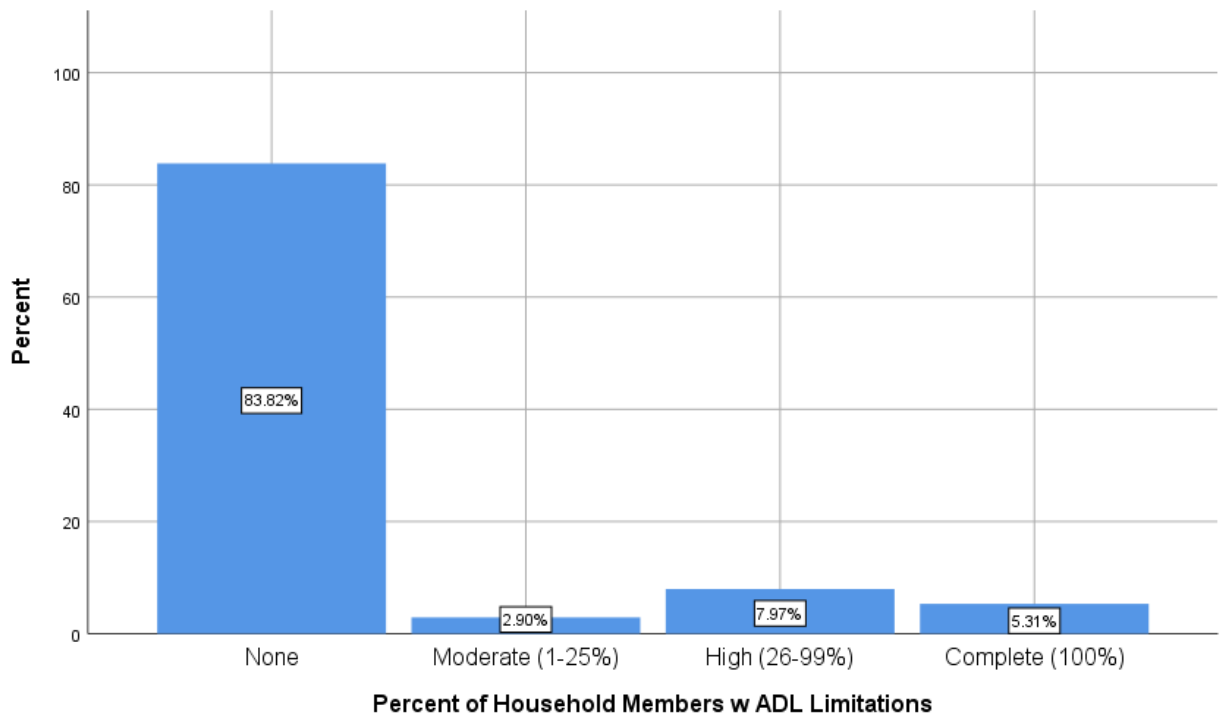
Among households that say their household income has decreased during the COVID pandemic, 22 percent have one or more adults with ADL limitations. Among households that say their household income has increased, almost 23 percent have one or more adults needing assistance for ADL. ADL households make up 13 percent of households whose income stayed about the same.





## Percent of Household Members with ADL Limitations

ADL households can be characterized along the spectrum from moderate to complete. Moderate ADL households have been 1 percent and 25 percent of the household comprising of adults needing assistance with ADL, while in a complete ADL household all adult members need assistance with are dependent upon others for assistance with activities of daily living. Just under 3 percent of households are moderate ADL households and 8 percent are high ADL households. Slightly over 5 percent of all households are characterized as complete ADL households.

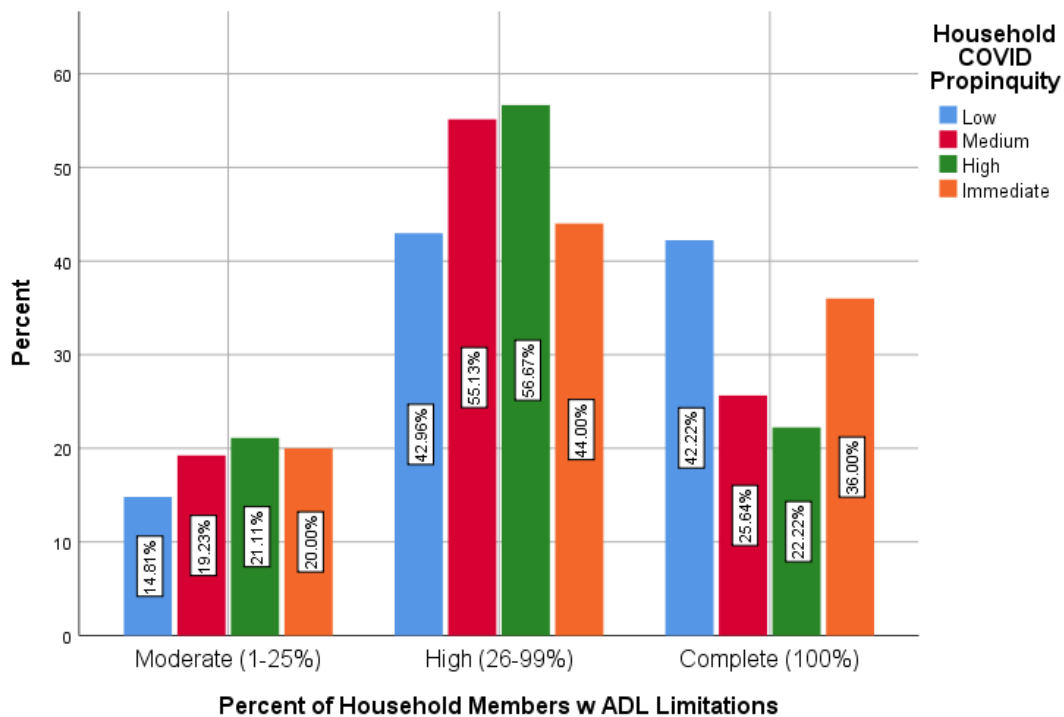


..by..Household COVID Propinquity

The chart below summarizes data only for ADL households (the 84 percent of households that do not have a member needing ADL assistance are excluded). This chart shows the proportions of household with different household COVID Propinquity (low, medium, high, and immediate COVID propinquity) by the extent of ADL limitations in the different households (moderate, high, and complete ADL households).

For households with low household COVID propinquity, about 16 percent have moderate, about 43 percent have high, and 42 percent have complete ADL limitations.

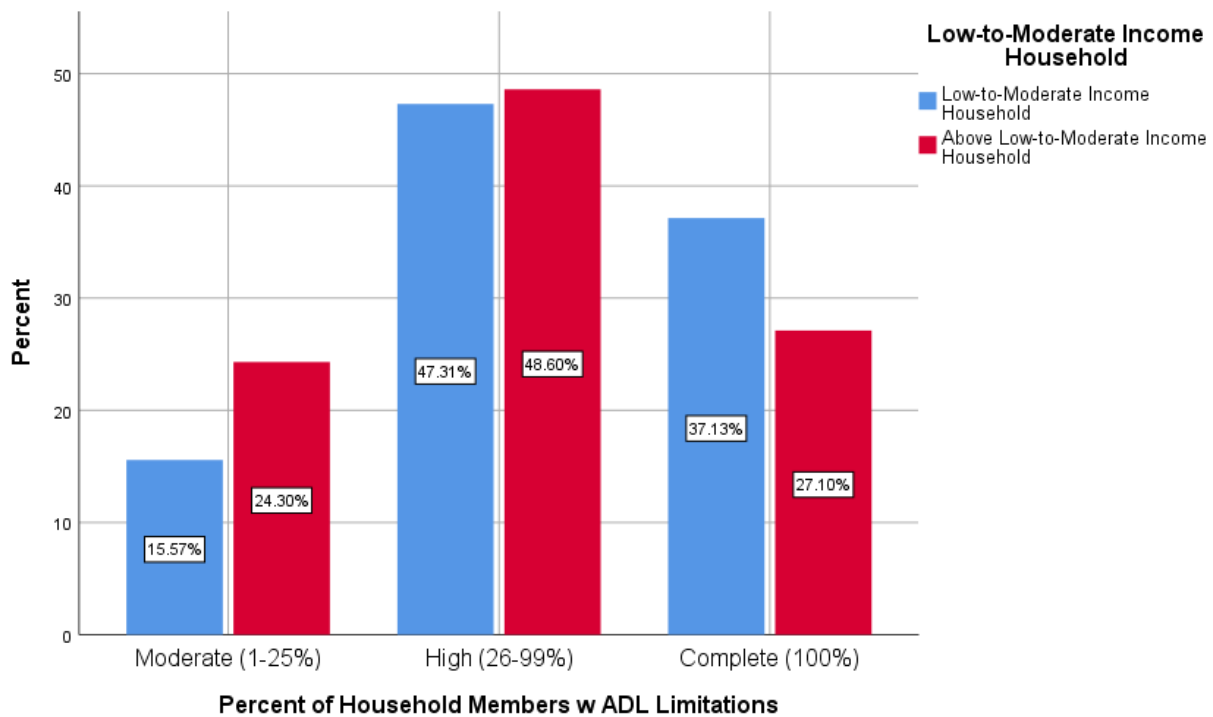
For households with immediate household COVID propinquity, about 20 percent have moderate, about 44 percent have high, and 36 percent have complete ADL limitations.



..by..Low-to-Moderate Income Household

The chart below includes only households with adult members needing ADL assistance (the 84 percent of households that do not have a member with ADL limitations are excluded). This chart shows these households by low-to-moderate income classification and the proportion of households with different categories of ADL limitations (moderate, high, and complete).

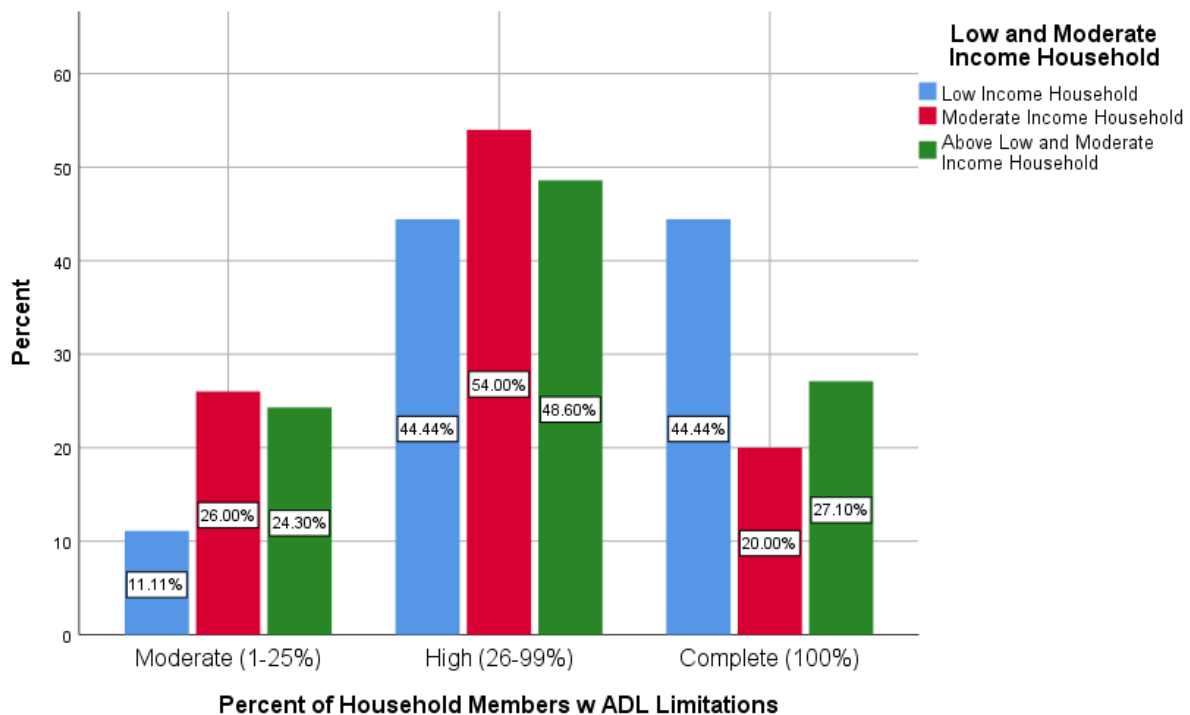
Greater proportions of LMI households are complete ADL households (meaning 100 percent of adult members are in need of ADL assistance) compared to above LMI households. For LMI households, about 16 percent have moderate, more than 47 percent have high, and 37 percent have complete ADL limitations.



..by..Low and Moderate Income Household

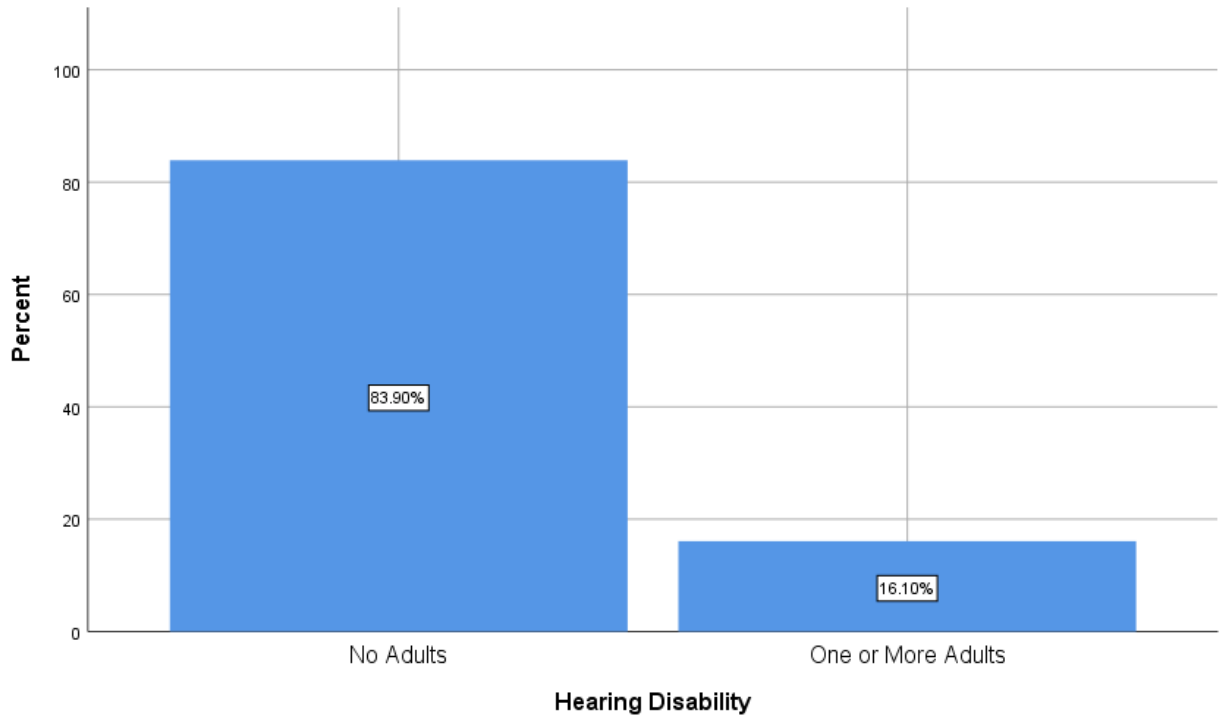
The chart below illustrates only households with adult members needing ADL assistance (the 84 percent of households that do not have a member with ADL limitations are excluded). This chart shows these households by low and moderate income classification (low, moderate, and above low and moderate) and the proportion of households with different levels of ADL limitations (moderate, high, and complete).

Greater proportions of low income households are complete ADL households (meaning 100 percent of adult members are in need of ADL assistance) compared to other households. For low income households, about 11 percent have moderate, 44 percent have high, and 44 percent have complete ADL limitations.



## Hearing Disability

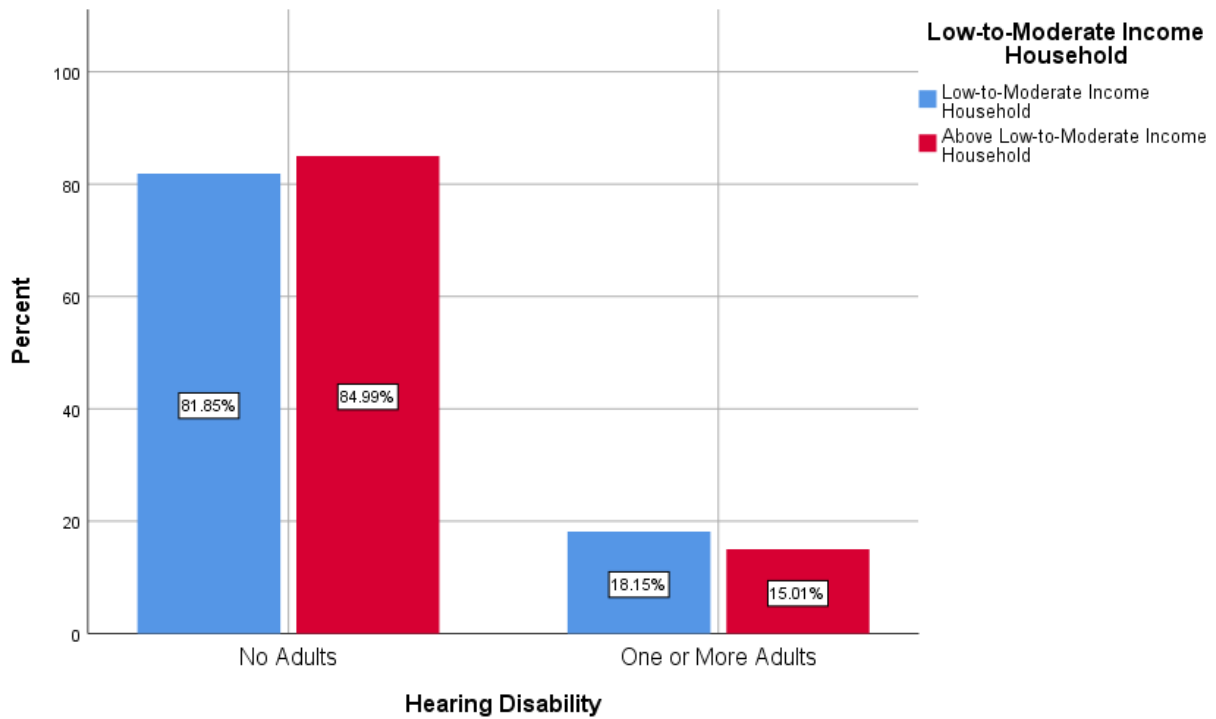
About 16.1 percent of households report having at least one adult with a hearing disability that interferes with normal activities.



..by..Low-to-Moderate Income Household

The chart below illustrates the proportions of low-to-moderate income households (disaggregated into LMI and above LMI households) that have one or more adults with hearing disability.

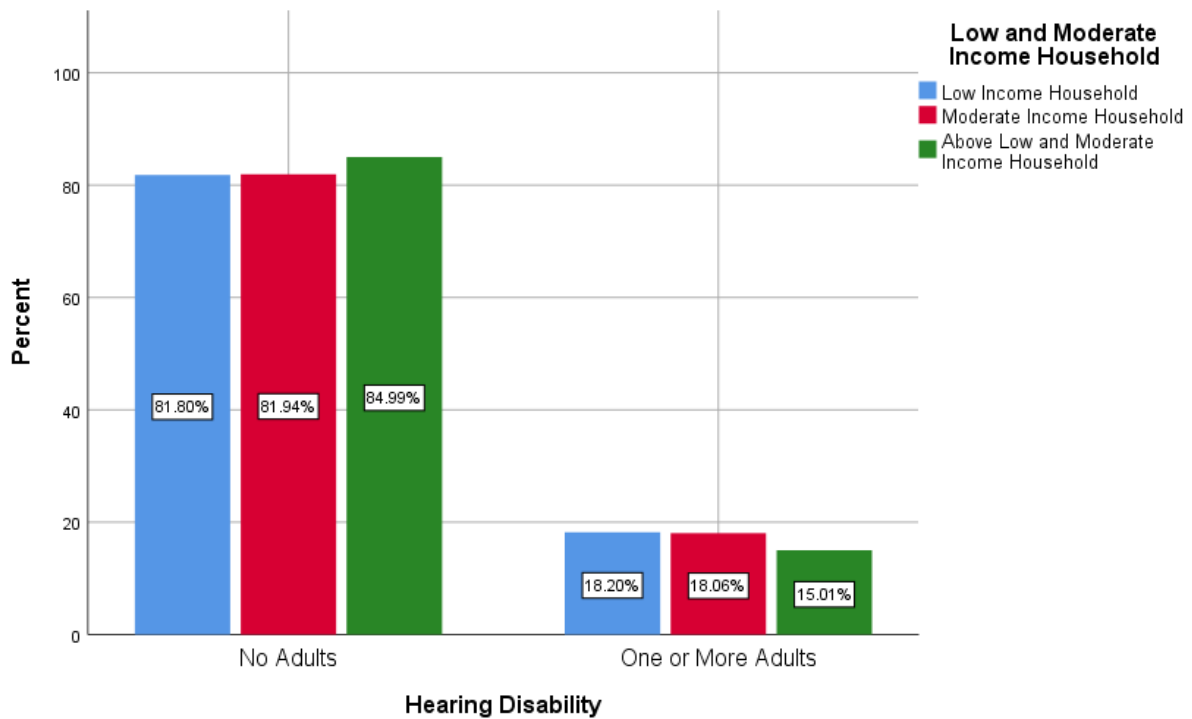
About 18 percent of LMI households report having at least one adult with a hearing disability.



..by..Low and Moderate Income Household

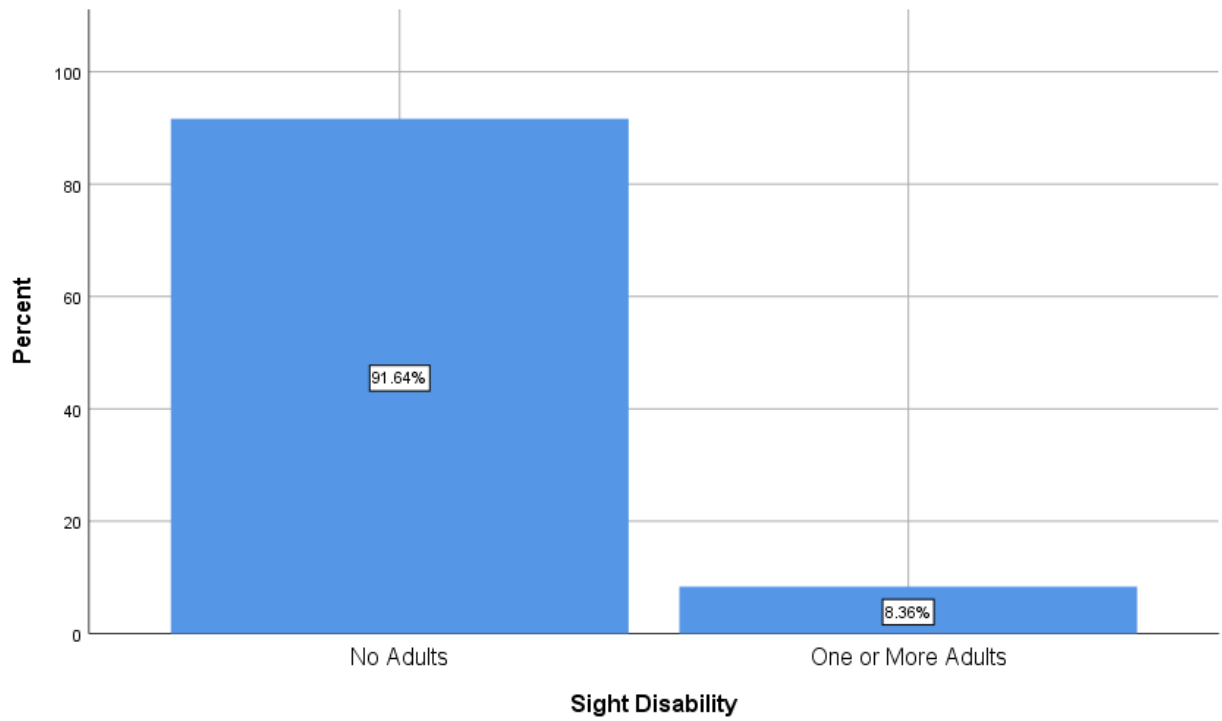
This chart shows proportion of households by income classification (low, moderate, and above low and moderate income) and the proportion of these households with one or more adults with hearing disability.

About 18 percent of low income households and moderate income households have at least one adult with a hearing disability.



## Sight Disability

About 8 percent of households report having at least one adult with a sight disability that interferes with normal activities.

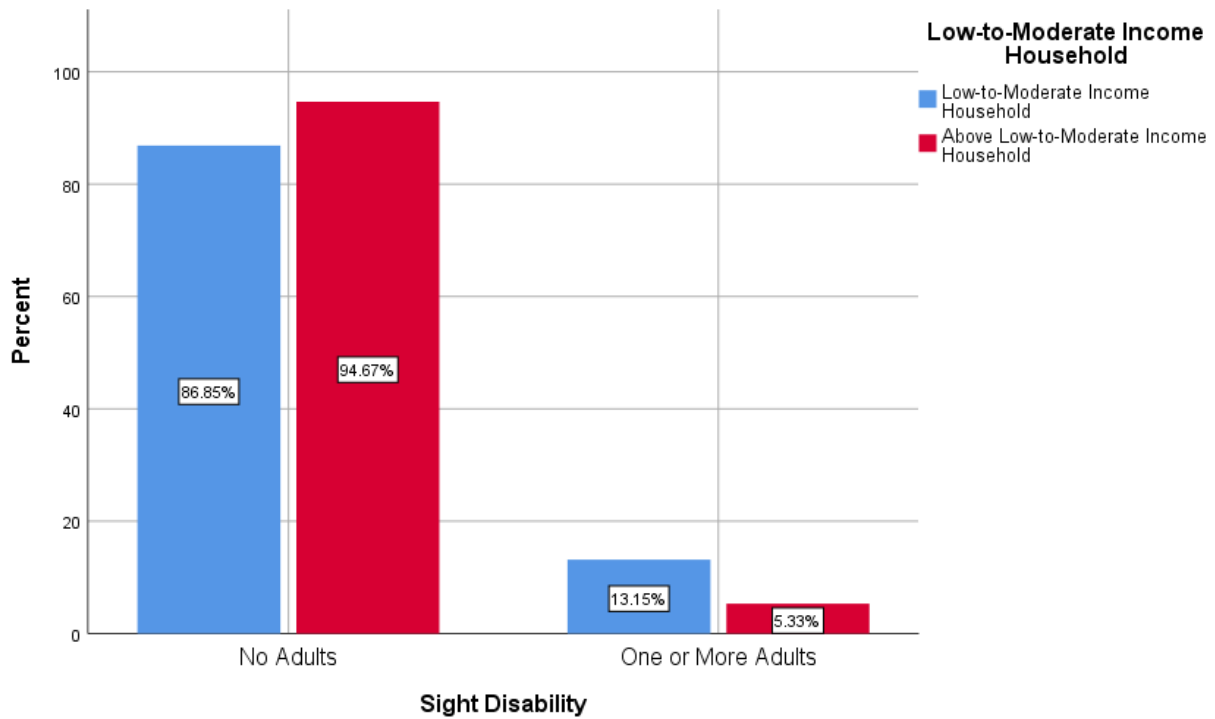




..by..Low-to-Moderate Income Household

The chart below illustrates the proportions of low-to-moderate income households (disaggregated into LMI and above LMI households) that have one or more adults with sight disability.

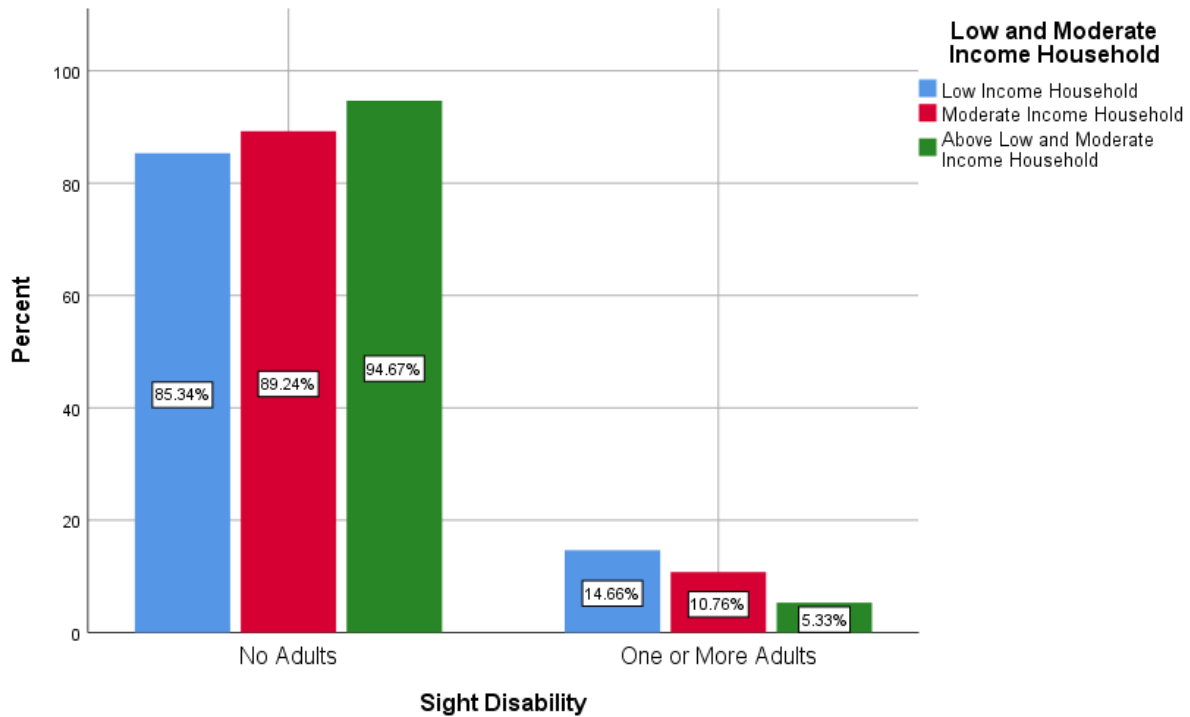
About 13 percent of LMI households report having at least one adult with a sight disability.



..by..Low and Moderate Income Household

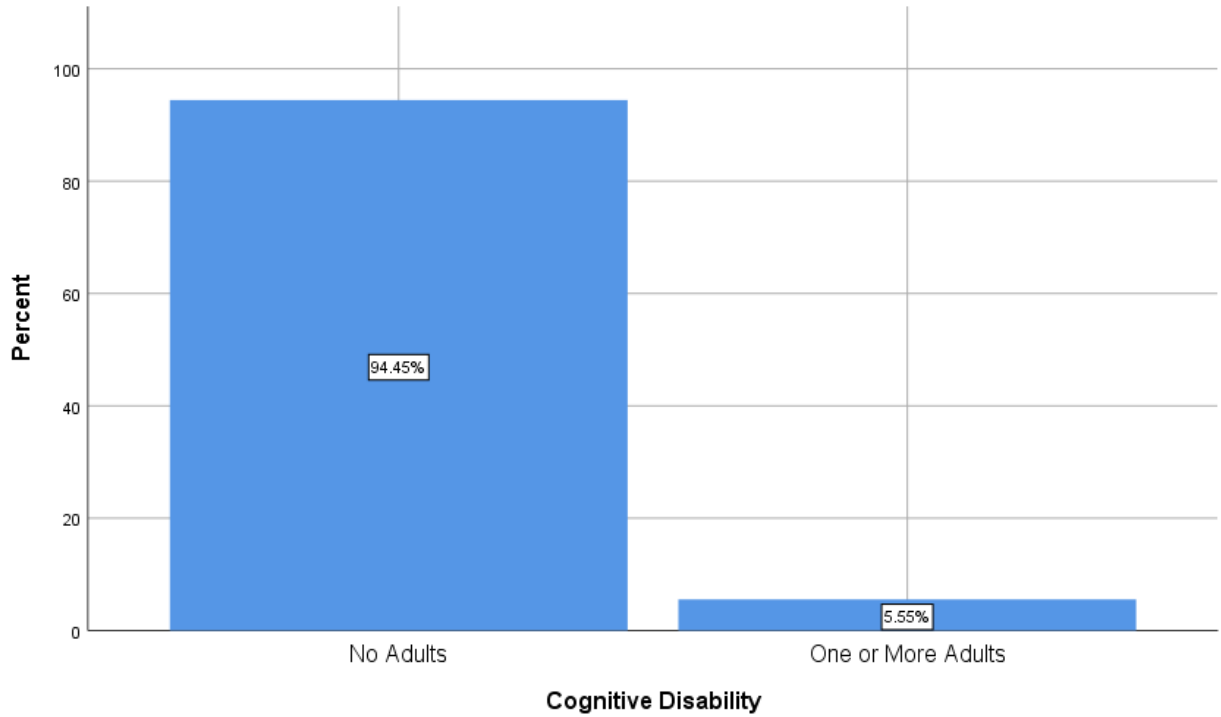
This chart shows proportion of households by income classification (low, moderate, and above low and moderate income) and the proportion of these households with one or more adults with sight disability.

About 15 percent of households with low income report having at least one adult with a sight disability.



## Cognitive Disability

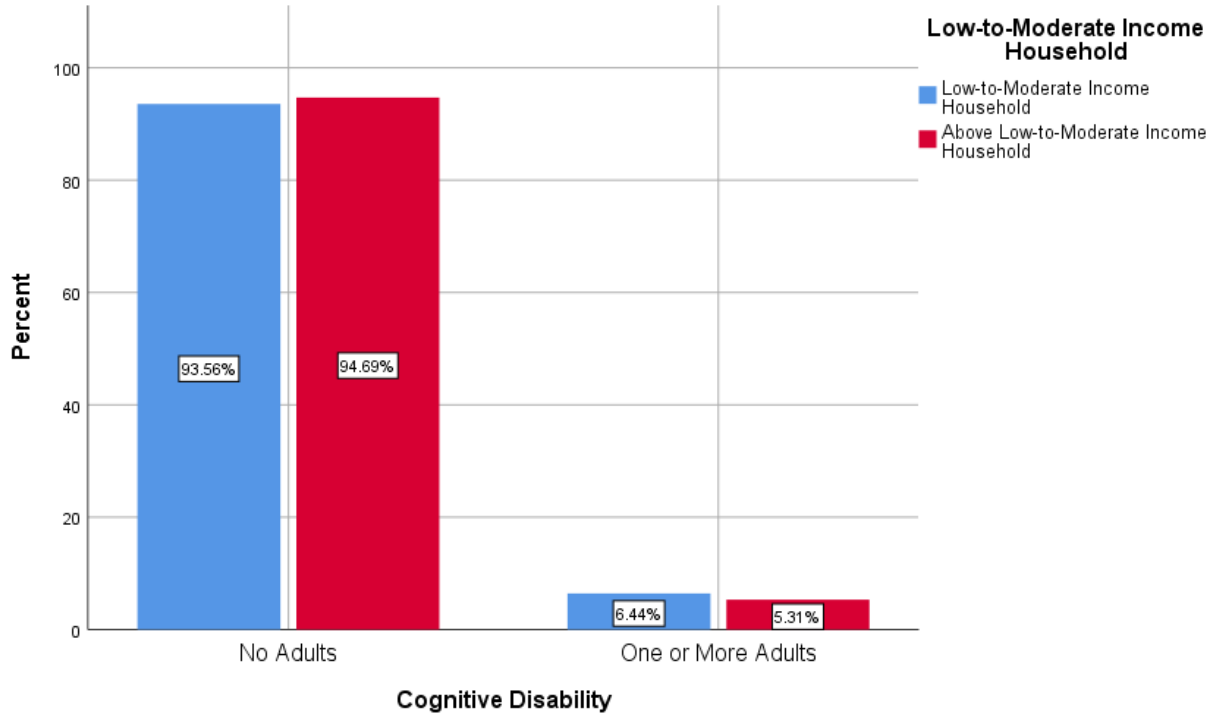
Almost 6 percent of households report having at least one adult with a cognitive disability, such as dementia or Alzheimer's, that interferes with normal activities.



..by..Low-to-Moderate Income Household

The chart below illustrates the proportions of low-to-moderate income households (disaggregated into LMI and above LMI households) that have one or more adults with a cognitive disability, such as dementia or Alzheimer’s, that interferes with normal activities.

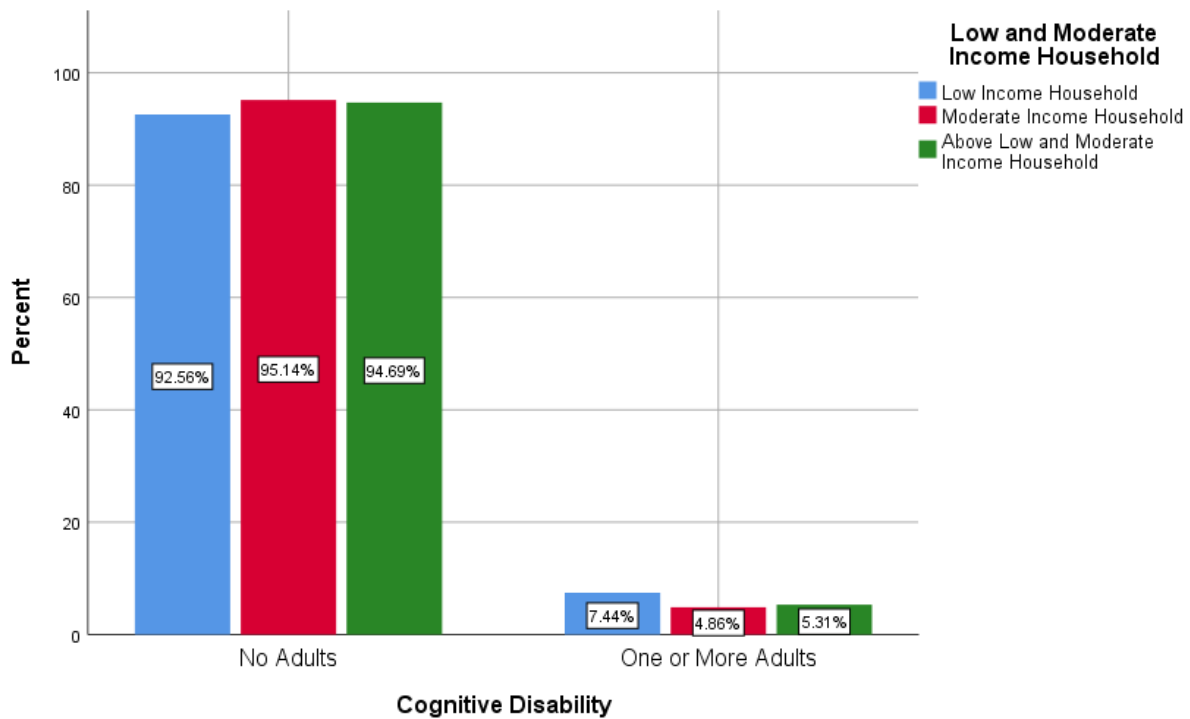
Over 6 percent of LMI households report having at least one adult with a cognitive disability.



..by..Low and Moderate Income Household

This chart shows proportion of households by income classification (low, moderate, and above low and moderate income) and the proportion of these households with one or more adults with a cognitive disability, such as dementia or Alzheimer’s, that interferes with normal activities.

About 7 percent of households with low income report having at least one adult with a cognitive disability.



## Part 5: Evacuation Out & Sheltering Within the Region

Part 5 describes the likelihood of staying or departing the region when confronted with a significant hurricane event during a COVID environment. Sheltering behaviors are examined across seven control variables:

1. Medically Fragile Household
2. Household Vulnerability
3. Household COVID Proximity
4. Low-to-Modest Income Household
5. Low and Modest Income Household
6. Granulated Household Income
7. Evacuation Zone

In addition, evacuation behavior is mapped relative to Qualified Opportunity Zones (QOZ).

Households are queried about their anticipated behavior during the 2020 hurricane season under the COVID environment to distinguish those households that anticipate staying in the region from households that anticipate departing the region. The following two questions are used to make this distinction, the second of which is quasi open-ended allowing for registering what 'something else' may entail:

1. *Currently, in this Hurricane Season, if a significant hurricane were to head for Hampton Roads, then would your household likely evacuate out of the Hampton Roads region?*
2. *Since your household is not likely to evacuate out of the region, what then will your household likely do? Will you: Stay in Your Home, Stay at Somebody Else's Home, Go to a Public Shelter, or Something Else?*

## Stay or Go

The following charts include both estimates for those households that are likely to stay in the region and estimates for those households likely to evacuate away from the region when confronted with a significant hurricane event under a COVID environment.

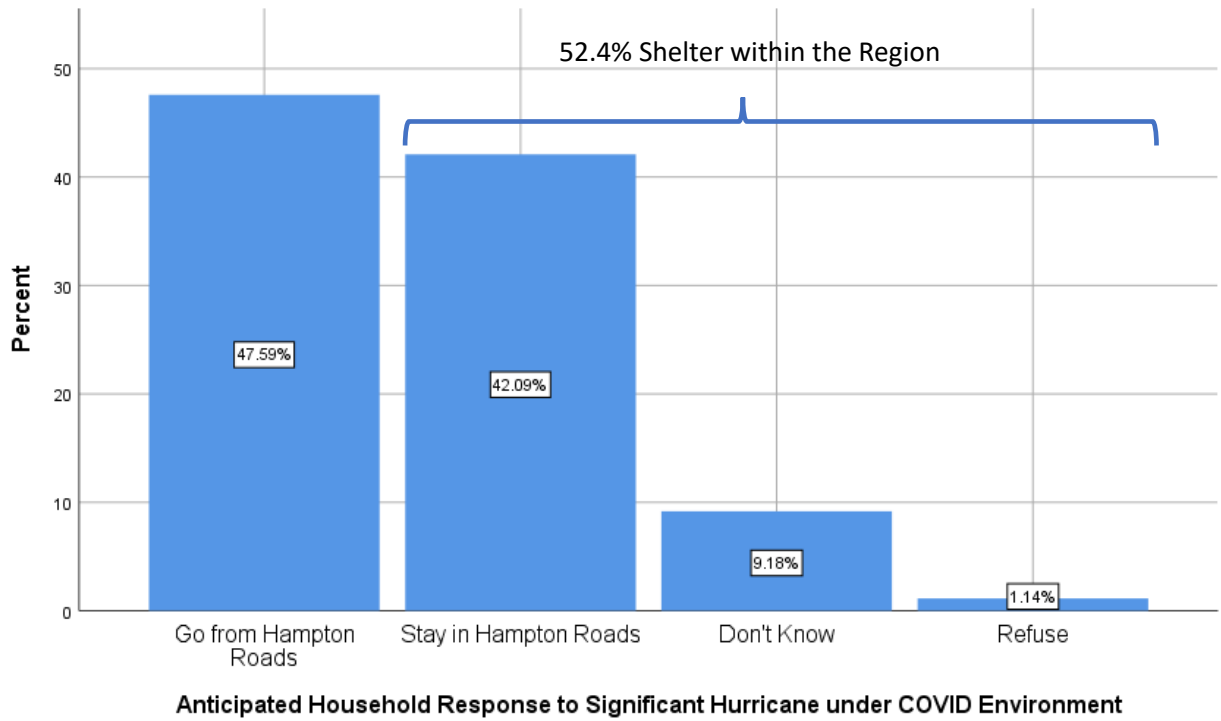
The categorization of ‘Stay’ and ‘Go’ households is initially derived from the query, *“Currently, in this hurricane season, if a significant hurricane were to head for Hampton Roads, then would your household likely evacuate out of the Hampton Roads region?”* where responses are coded as either Yes, No, Don’t Know, or Refuse.

Those responding ‘Yes’ are categorized as likely evacuating. This represents almost 48 percent of households surveyed. Those responding ‘No’ are categorized as likely staying in the region.

The ‘No,’ ‘Don’t Know,’ and ‘Refuse’ respondents are then queried, *“Since your household is not likely to evacuate out of the region, what then will your household likely do? Will you: stay in your home, stay at somebody else’s home, go to a public shelter, or what?”* Nearly all ‘Don’t Know’ and ‘Refuse’ respondents provided detailed responses to this question and the questions that logically followed it.

Those who answered either ‘Don’t Know’ or ‘Refuse’ are viewed as unable to provide clear anticipated behavior. As shown in the chart, about 9 percent of households are uncertain about being likely to evacuate out of the region, classified as Don’t Know, and about 1 percent of households refused to answer the question. As an approach, these ‘Don’t Know’ responses, along with the ‘Refuse’ responses, are assumed then to have the likely behavior of sheltering within the region. Thus, included within the percentage estimate for households that anticipate staying in Hampton Roads are households that, when queried about being likely to evacuate the Hampton Roads region, were unable to provide a clear anticipated behavior.

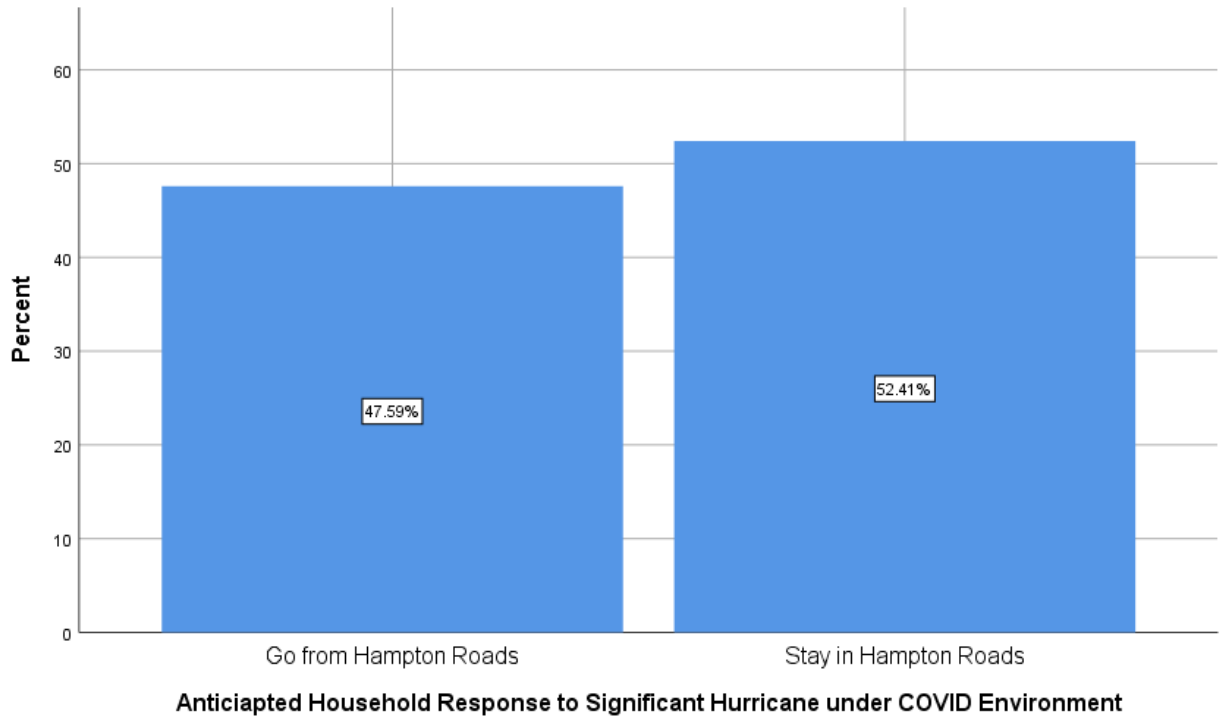
The rationale guiding this classification draws upon our knowledge of past evacuation and sheltering behaviors of Hampton Roads residents. Generally, evacuation requires resources and planning under both conditions of uncertainty and within a stressful impending-storm environment. This is further complicated by the uncertainties and perceived risks presented by the presence of COVID. While the logistical issues of public sheltering are perhaps less complex relative to evacuation out of the region, perceived risk of exposure to COVID is higher. When pressed, rather than making a decision that requires taking action (either evacuation or public sheltering), the household default is not taking action. Thus, indecisive households are deemed likely to remain in the region, and more likely to shelter in place, relative to evacuating or seeking public shelter.



As such, we assume that, when confronted by a significant hurricane, roughly 52 percent (42% + 9% + 1%) of respondent households anticipate sheltering within the region and 48 percent anticipate evacuating out of the region when faced with an approaching, significant hurricane under the COVID environment.



The chart below illustrates that about 52 percent of households anticipate staying in Hampton Roads and 47 percent anticipate departing the region when confronted with a significant hurricane event under a COVID environment.

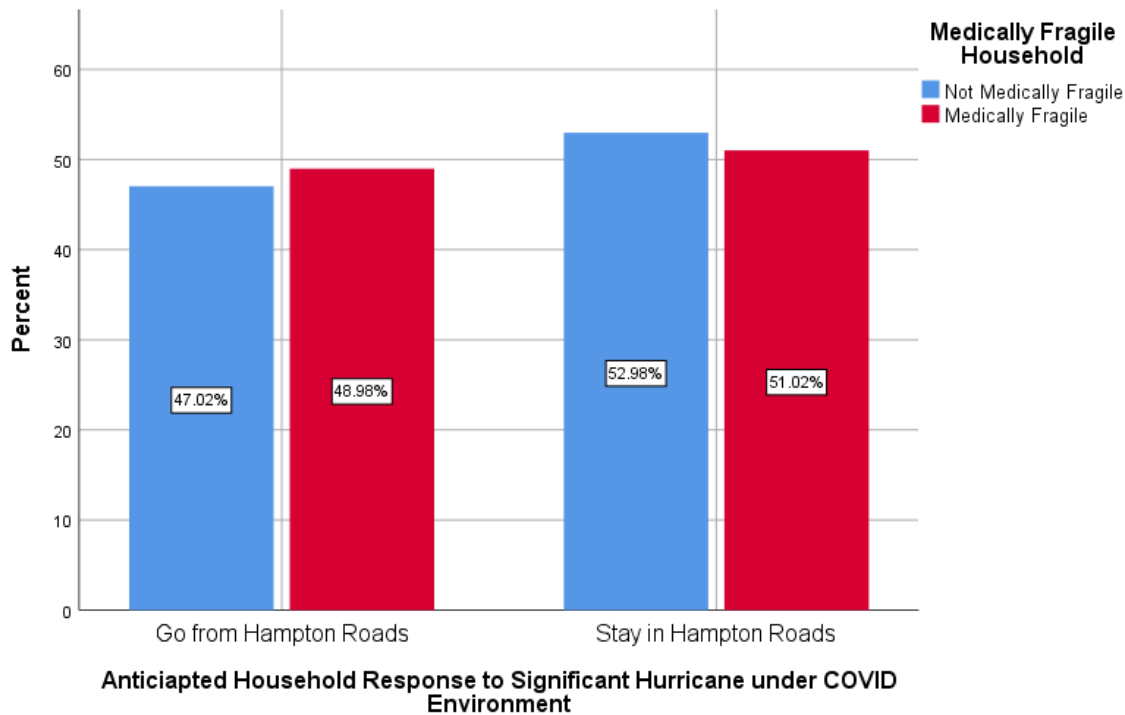


..by..Medically Fragile Household

The chart below illustrates the proportions of medically fragile household according to their anticipated households response (go or stay).

Among all medically fragile households, almost 49 percent anticipate evacuating from the region and 51 percent anticipate staying in Hampton Roads. In contrast, 47 percent of households that are not medically fragile anticipate likely evacuation from the region. This two percent difference is statistically significant, indicating that medically fragile households are slightly more likely to evacuate from the region.

Although this indicates that the medically fragile households would behave slightly differently, the difference is not much more than the non-medically fragile households during a hurricane. This is a concern since medically fragile households are more likely to suffer from the immediate impact of an event, and suffer complications in a recovery. Therefore, higher evacuation rates will reduce risk for medically fragile households.

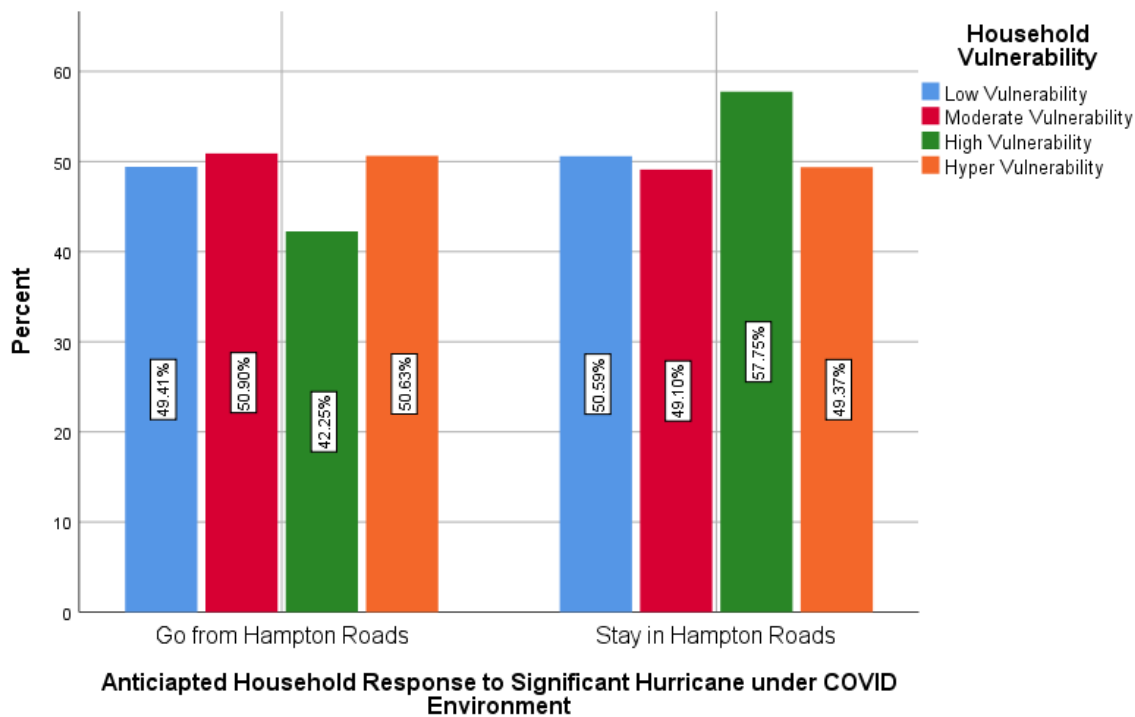


..by..Household Vulnerability

This chart shows the proportions of households with different levels of vulnerability (low, moderate, high, and hyper vulnerability households) according to their anticipated household response to an impending hurricane (go or stay).

In terms of household vulnerability, the following proportion of households were likely to evacuate out of Hampton Roads during a significant hurricane: low vulnerability (49 percent likely to go), moderate vulnerability (51 percent), high vulnerability (42 percent), and hyper vulnerability (51 percent).

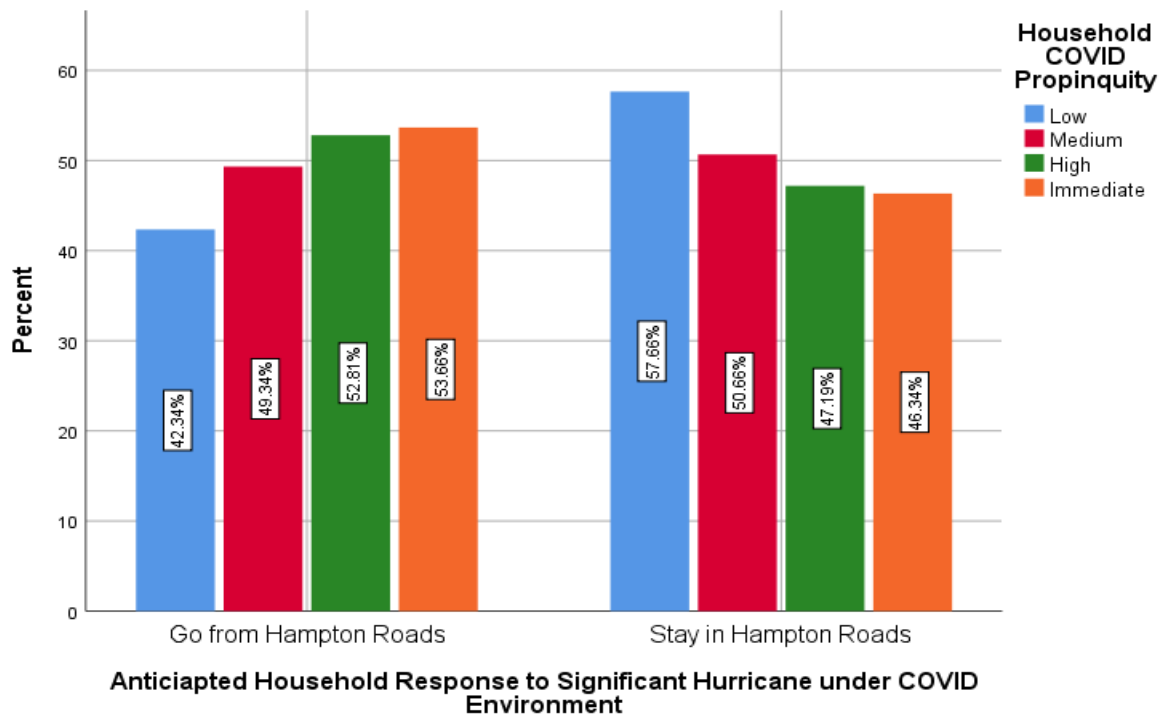
There is no statistical difference in the propensities to evacuate between low vulnerability and hyper vulnerability households. Just over half of the most vulnerable households report that they would evacuate – almost 51 percent of hypervulnerable households are likely evacuate while 49 percent are likely to stay. This highlights the need for more governmental and community support to assist vulnerable populations in evacuating, as these populations are more likely to suffer physically and financially from a severe weather event.



..by..Household COVID Propinquity

The chart below illustrates the proportions of households with different COVID propinquity (low, medium, high, and immediate COVID propinquity households) according to their anticipated household response (go or stay in Hampton Roads).

Households with low COVID propinquity are less likely to evacuate from Hampton Roads relative to households with high COVID propinquity. Evacuating proportions within each category of household COVID propinquity are: immediate propinquity (54 percent likely to evacuate), high propinquity (53 percent), medium propinquity (49 percent) and low propinquity (42 percent).

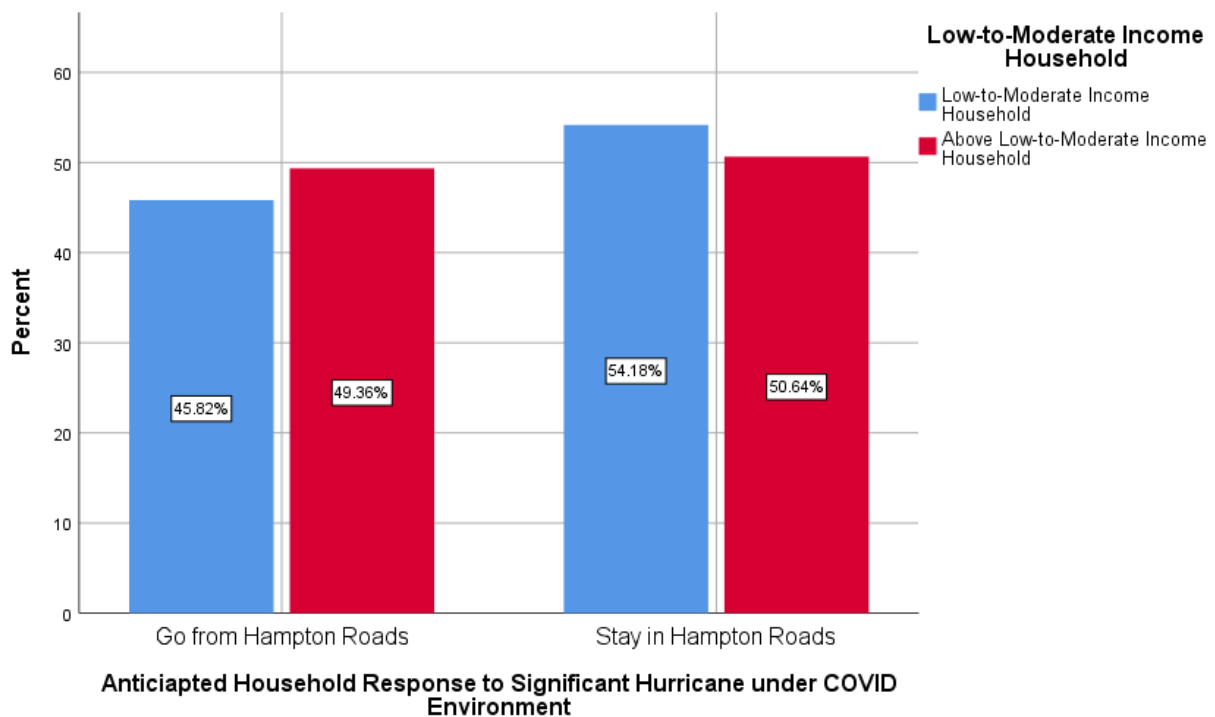


..by..Low-to-Moderate Income Household

This chart shows the proportions of low-to-moderate income households (disaggregated into LMI and above LMI households) according to the anticipated household responses (go or stay).

As shown, when asked if households would evacuate out of the Hampton Roads Region due to a significant hurricane heading to the area, about 46 percent of LMI households and about 49 percent of above LMI households indicate they are likely to evacuate out of the Hampton Roads area.

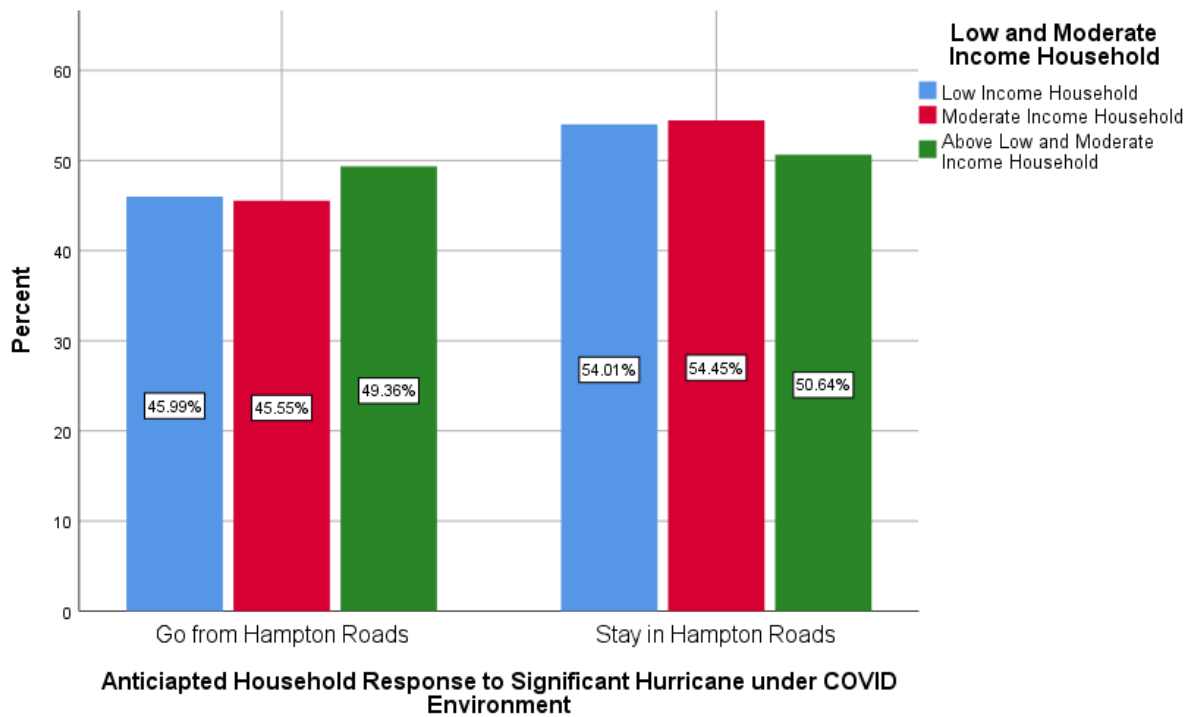
Low-to-Moderate Income (LMI) households are more likely to stay in Hampton Roads relative to above LMI households (54 percent and 51 percent, respectively).



..by..Low and Moderate Income Household

The chart below illustrates the proportions within low and moderate income households (disaggregated into low, moderate, and above low and moderate households) across the different anticipated household response categories (go or stay).

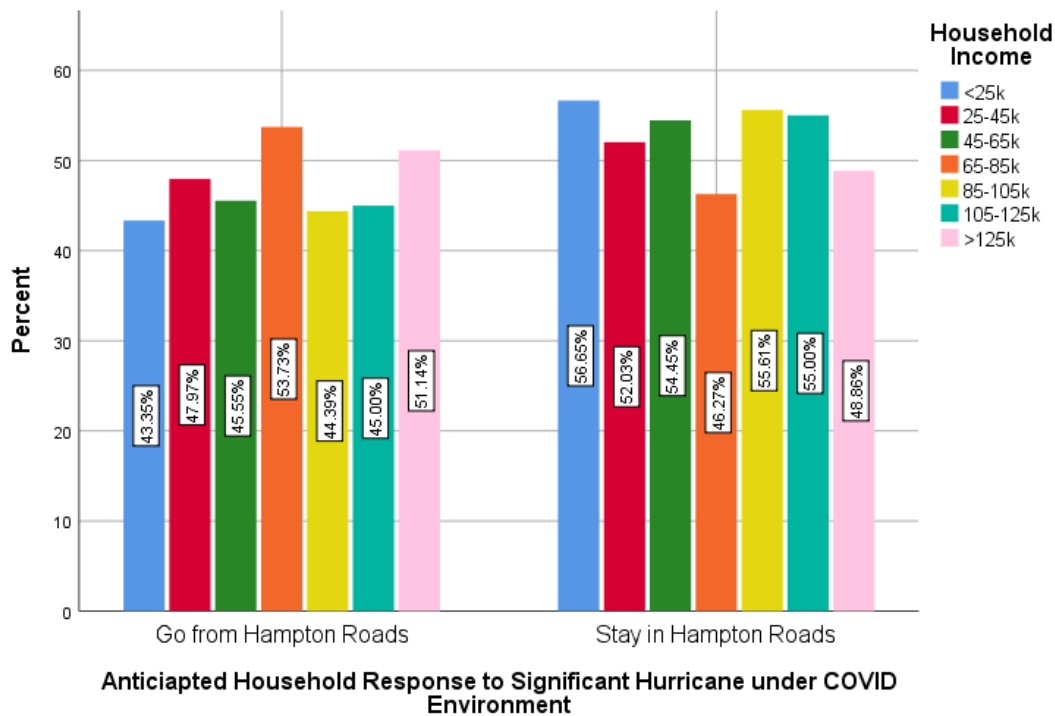
Almost 46 percent of low income, over 45 percent of moderate income, and 49 percent of above low and moderate income households are likely to evacuate from Hampton Roads. While there is no statistical difference between the propensities of low income and moderate income households to evacuate, higher incomes households (those above low and moderate income households) are more likely to evacuate from the region.



..by..Granulated Household Income

This chart summarizes the proportions of households in different income categories (disaggregated into seven household income gradients) according to their anticipated household response (go or stay).

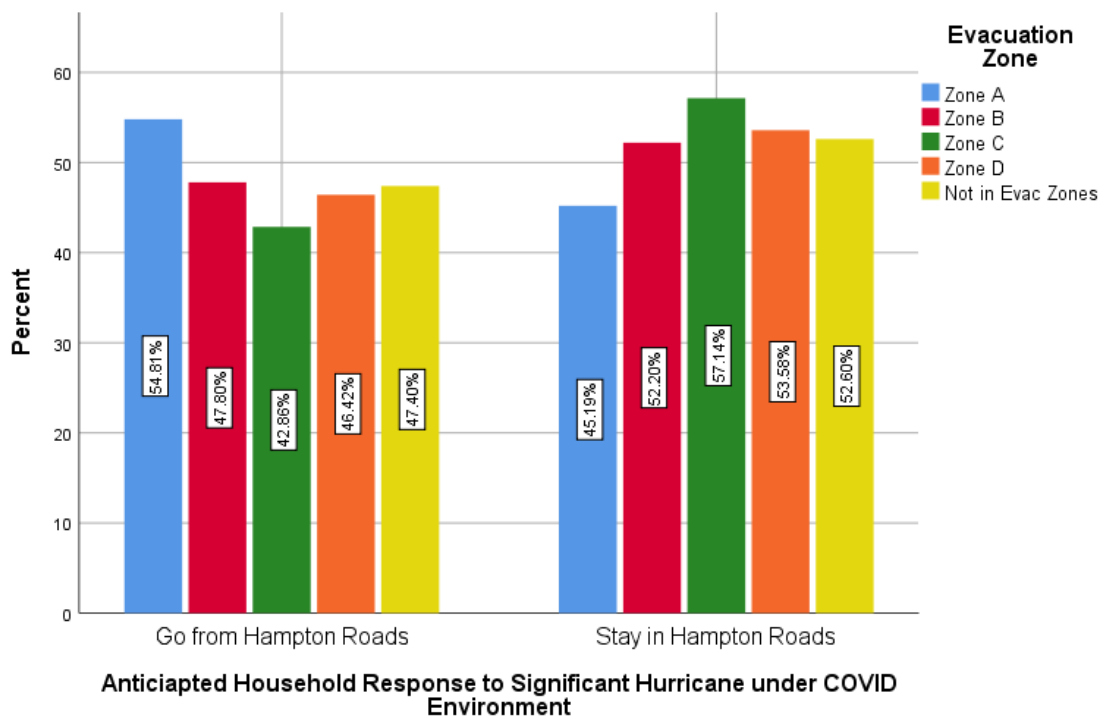
Households in the lowest income categories (e.g., less than \$25k) are the least likely (43 percent) to evacuate from the region relative to the other income categories. In contrast, 51 percent of households in the highest income category (e.g., greater than \$125k) are likely to evacuate. Households in the middle income category (e.g., between \$65K and \$85K) have the highest likelihood of evacuation of almost 54 percent.



..by..Evacuation Zone

The chart below illustrates the proportions of households within specific evacuation zones (Zones A-D and areas not within an evacuation zone) according to their anticipated household response (go or stay).

Households residing in evacuation Zone A are more likely to evacuate (55 percent) relative to any of the other zones and the area not in a zone. About 48 percent of households residing in Evacuation Zone B, almost 43 percent of households in Evacuation Zone C, and 46 percent of households in Zone D are likely to evacuate.

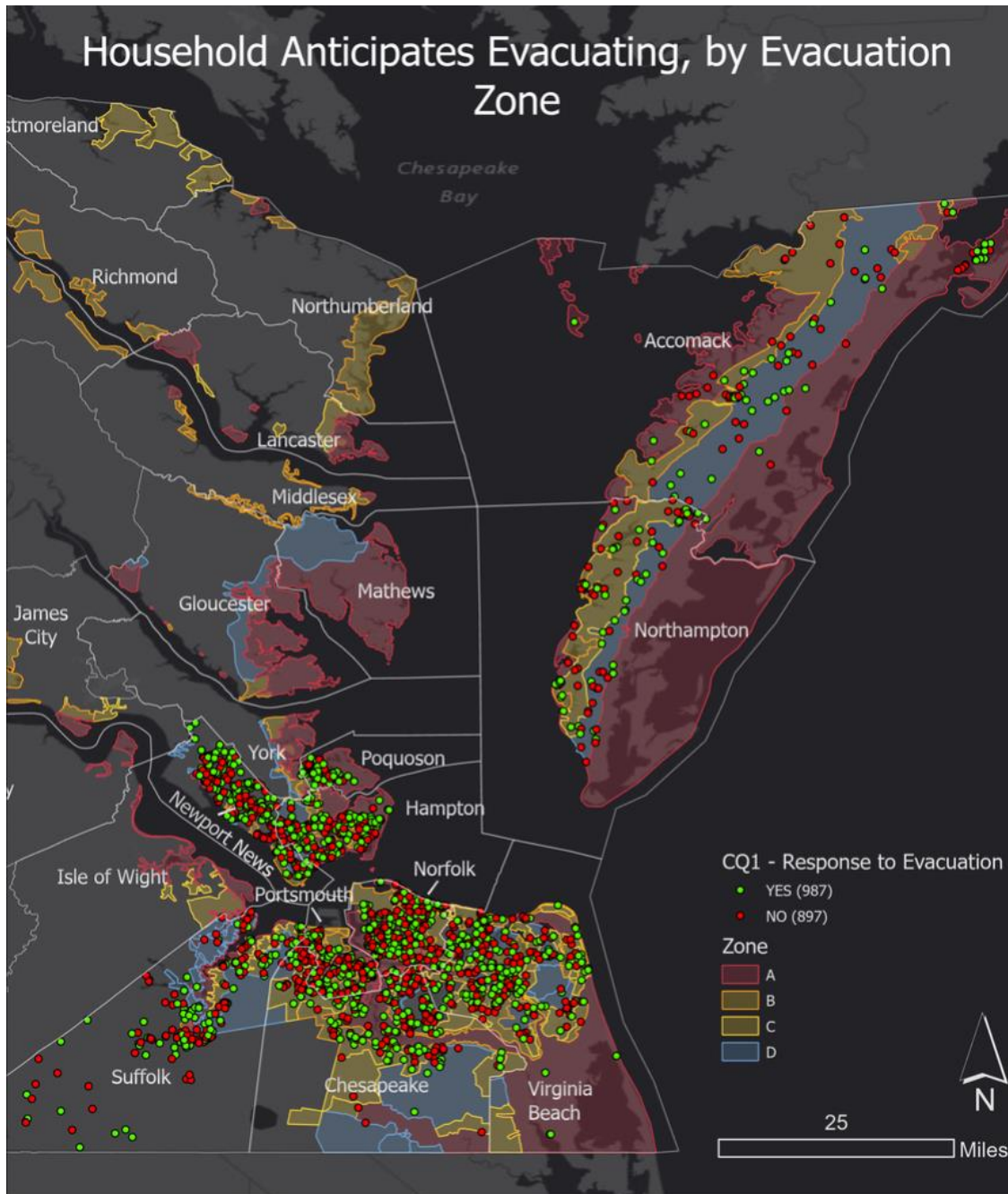




## Likely Evacuate Out of Hampton Roads (Map)

This map illustrates, across evacuation zones, the general location of respondents that indicate their household is likely to evacuate from the Hampton Roads region when confronted with a significant hurricane under a COVID environment. Green indicates households likely to evacuate and red indicates households likely to remain in the region.

This map shows the general location of sampled households. Precise locations of geocoded dots are masked to assure anonymity.



## Sheltering Venue if Likely to Stay in Hampton Roads

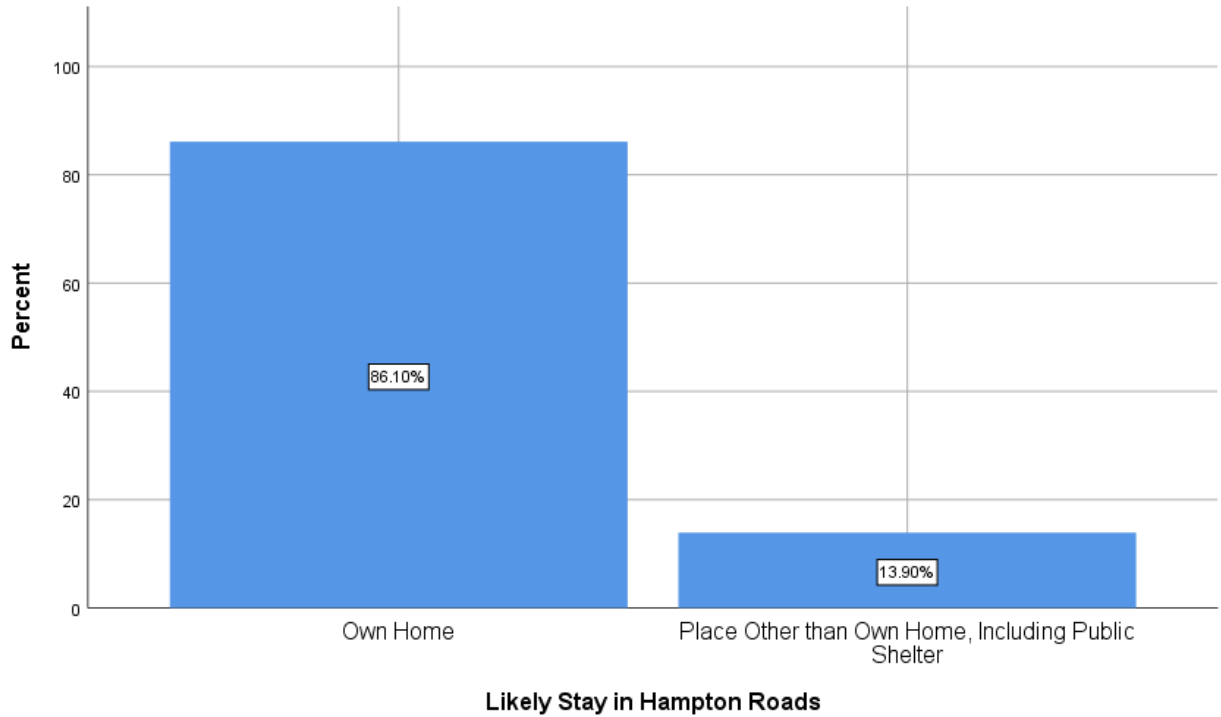
The charts discussed next provide information for households that are likely to stay in the Hampton Roads region when confronted with a significant hurricane event under a COVID environment.

Identification of these households are initially derived from the query, “Currently, in this hurricane season, if a significant hurricane were to head for Hampton Roads, then would your household likely evacuate out of the Hampton Roads region?” About 52 percent of all study households fall within the ‘Likely to Stay in Hampton Roads’ category.

Following this initial question, households are further queried about where, specifically, the household anticipates sheltering within the region. Among those households that are likely to stay in the Hampton Roads region, there are a variety of sheltering venues. This section identifies several of these sheltering venues. The charts in this section report figures as a percent of only those households that have been classified as likely to stay in Hampton Roads when confronted with a significant hurricane under the COVID environment.

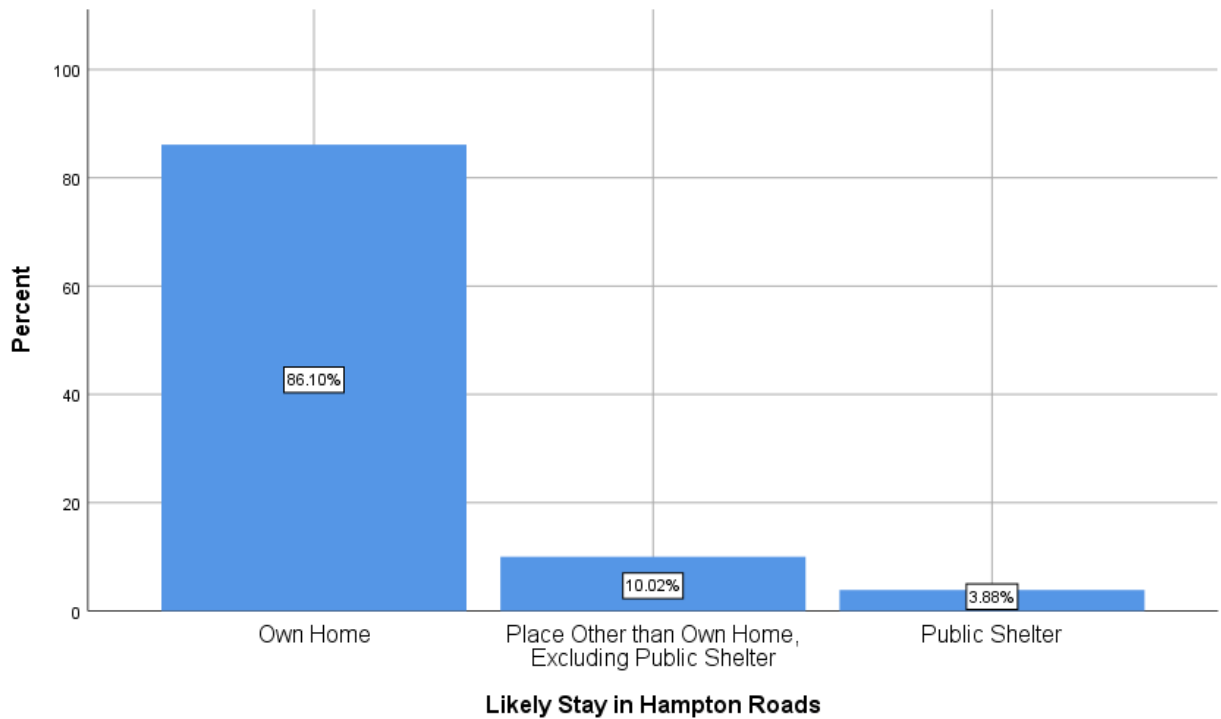
## Primary Residence

The phrase 'shelter in place' generally implies sheltering within the household's primary residence. As illustrated in the chart below, just over 86 percent of households that anticipate staying in the region plan to shelter in place in their own home. Notable is that nearly 14 percent of all households that remain in the region do not anticipate sheltering in their own home.



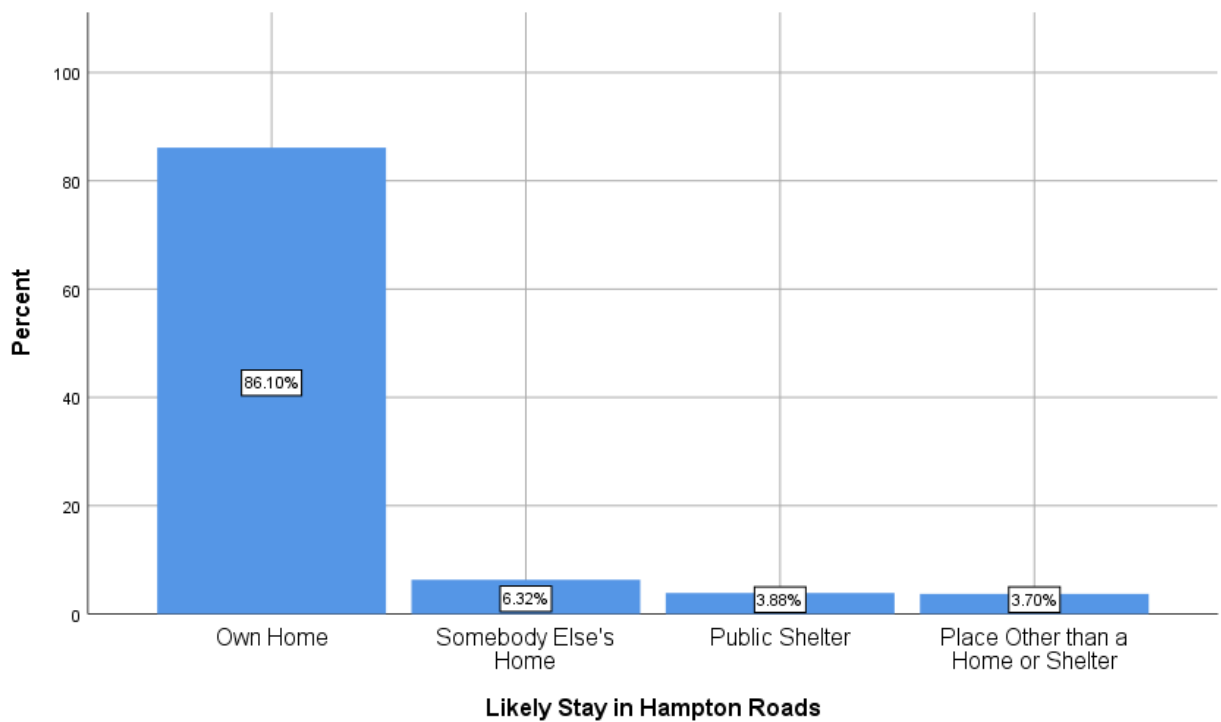
## Public Shelter

About 4 percent of all households likely to stay in Hampton Roads anticipate seeking public shelter. Notable is that slightly over 10 percent of households staying in the region neither anticipate sheltering in their primary home nor anticipate sheltering at a public shelter.



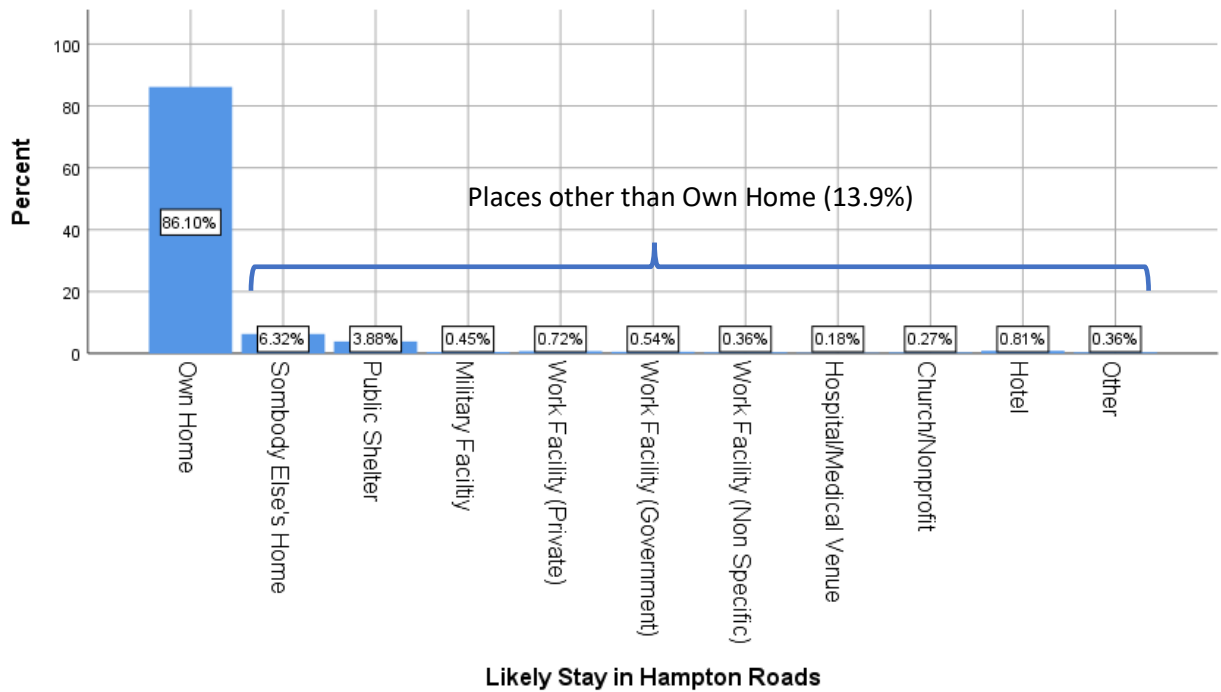
## Somebody Else's Home

Leading up to a storm making landfall, there is movement across the region as households evacuate the region and those remaining prepare to weather the storm. Previous studies of evacuation and sheltering behavior suggest that some households may choose to shelter in a residence, but one other than their own. The reasons for this behavior vary but range from a preference to shelter with extended family and to shelter in a home that is perceived to be less at risk relative to the household's primary residence. The chart below shows that, among those sheltering in the region, over 6 percent shelter within a home other than the household's primary residence.



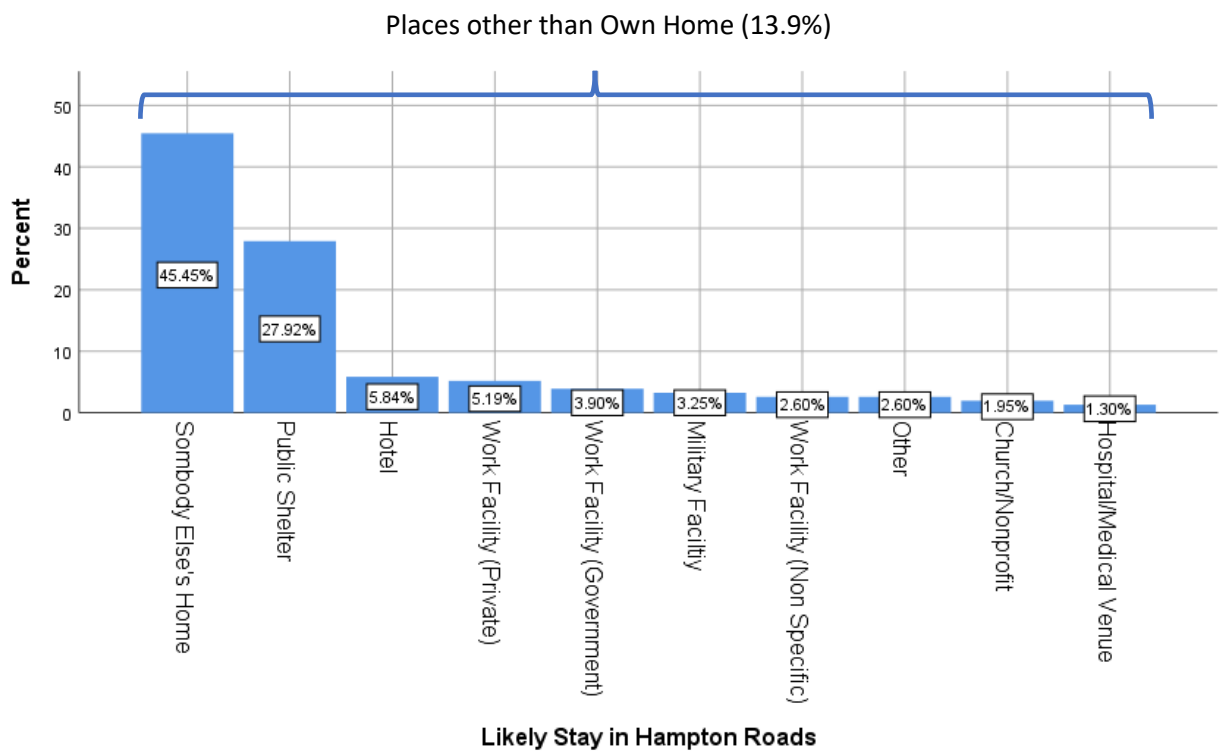
### Places other than Own Home (1)

Among those households likely to stay in Hampton Roads, just over 86 percent anticipate sheltering in their primary residential structure, and nearly 14 percent will seek shelter at places other than the own home. Notably, within this 14 percent, over 6 percent will shelter in somebody else's residential structure and just under 4 percent will shelter in a public shelter. Other choices that were identified by under 1 percent of households include staying at a work facility, medical venue, church, or hotel.



## Places other than Own Home (2)

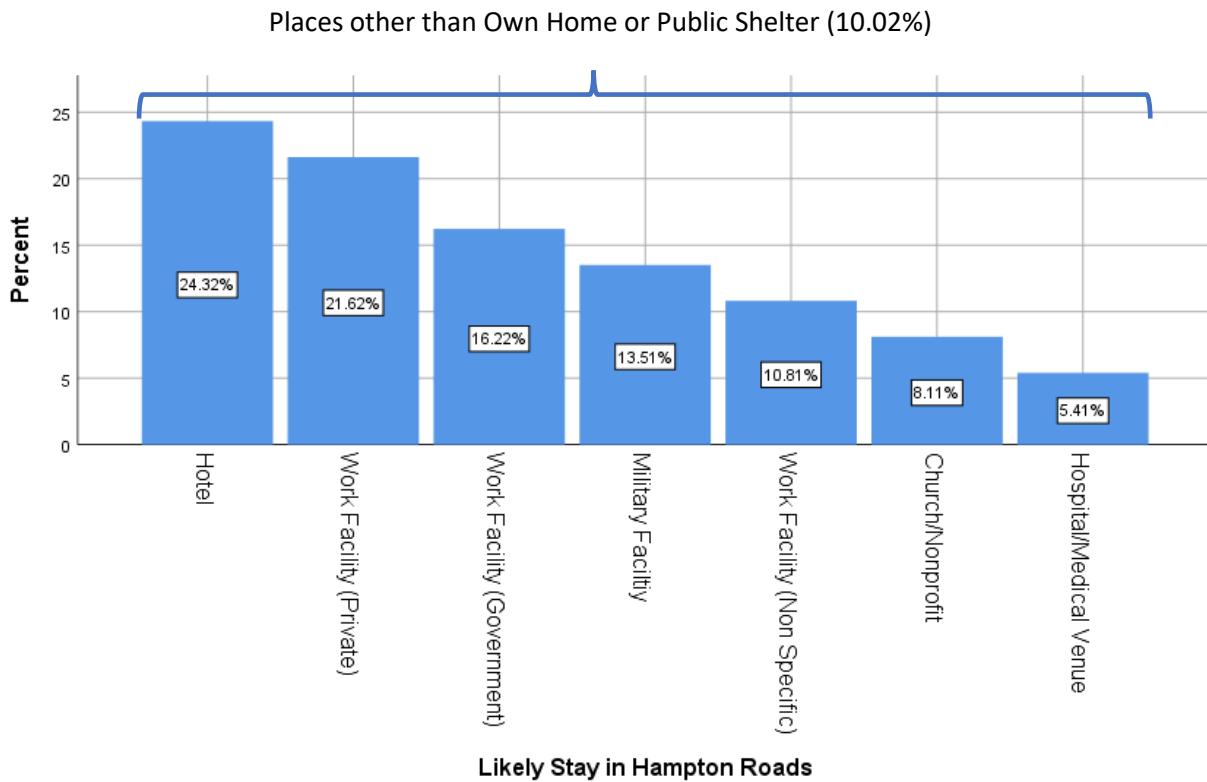
Drawing from the previous chart, we note that the majority of households remaining in Hampton Roads anticipate sheltering within their primary residence. The chart below excludes primary residences as a sheltering choice and examines the relative weight of each of the remaining sheltering choices that. As shown in the chart below, of the households that would shelter in places other than their own home, just over 45 percent will seek shelter in another residential structure and nearly 28 percent will seek a public shelter. Roughly 24 percent will seek shelter at hotels, places of employment, military facilities, churches, and healthcare venues.



## Places other than either Own Home or Public Shelter

Households that plan to shelter within the region, but not within either their own home or public shelter, represent 10 percent of the total households staying in the Hampton Roads region.

The chart below shows the variety of sheltering venues collapsed into seven common categories. Nearly a quarter (24 percent) anticipate sheltering in a hotel within the region, nearly 22 percent will shelter at a commercial/private work facility, just over 16 percent at a government work facility, about 14 percent at a military facility, nearly 11 percent at a nonspecific work venue, just over 8 percent at a religious or nonprofit venue, and over 5 percent at a hospital or medical venue.



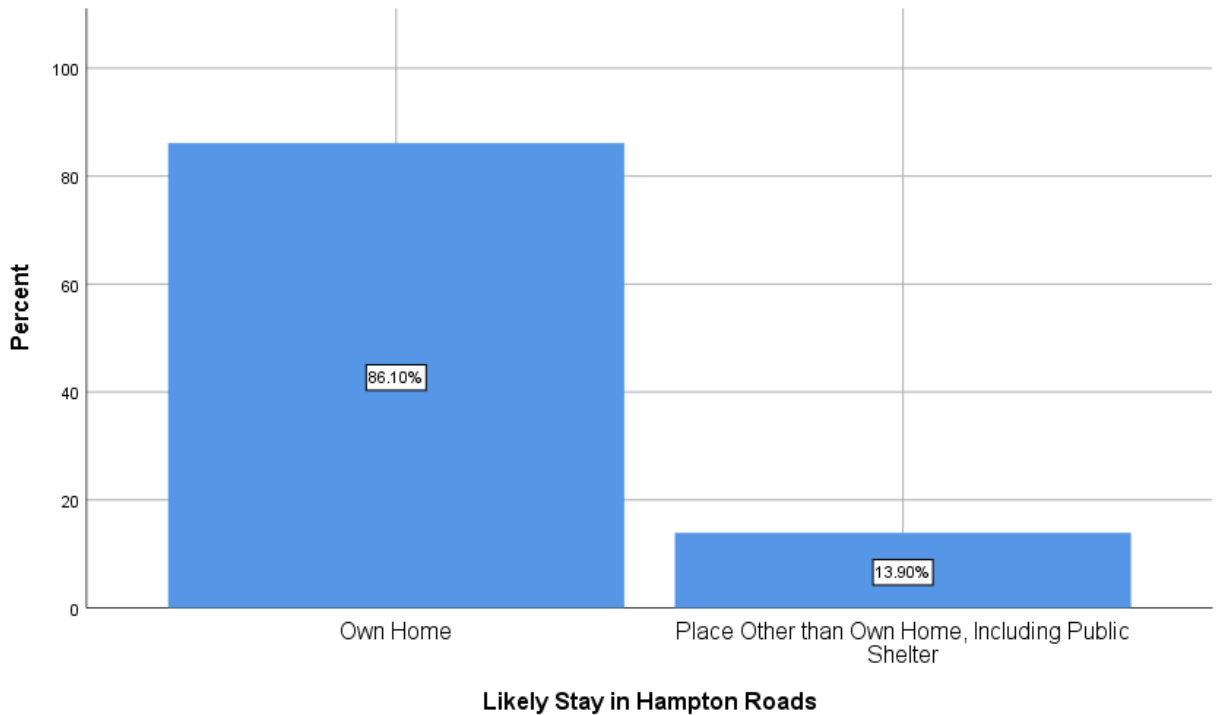


## Likely to Stay in Hampton Roads

Of all households, almost 48 percent anticipate evacuating out of Hampton Roads are excluded and 52 percent anticipate staying in the region. The chart below illustrates only households likely to stay in Hampton Roads.

Note: The chart below duplicates the previous chart but is presented again to set the stage for the seven control variables that will be discussed next.

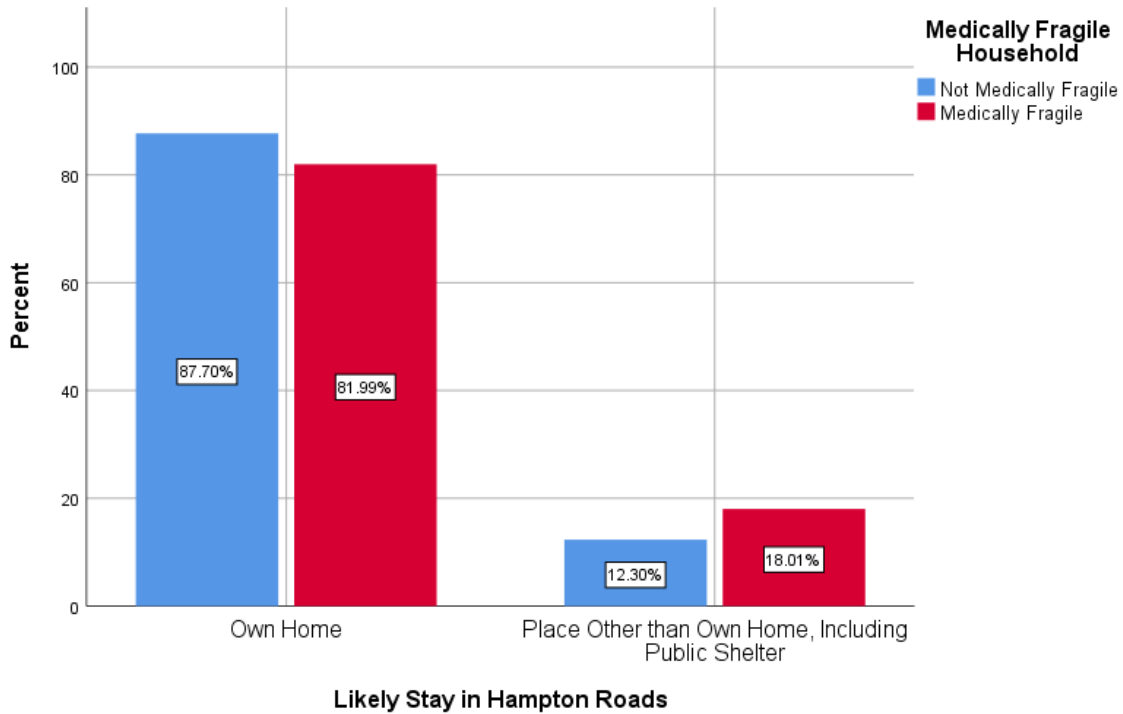
Just over 86 percent of households that are likely to stay in Hampton Roads report their household as being likely to shelter in their primary residence. Roughly 14 percent anticipate seeking shelter within the region, but at a place other than the own home, including a public shelter.



..by..Medically Fragile Household

The chart below illustrates the proportions within medically fragile households according to where they were likely to stay while sheltering in the region (own home and place other than own home).

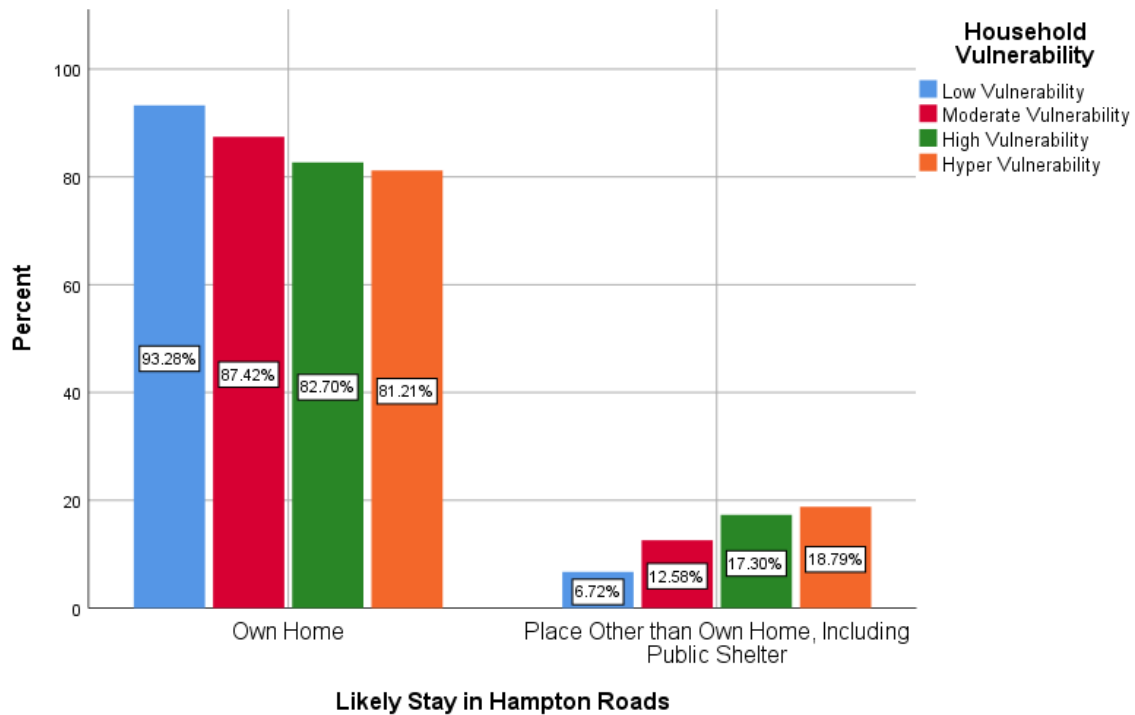
Medically fragile households are less likely to shelter in their primary residence relative to non-medically fragile populations (82 percent and 88 percent, respectively).



..by..Household Vulnerability

This chart presents the proportions of households with different vulnerability (low, moderate, high, and hyper vulnerability households) according to where they were likely to stay while sheltering in the region (own home and place other than own home).

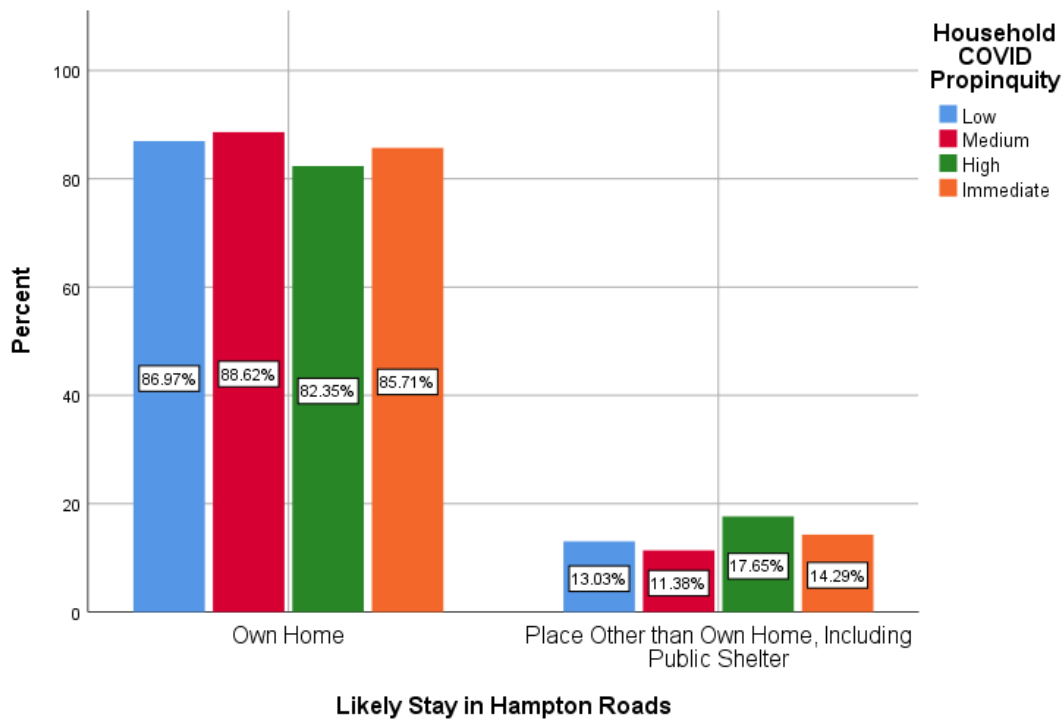
The more vulnerable a household, the less likely the household will shelter in their primary residence. Hyper vulnerable households are less likely to shelter in their primary residence relative to low vulnerability households (81 and 93 percent, respectively).



..by..Household COVID Propinquity

The chart below illustrates the proportions of households with different COVID propinquity (low, medium, high, and immediate COVID propinquity households) according to where they were likely to stay while sheltering in the region (own home and place other than own home).

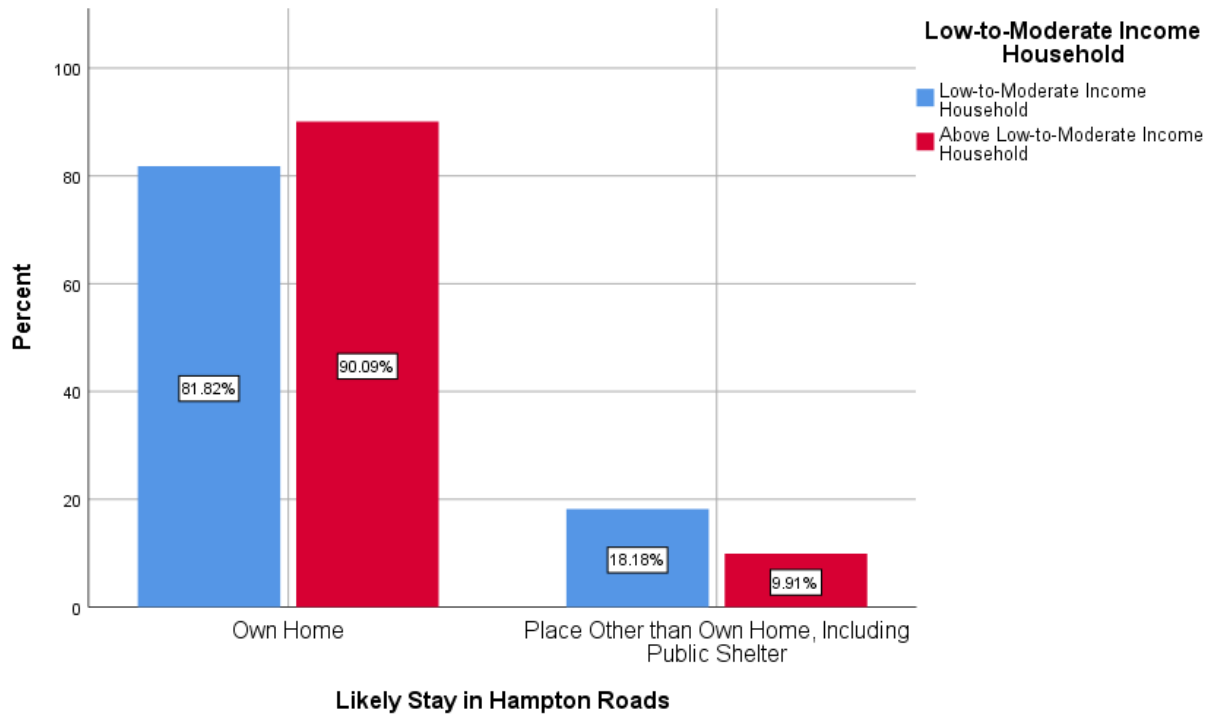
Households characterized as immediate COVID propinquity are nearly as likely to shelter in their primary residence relative to low COVID propinquity households (86 percent and 87 percent, respectively).



..by..Low-to-Moderate Income Household

The chart below illustrates the proportions of low-to-moderate income household (disaggregated into LMI and above LMI households) according to where they were likely to stay while sheltering in the region (own home and place other than own home).

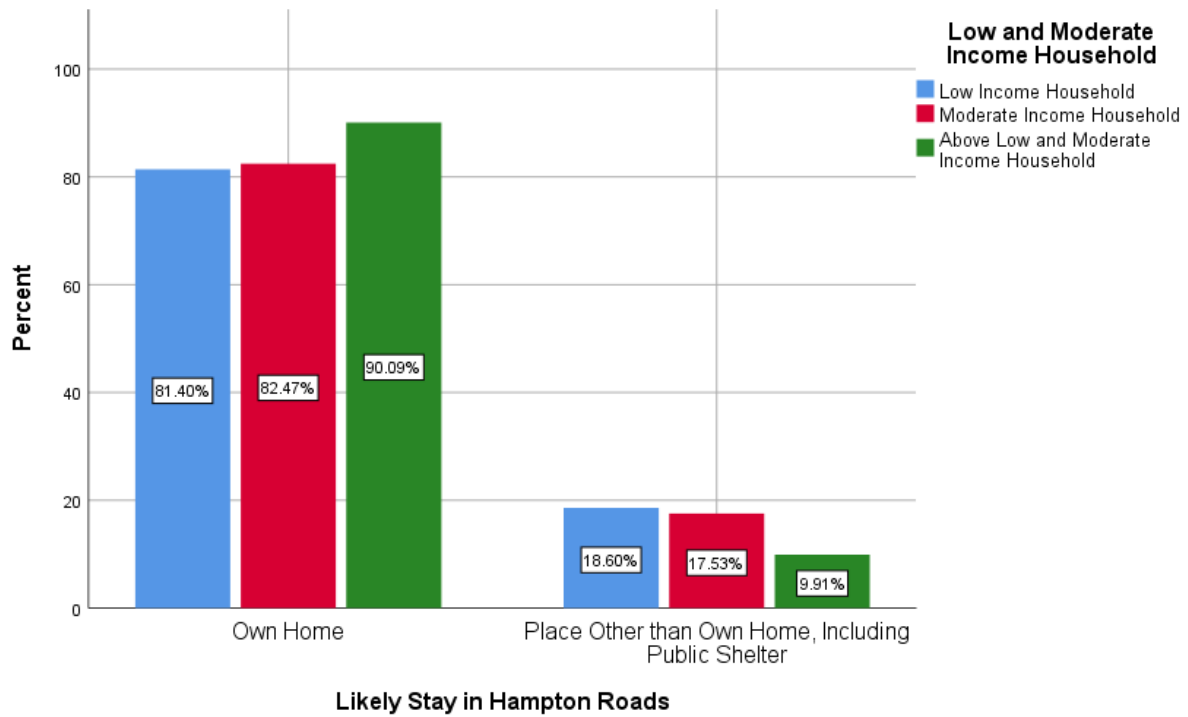
LMI households are less likely to shelter in their primary residence relative to households with incomes above low-to-moderate (82 and 90s percent, respectively).



..by..Low and Moderate Income Household

This chart shows the proportions of low and moderate income households (disaggregated into low, moderate, and above households) according to where they were likely to stay while sheltering in the region (own home and place other than own home).

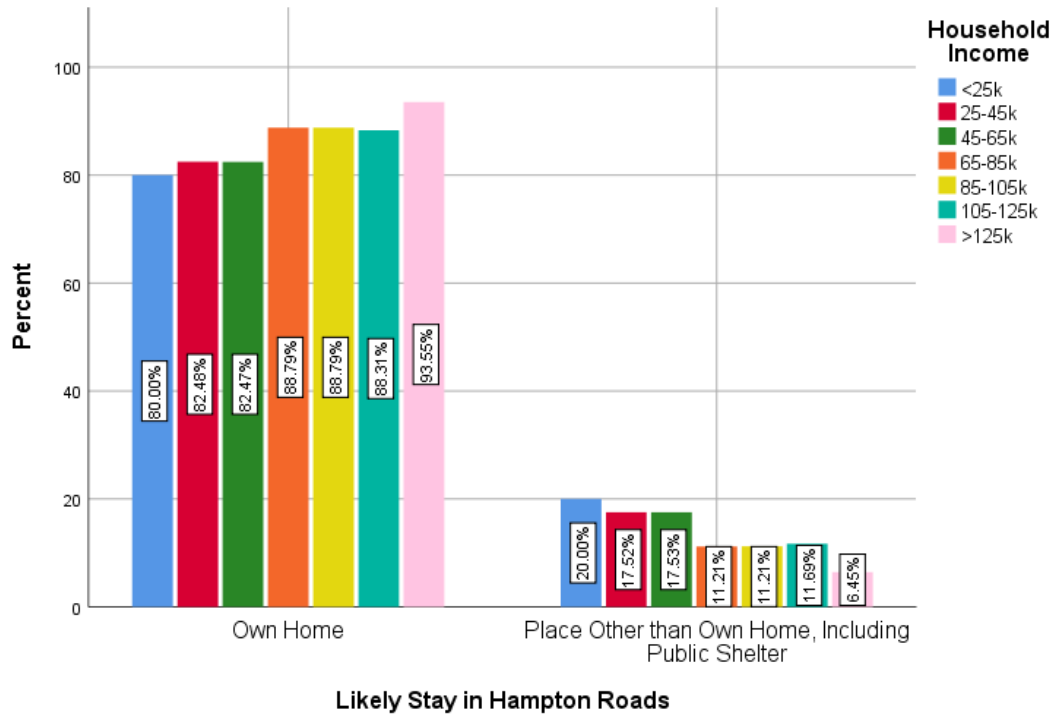
Low income and moderate income households are less likely to shelter in their primary residence relative to households with incomes above low and moderate (81 percent for low income households and 83 percent for moderate income households, compared to 90 percent for above low and moderate income households).



..by..Granulated Household Income

This chart summarizes the proportions of households in different income categories (disaggregated into seven household income gradients) according to where they were likely to stay while sheltering in the region (own home and place other than own home).

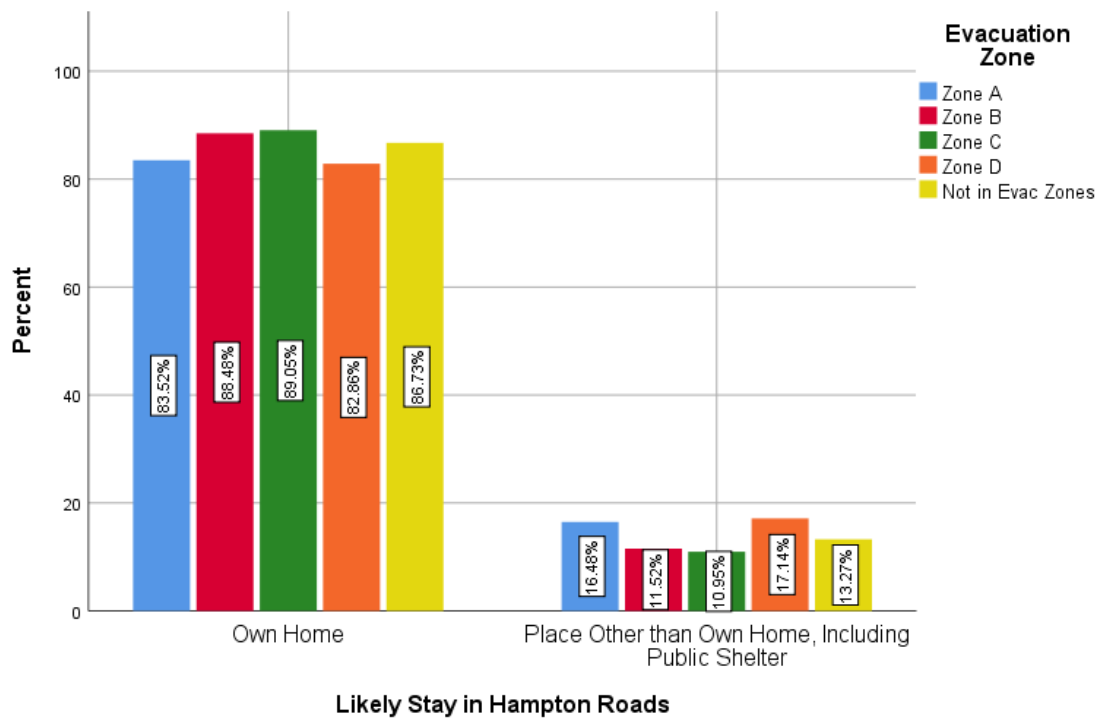
There is a general relationship between increased household income and increased likelihood of sheltering in primary residence. Households with income less than \$25k are the least likely to shelter in their own home (80 percent) and households with income greater than \$125k are most likely to shelter in primary residence (94 percent).



..by..Evacuation Zone

This next chart shows the proportions of households within specific evacuation zones (Zones A-D and areas not within an evacuation zone) according to where they were likely to stay while sheltering in the region (own home and place other than own home).

Households in Zone A and Zone D have the greatest likelihood of not sheltering in their primary residence, relative to other areas. Almost 84 percent of households in Zone A, the most physically vulnerable area, indicate that they are likely to shelter in the region and stay in their own home.





## Qualified Opportunity Zone (QOZ) & Evacuation

Qualified Opportunity Zones (QOZ) are designated areas at the U.S. Census tract level that are nominated by states, the District of Columbia or U.S. territories, and are certified by the U.S. Treasury Secretary as economically distressed communities. Added to the tax code by the Tax Cuts and Jobs Act on December 22, 2017, QOZs are eligible for preferential tax treatment for new investments under certain conditions. More information about QOZ are available here: <https://www.cdfifund.gov/Pages/Opportunity-Zones.aspx>.

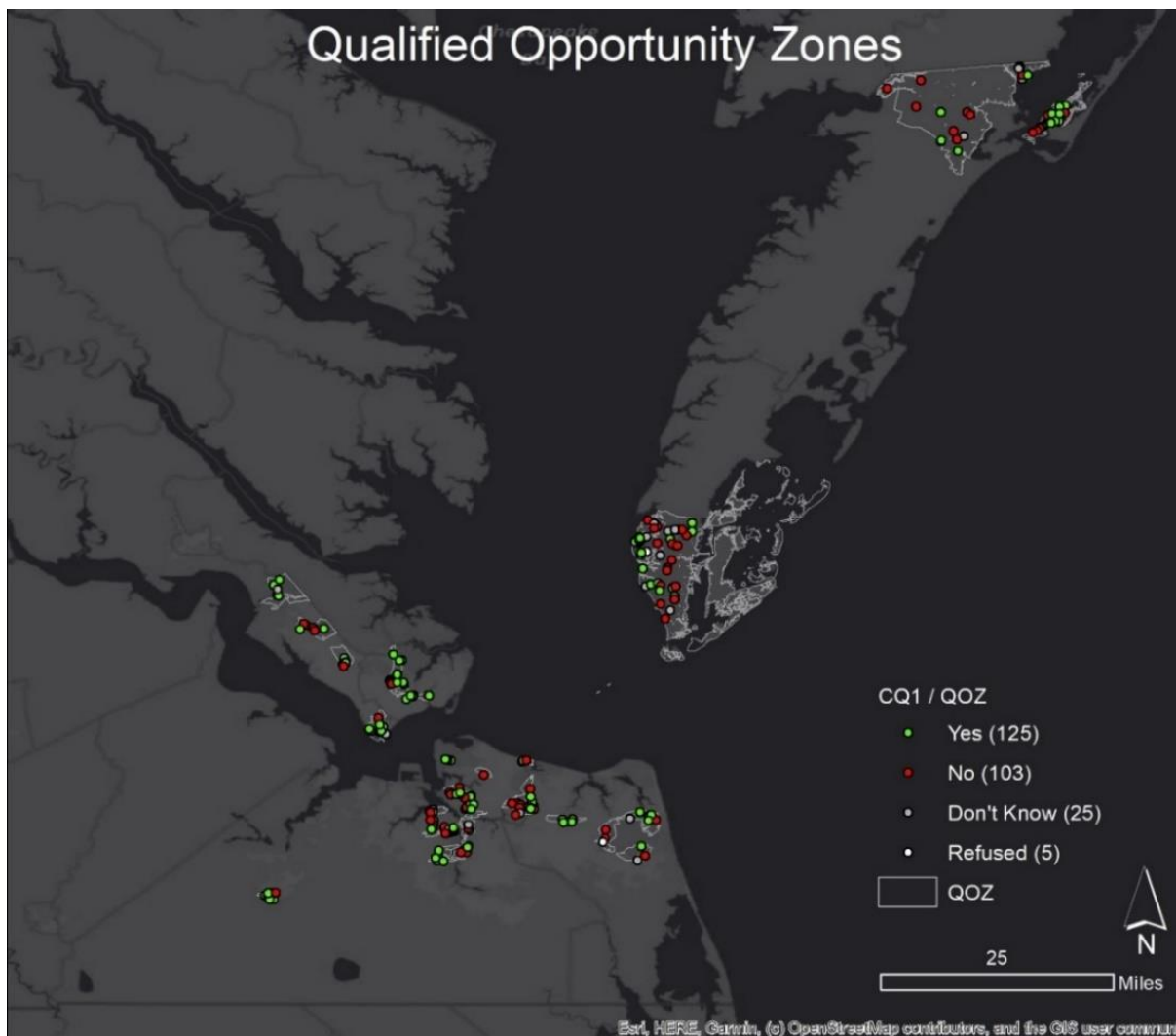
Approximately 48 percent of respondents within Qualified Opportunity Zones indicated that they would evacuate when asked, *“Currently, in this Hurricane Season, if a significant hurricane were to head for Hampton Roads, then would your household likely evacuate out of the Hampton Roads region?”*

## Qualified Opportunity Zone (QOZ) & Evacuation (Map)

The map below illustrates the location of Qualified Opportunity Zones relative to sampled households within these zones. Green dots represent households likely to evacuate when confronted with a significant hurricane event during COVID and red dots represent households anticipating staying in the region.

Overall, 45 percent of households within QOZs anticipate sheltering within the region (excluding Don't Know and Refuse responses).

This map shows the general location of sampled households. Precise locations of geocoded dots are masked to assure anonymity.



## Part 6: COVID Impact on Household Evacuation & Sheltering Behavior

An important focus of this study is a better understanding of how COVID may be expected to impact evacuation and sheltering behavior leading up to a *significant* hurricane event.

The removal of persons away from areas most likely to experience destructive wind- and water-related impacts on the built environment is the State's primary approach to reduce bodily harm to residents. Simply, evacuation and public sheltering are intended to remove persons from areas of high risk to areas of lesser risk and, thus, protect the wellbeing of persons and households.

Part 6 reports the methodology and results employed to arrive at estimates for changes in evacuation and sheltering behavior during the COVID-19 pandemic. Specifically, Part 6:

1. Formulates two specific research questions,
2. Develops a logic model used to answer these questions empirically,
3. Analyzes evacuation and sheltering propensities, and
4. Summarizes estimates in terms of persons and number of households expected to alter evacuation and sheltering behavior under COVID conditions.

## Research Questions

The State, for planning purposes, has a particular interest in estimating the number of residents that will shelter in place, shelter in a public shelter, or evacuate under a pandemic environment.

Specifically:

- 1) How much will the COVID environment likely decrease the propensity of residents to evacuate out of the Hampton Roads region?
- 2) How much will the COVID environment likely decrease the propensity of residents to seek shelter in a public shelter within the Hampton Roads region?

In order to answer these, we must necessarily have three types of data.

**First**, we must have a sense of how households anticipate behaving should a significant hurricane approach Hampton Roads within the COVID environment. The compound hurricane-pandemic threat is a very real scenario for 2020 and 2021 hurricane seasons. To assess anticipated evacuation and sheltering behavior during this current hurricane season within this COVID environment, households were queried: *“Currently, in this Hurricane Season, if a significant hurricane were to head for Hampton Roads, then would your household likely evacuate out of the Hampton Roads region?”* and *“Since your household is not likely to evacuate out of the region, what then will your household likely do? Will you: stay in your home, stay at somebody else’s home, go to a public shelter, or something else?”*

From these questions, we broadly categorize households to fall exclusively within one of three branches characterizing anticipated evacuation and sheltering behavior:

*Branch 1:* Shelter Somewhere within Hampton Roads, although not within a Public Shelter in the Region.

*Branch 2:* Shelter within a Public Shelter within Hampton Roads.

*Branch 3:* Evacuate out of Hampton Roads.

**Second**, we must have a sense of the household's risk perception relative to the COVID environment. We distinguish between concern about COVID exposure being 'one of the reasons' and concern about COVID exposure being 'the primary reason' driving the household's decision on where to shelter within the region or to evacuate out of the region.

*Risk Perception 1:* Concern about exposure to COVID is one of the reasons the household is unlikely to evacuate out of the region.

*Risk Perception 2:* COVID is the primary reason the household is unlikely to evacuate out of the region.

*Risk Perception 3:* Concern about exposure to COVID is one of the reasons the household is unlikely to shelter in a public shelter in the region.

*Risk Perception 4:* COVID is the primary reason the household is unlikely to shelter in a public shelter in the region.

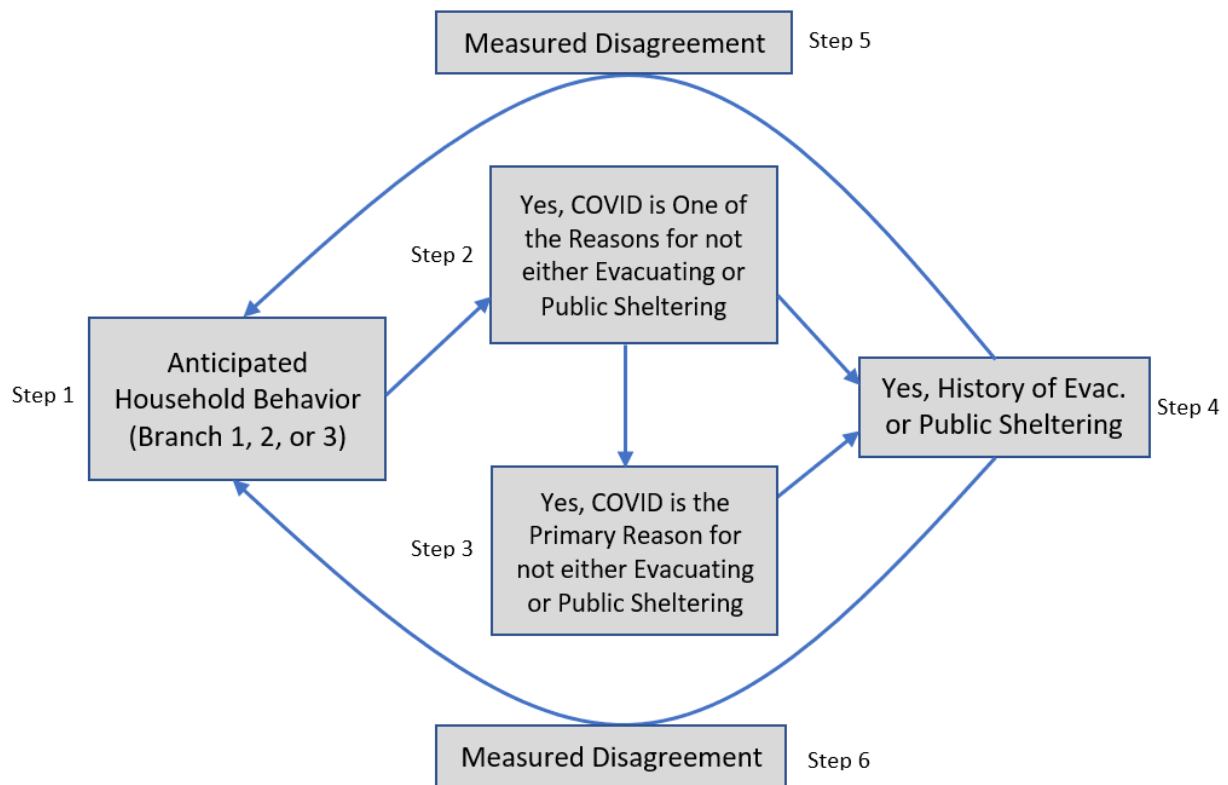
**Third**, we must have a sense of how households have behaved in the past under a similar (i.e., significant) or lesser hurricane condition. We query households to assess the history of evacuation and sheltering to establish two past behaviors:

*Past Behavior 1:* Household has History of Evacuation Out of Region Due to Storm Threat

*Past Behavior 2:* Household has History of Sheltering in Public Shelter Due to Storm Threat

## General Logic Model

We perform four analyses of COVID impacts on household hurricane evacuation and sheltering behavior. The figure below illustrates the general logic model applied in these four analyses. Step 1 determines the household anticipated behavior under the current COVID environment. This may be sheltering within Hampton Roads, sheltering at a public shelter, or evacuating from the region (i.e., Branches 1-3). Step 2 assesses the risk of COVID being cited as one of the reasons for either not evacuating out of Hampton Roads or seeking shelter in a public shelter within Hampton Roads. Step 3 assesses the risk of COVID being cited as the primary reason for either not evacuating or sheltering. Step 4 determines past household behavior. This may be a history of either evacuation or sheltering in a public shelter. In Step 5, the disagreement between household past behavior and anticipated behavior for those households that answered 'yes COVID is one of the reasons' is measured. In Step 6, the disagreement between household past behavior and anticipated behavior is measured for those households that answered 'yes COVID is the primary reason.' These measures of disagreement are indications of change in behavior.



## Analysis 1: Change in Propensity to Evacuate

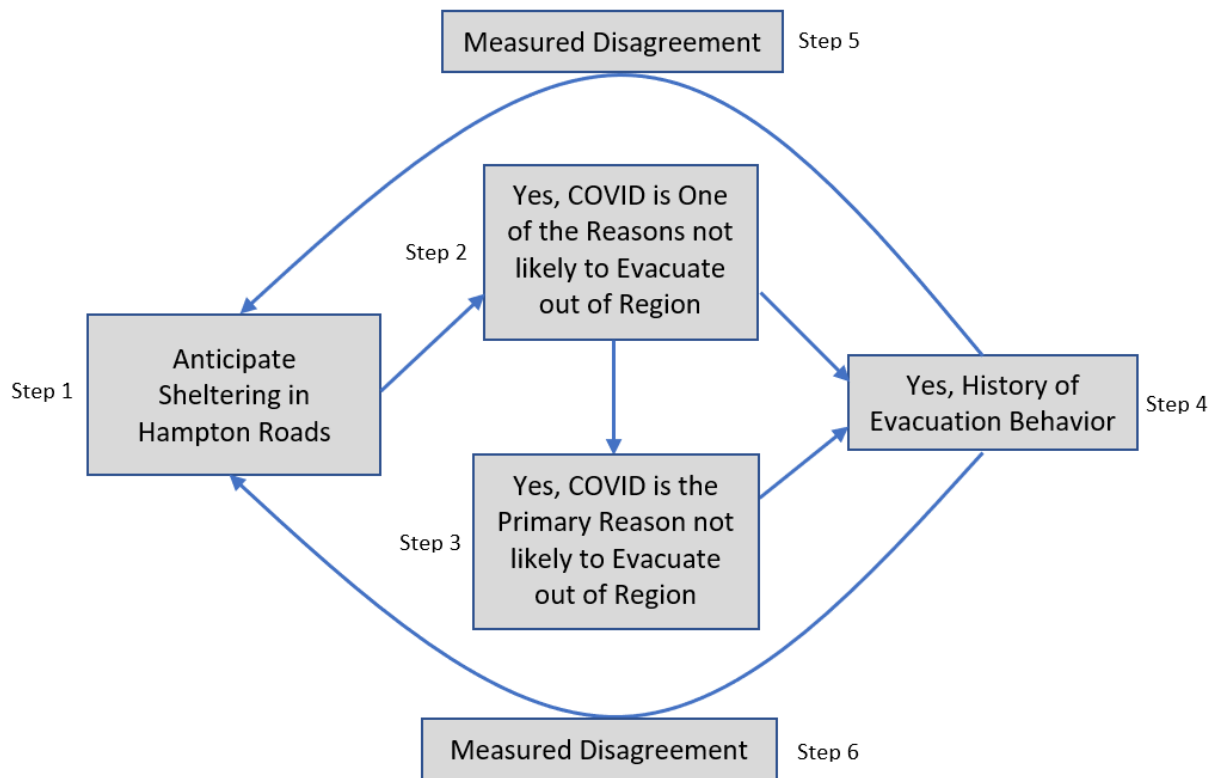
### Branch 1

We are measuring change in behavior among those households that, during the 2020 hurricane season under the COVID environment, plan to shelter somewhere within Hampton Roads, although not within a public shelter in the region.

### Research Question

What extent might the COVID environment impact household propensity to evacuate out of the Hampton Roads region? Specifically, has COVID decreased the number of households that would otherwise evacuate? And if so, by how much?

### Logic Model



Many of the households that plan on sheltering in the region do not have a history of evacuation but do have a history of sheltering in the region. There is agreement between anticipated behavior and past behavior. These households do not appear to be changing their behavior under the COVID environment. In addition, given this agreement, these households are unlikely candidates for measurable change in behavior based on whether or not they cite COVID exposure as a reason for not evacuating.

What is of interest are those households that have a history of evacuation under either a lesser or similar hurricane threat, but under this COVID environment are no longer anticipating evacuating. That is, there is disagreement between anticipated behavior and past behavior. Demonstrating measurable change in behavior are those households that exhibit disagreement *and* also cite concern about COVID as either one of the reasons for not evacuating or as the primary reason for not evacuating.

According to Chart 1, among households that state concern about exposure to COVID as one of the reasons for being unlikely to evacuate, roughly 23 percent are households that have a history of evacuation out of the region, and therefore exhibiting disagreement. This portion equates to 12,483 households across the region, or 38,697 residents, that would otherwise have evacuated the region if not for concern about COVID exposure.\*

\*Derivation of these estimates: 1,494,089 total population across ten localities and 481,964 total households within the sampled localities. The 23.17 percent of the households within the chart tabulation (CQ2 Stay in HR, B1Q5 COVID is a Concern, B1Q13 History of Evacuation) is equivalent to 2.59 percent of the overall N=2,200. Inference 2.59 percent of total households within sampled localities is 12,483 households, or 38,697 persons at 3.1 per/household.

Chart 1

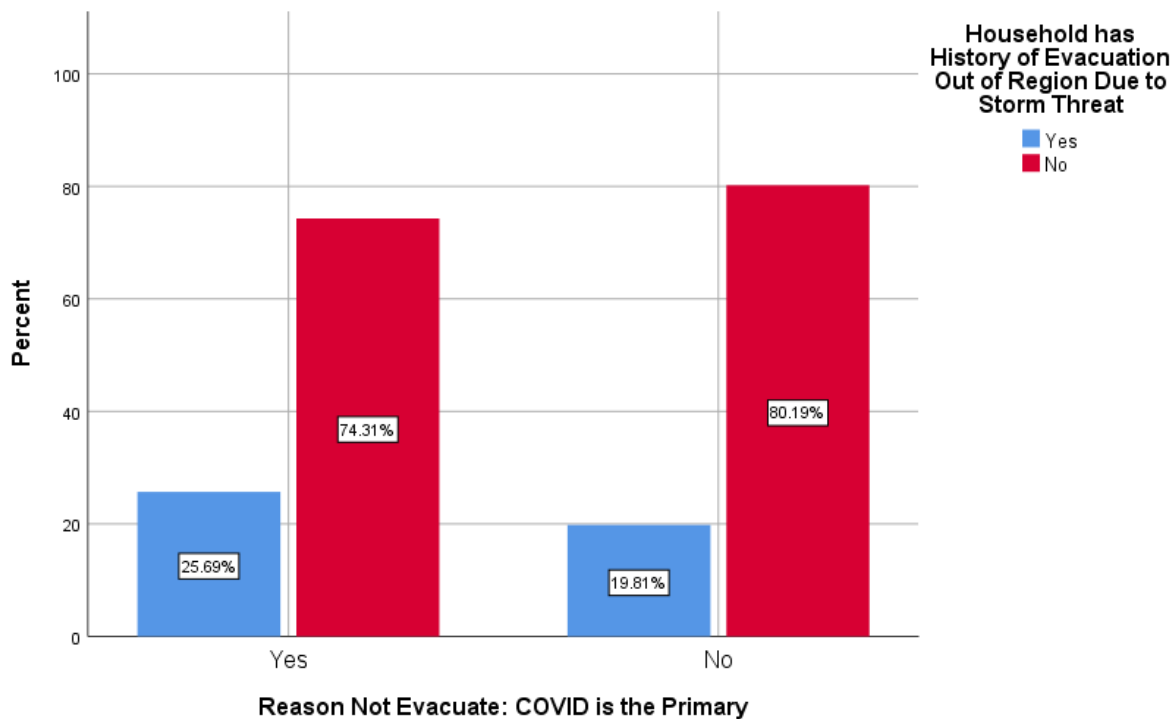




According to Chart 2, among households that state COVID is the primary reason for being unlikely to evacuate, roughly 26 percent are households that have a history of evacuation out of the region, thus exhibiting disagreement. This equates to 8,097 households across the region, or 25,101 residents, that would otherwise have evacuated the region if not for concern about COVID exposure.\*

\*Derivation of these estimates: 1,494,089 total population across ten localities and 481,964 total households within the sampled localities. The 25.69 percent of the households within the chart tabulation (CQ2 Stay in HR, B1Q6 COVID as the Primary, B1Q13 History of Evacuation) is equivalent to 1.68 percent of the overall N=2,200. Inference 1.68 percent of total households within sampled localities is 8,097 households, or 25,101 persons at 3.1 per/household.

Chart 2



## Analysis 2: Change in Propensity to Seek Public Shelter

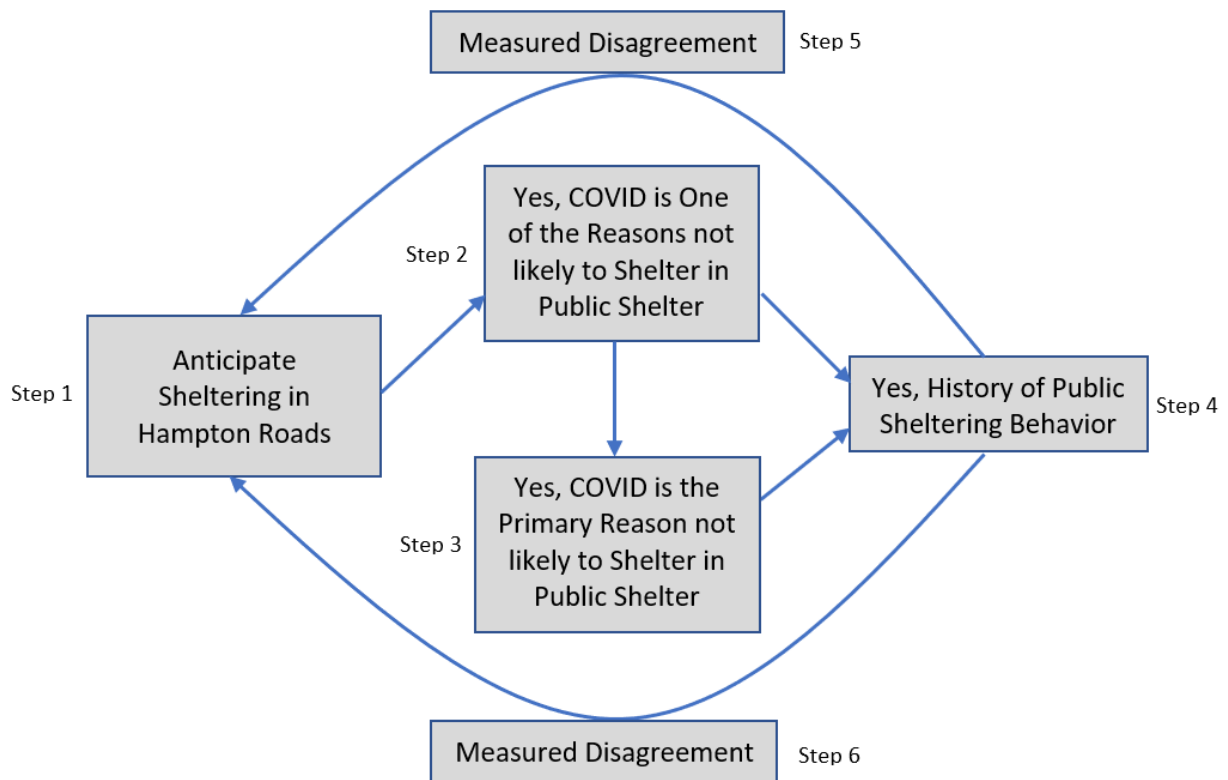
### Branch 1

We are measuring change in behavior among those households that, during the 2020 hurricane season under the COVID environment, plan to shelter somewhere within Hampton Roads, although not within a public shelter in the region.

### Research Question

What extent might the COVID environment impact household propensity to seek public shelter within the Hampton Roads region? Specifically, has COVID decreased the number of households that would otherwise seek public shelter? And if so, by how much?

### Logic Model



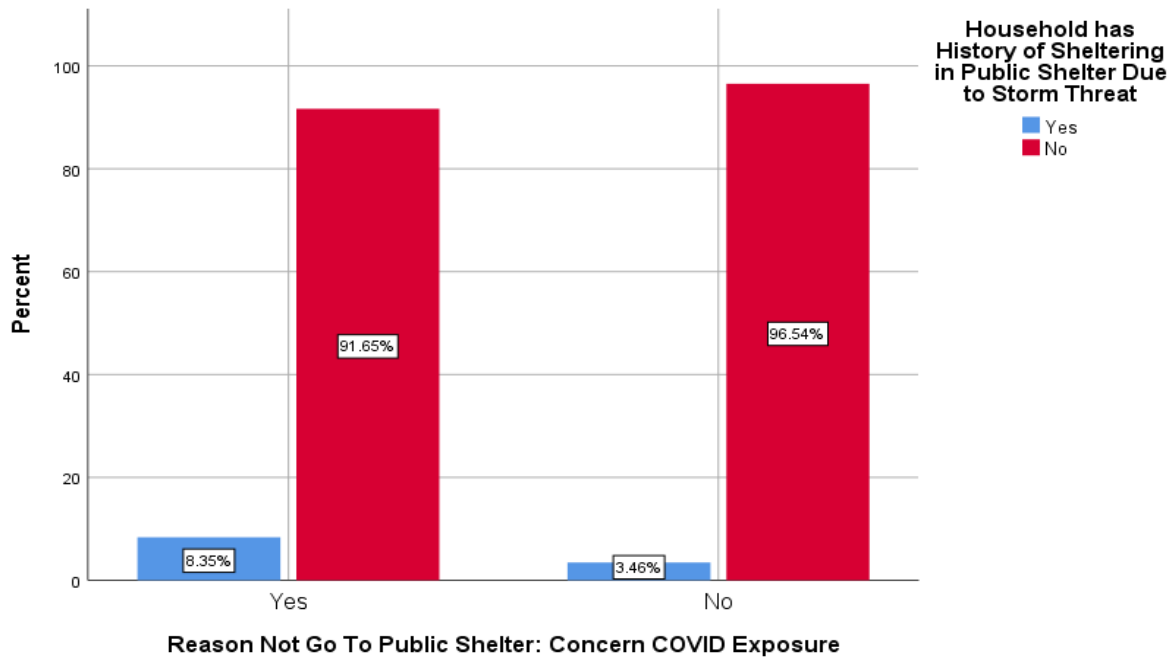
Many of the households that plan on sheltering in the region do not have a history of seeking public shelter, but do have a history of sheltering in the region. There is agreement between anticipated behavior and past behavior. These households do not appear to be changing their behavior under the COVID environment. In addition, given this agreement, these households are unlikely candidates for measurable change in behavior based on whether or not they cite COVID exposure as a reason for not evacuating.

What is of interest are those households that have a history of seeking public shelter under either a lesser or similar hurricane threat, but under this COVID environment are no longer anticipating seeking public shelter. That is, there is disagreement between anticipated behavior and past behavior. Demonstrating measurable change in behavior are those households that exhibit disagreement *and* also cite concern about COVID as either one of the reasons for not seeking public shelter or as the primary reason for not seeking public shelter.

According to Chart 3, among households that state concern about exposure to COVID as one of the reasons for being unlikely to seek public shelter, roughly 8 percent are households that have a history of evacuation out of the region, thus exhibiting disagreement. This portion equates to 7,229 households across the region, or 22,409 residents, that would otherwise have sought public shelter across the region if not for concern about COVID exposure.\*

\*Derivation of these estimates: 1,494,089 total population across ten localities and 481,964 total households within the sampled localities. The 8.35 percent of the households within the chart tabulation (CQ2 Stay in HR, B1Q5 COVID is a Concern, B1Q12 History of Public Sheltering) is equivalent to 1.5 percent of the overall N=2,200. Inference 1.5 percent of total households within sampled localities is 7,229 households, or 22,409 persons at 3.1 per/household.

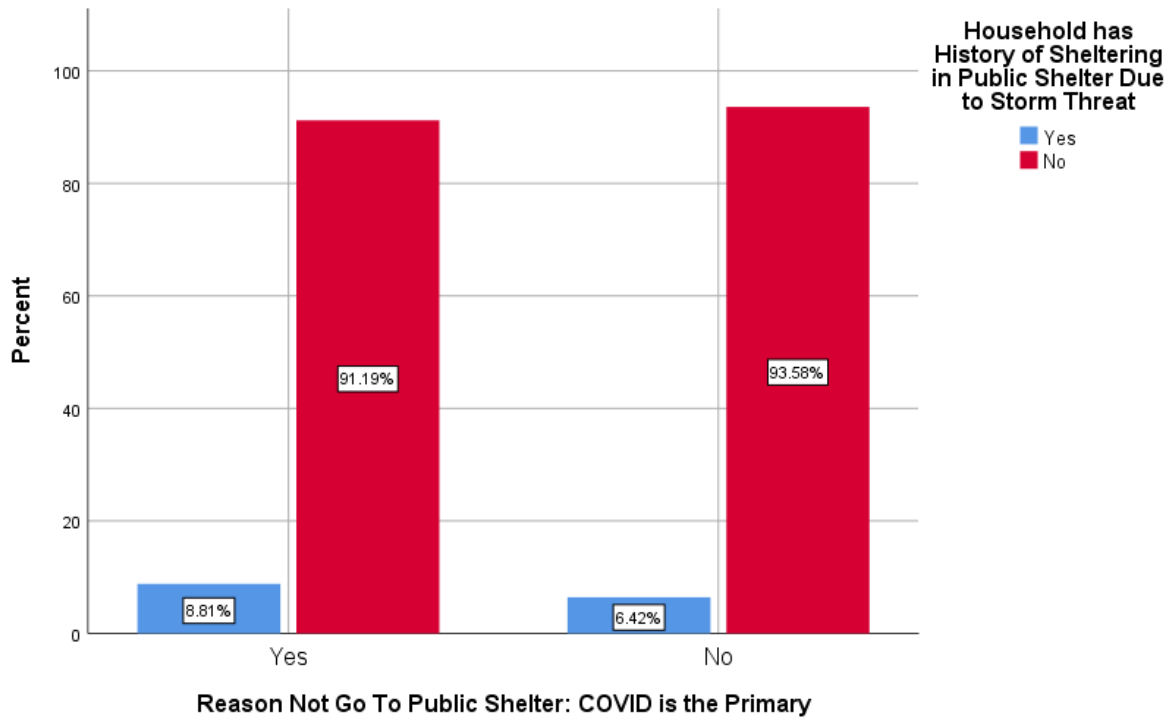
Chart 3



According to Chart 4, among households that state COVID is the primary reason for being unlikely to seek public shelter, roughly 9 percent are households that have a history of seeking public shelter thus exhibiting disagreement. This portion equates to 5,687 households across the region, or 17,630 residents, that would otherwise have sought public shelter if not for concern about COVID exposure.\*

\*Derivation of these estimates: 1,494,089 total population across ten localities and 481,964 total households within the sampled localities. The 8.81 percent of the households within the chart tabulation (CQ2 Stay in HR, B1Q6 COVID as the Primary, B1Q12 History of Public Sheltering) is equivalent to 1.18 percent of the overall N=2,200. Inference 1.18 percent of total households within sampled localities is 5,687 households, or 17,630 persons at 3.1 per/household.

Chart 4



## Analysis 3: Change in Propensity to Evacuate

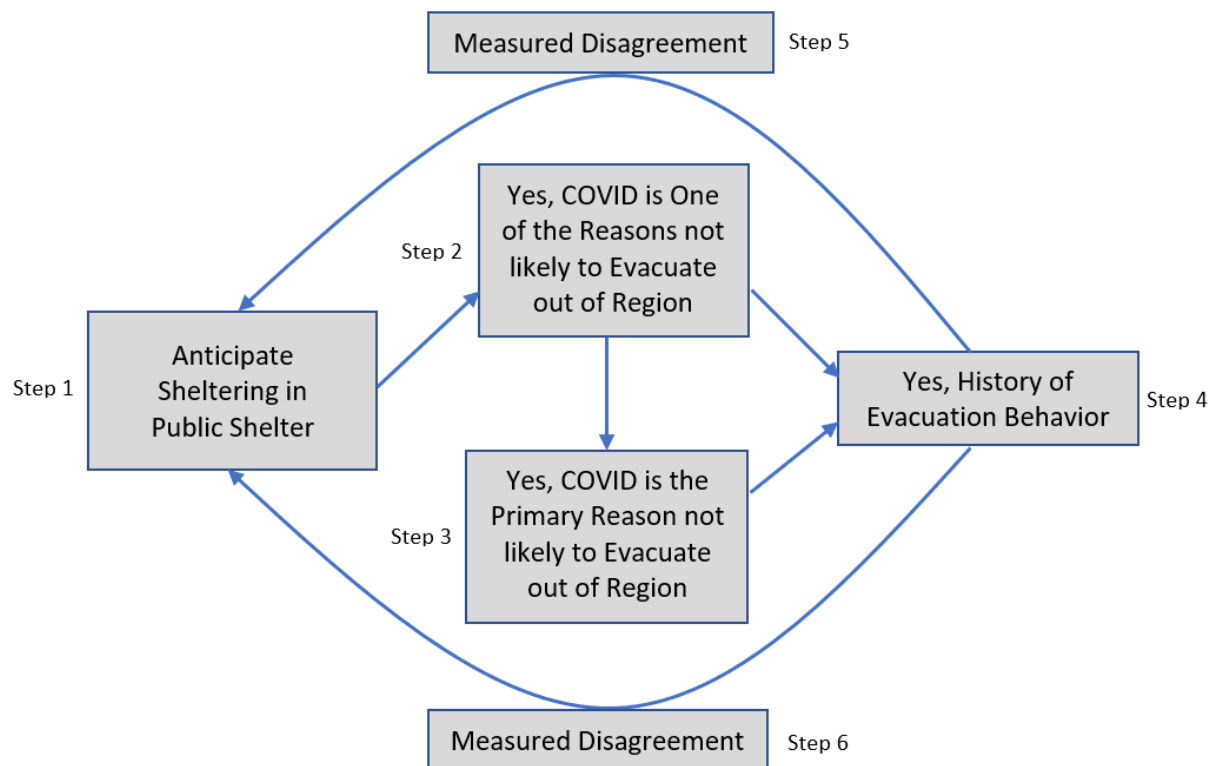
### Branch 2

We are measuring change in behavior among those households that, during this hurricane season under the COVID environment, plan to evacuate from the Hampton Roads region.

### Research Question

What extent might the COVID environment impact household propensity to evacuate out of the Hampton Roads region? Specifically, has COVID decreased the number of households that would otherwise evacuate? And if so, by how much?

### Logic Model



Many of the households that plan on seeking public shelter in the region do not have a history of evacuation but do have a history of public sheltering. There is agreement between anticipated behavior and past behavior. These households do not appear to be changing their behavior under the COVID environment. In addition, given this agreement, these households are unlikely candidates for measurable change in behavior based on whether or not they cite COVID exposure as a reason for not evacuating.

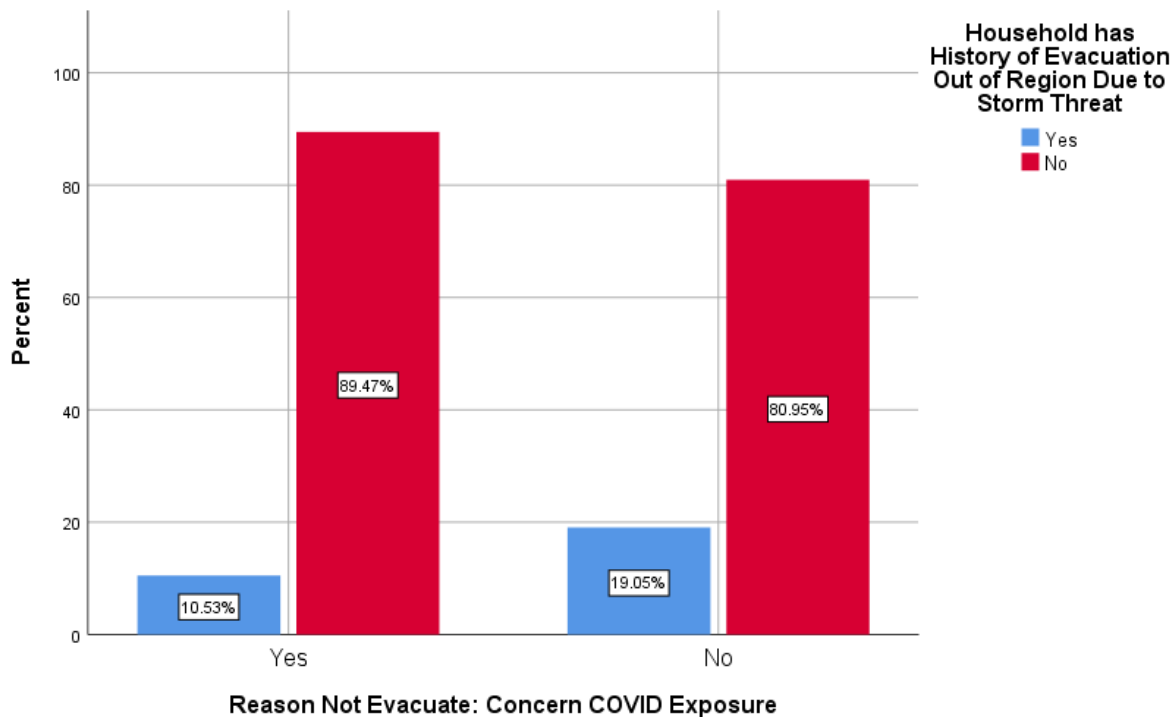
What is of interest are those households that have a history of evacuation under either a lesser or similar hurricane threat, but under this COVID environment are no longer anticipating

evacuating. That is, there is disagreement between anticipated behavior and past behavior. Demonstrating measurable change in behavior are those households that exhibit disagreement *and* also cite concern about COVID as either one of the reasons for not evacuating or as the primary reason for not evacuating.

According to Chart 5, among households that state concern about exposure to COVID as one of the reasons for being unlikely to evacuate, almost 11 percent are households that have a history of evacuation out of the region, thus exhibiting disagreement. This equates to 482 households across the region, or 1,494 residents, that would otherwise have evacuated the region if not for concern about COVID exposure.\*

\*Derivation of these estimates: 1,494,089 total population across ten localities and 481,964 total households within the sampled localities. The 10.53 percent of the households within the chart tabulation (CQ2 Stay in HR, B2Q5 COVID is a Concern, B2Q8 History of Evacuation) is equivalent to 0.1 percent of the overall N=2,200. Inference 0.1 percent of total households within sampled localities is 482 households, or 1,494 persons at 3.1 per/household.

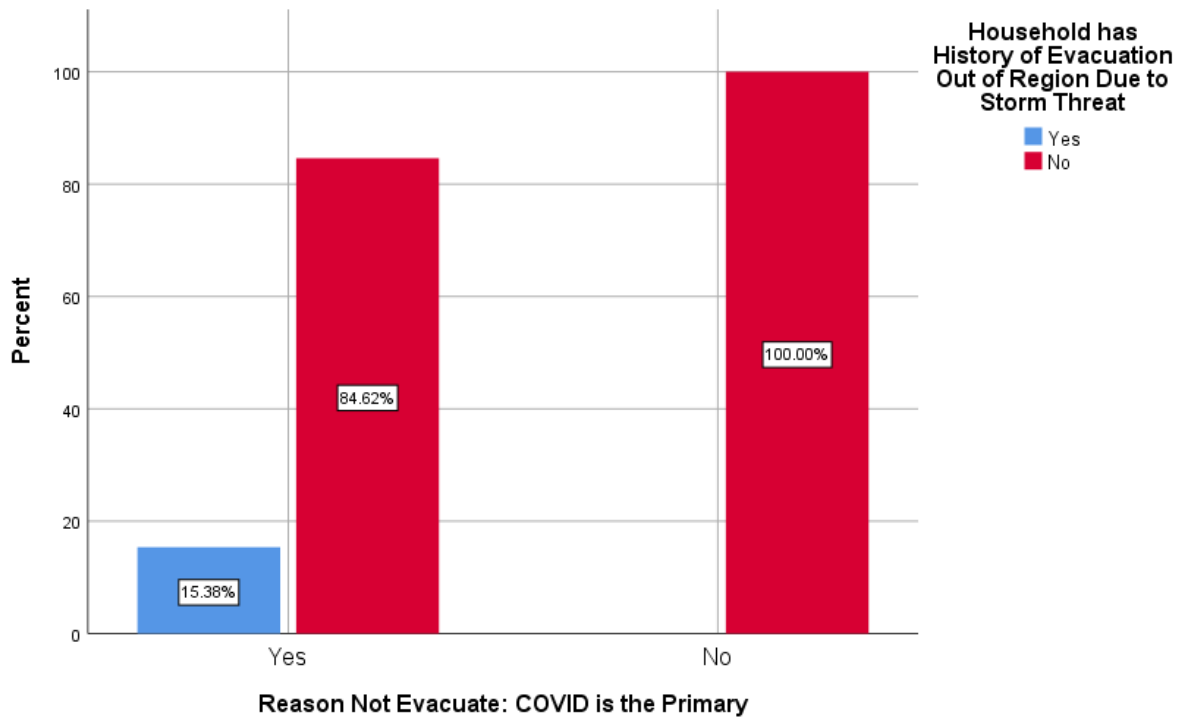
Chart 5



According to Chart 6, among households that state COVID is the primary reason for being unlikely to evacuate, roughly 15 percent are households that have a history of evacuation out of the region. These households that exhibit disagreement equate to 482 households across the region, or 1,494 residents, that would otherwise have evacuated the region if not for concern about COVID exposure.\*

\*Derivation of these estimates: 1,494,089 total population across ten localities and 481,964 total households within the sampled localities. The 15.38 percent of the households within the chart tabulation (CQ2 Stay in HR, B2Q6 COVID is Primary, B2Q8 History of Evacuation) is equivalent to 0.1 percent of the overall N=2,200. Inference 0.1 percent of total households within sampled localities is 482 households, or 1,494 persons at 3.1 per/household.

Chart 6



## Analysis 4: Change in Propensity to Seek Public Shelter

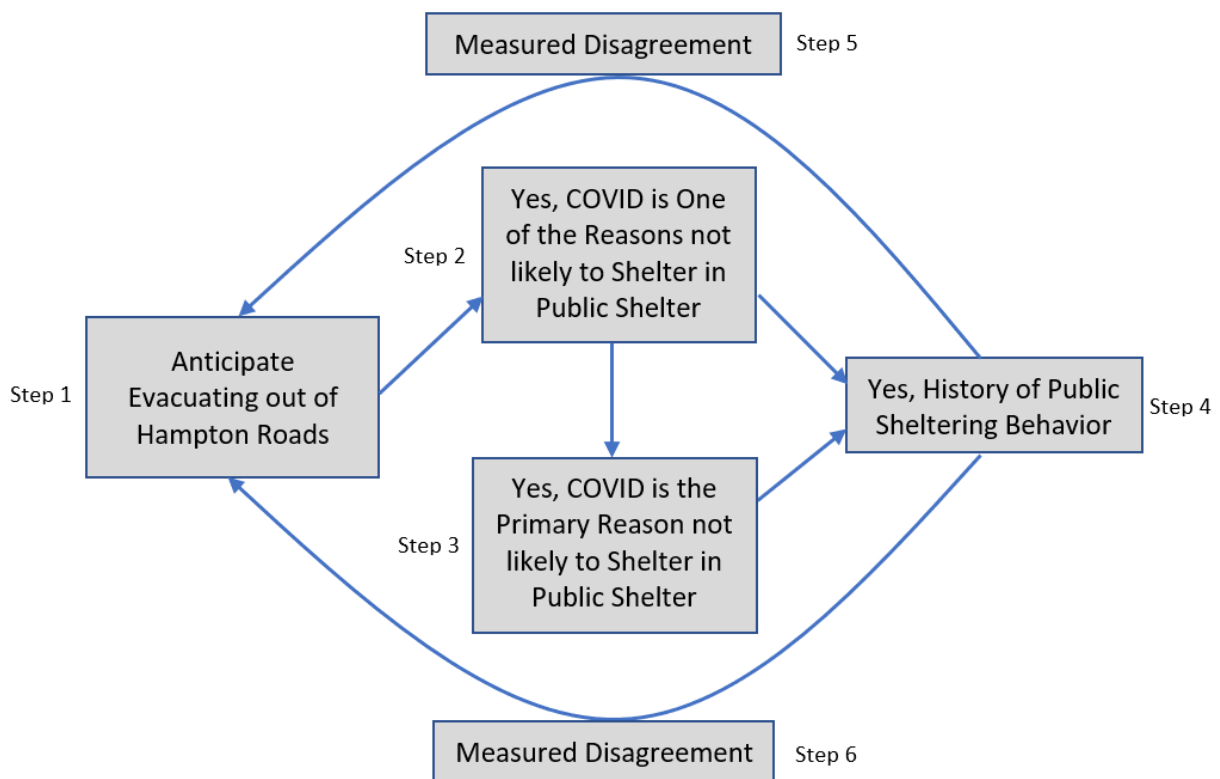
### Branch 3

We are measuring change in behavior among those households that, during this hurricane season under the COVID environment, plan to shelter in a public shelter within Hampton Roads.

### Research Question

What extent might the COVID environment impact household propensity to seek public shelter within the Hampton Roads region? Specifically, has COVID decreased the number of households that would otherwise seek public shelter? And if so, by how much?

### Logic Model



Many of the households that plan on evacuating out of the region do not have a history of seeking public shelter, but do have a history of evacuating out of the region. There is agreement between anticipated behavior and past behavior. These households do not appear to be changing their behavior under the COVID environment. In addition, given this agreement, these households are unlikely candidates for measurable change in behavior depending on whether or not they cite COVID exposure as a reason for not seeking public shelter.

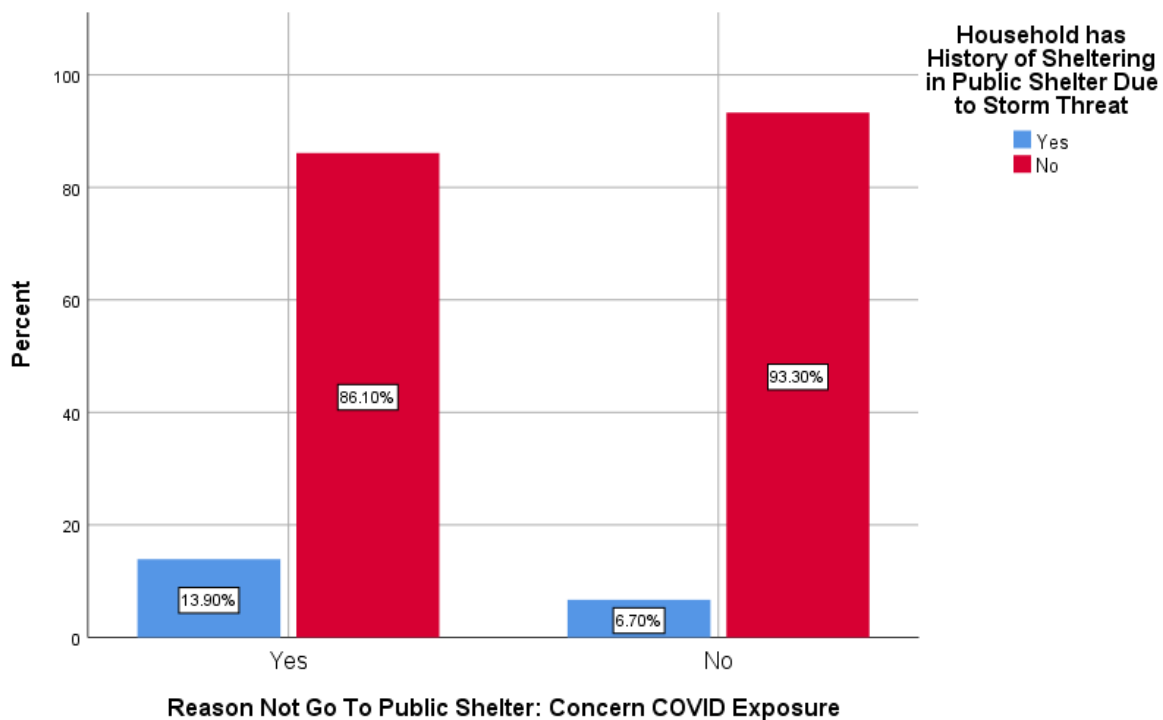


What is of interest are those households that have a history of seeking public shelter under either a lesser or similar hurricane threat, but under this COVID environment are no longer anticipating seeking public shelter. That is, there is disagreement between anticipated behavior and past behavior. Demonstrating measurable change in behavior are those households that exhibit disagreement *and* also cite concern about COVID as either one of the reasons for not seeking public shelter or as the primary reason for not seeking public shelter.

According to Chart 7, among households that state concern about exposure to COVID as one of the reasons for being unlikely to seek public shelter, almost 14 percent are households that have a history of seeking public shelter, thus exhibiting disagreement. This portion equates to 18,170 households across the region, or 56,327 residents, that would otherwise have sought public shelter in the region if not for concern about COVID exposure.\*

\*Derivation of these estimates: 1,494,089 total population across ten localities and 481,964 total households within the sampled localities. The 13.9 percent of the households within the chart tabulation (CQ2 Stay in HR, B3Q2 COVID is a Concern, B3Q7 History of Public Sheltering) is equivalent to 3.77 percent of the overall N=2,200. Inference 3.77 percent of total households within sampled localities is 18,170 households, or 56,327 persons at 3.1 per/household.

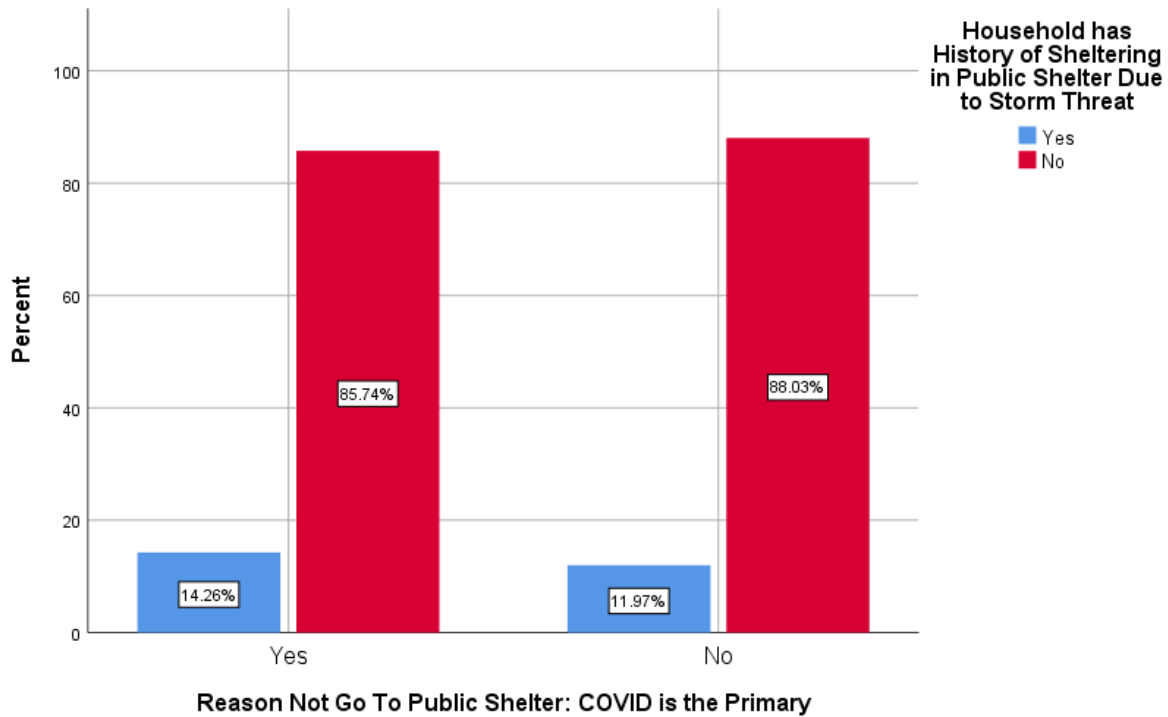
Chart 7



According to Chart 8, among households that state COVID is the primary reason for being unlikely to seek public shelter, roughly 14 percent are households that have a history of seeking public. These households exhibiting disagreement equate to 14,940 households across the region, or 46,314 residents, that would otherwise have sought public shelter in the region if not for concern about COVID exposure.\*

\*Derivation of these estimates: 1,494,089 total population across ten localities and 481,964 total households within these sampled localities. The 14.26 percent of the households within the chart tabulation (CQ2 Stay in HR, B3Q2 COVID is a Concern, B3Q7 History of Public Sheltering) is equivalent to 3.1 percent of the overall N=2,200. Inference 3.1 percent of total households within sampled localities is 14,940 households, or 46,314 persons at 3.1 per/household.

Chart 8



## Summary of Findings, Analyses 1-4

The table below provides a summary of the four analyses of the household and resident change in evacuation and sheltering behavior in response to COVID. This table summarizes both direction and magnitude of the movements.

Column 2 (from the left) identifies the branch in which the household have been classified. Branch 1 are households that state they anticipate, if faced with an impending severe hurricane event during this COVID season, sheltering within Hampton Roads although not within a public shelter. Branch 2 are households that state they anticipate sheltering in a public shelter within the Hampton Roads region during the compound hurricane-pandemic threat. Branch 3 are households that state they plan to evacuate out of the Hampton Roads region in the COVID environment when faced with a severe hurricane threat.

Columns 3, 4, and 5 present the estimated direction of the movement of populations in response to the COVID environment. The expected sheltering behavior is based on past household behavior when faced with a similar or lesser weather event. The stated behavior is the anticipated current behavior expressed by the household should a severe hurricane track for Hampton Roads under the COVID environment. The movement arrow suggests behavioral change for those households that are identified as having a heightened COVID risk perception (i.e., concern about COVID is either one reason or the primary reason for sheltering choice) and the household's past behavior is not consistent with stated, current behavior under this COVID environment.

Column 6 presents the units in which the estimates are provided, either raw number of households (HH) or raw number of Hampton roads residents (Res). Columns 7 and 8 are the actual estimates for the number of households and residents that may be expected to change their evacuation and sheltering behavior due to COVID. Thus, these estimates reflect a minimum-maximum range in COVID-induced household behavioral change. The estimated *minimum* movement are those households that state COVID is the primary reason for their sheltering choice. These households clearly state that COVID is driving their departure from past sheltering behavior. These minimum figures reflect conservative estimates on the number of households that have changed their behavior. The estimated *maximum* movement are those households that state COVID is one of the reasons driving their sheltering choice that is a departure from past sheltering behavior. For these households, other factors in conjunction with concern about COVID are informing sheltering choice. In this sense, these maximum estimates are not as conservative as the minimum estimates. Thus, the estimated maximum reflects the upper bound of the range.

Analysis 1 finds that COVID risk perceptions have induced at least 8,097 households to alter previous behavior to evacuate out of the region and now plan to shelter within Hampton Roads (although not in a public shelter within the region). That is, the COVID environment has induced a minimum 8,097 households to move from evacuation to sheltering within the region. The number of households moving from evacuation to sheltering within the region may range up to 12,483 households. These households reflect a range of 25,101 to 38,697 residents that may no longer chose to evacuate but, rather, remain in the region when faced with a severe hurricane during a COVID environment.

Analysis 2 finds that COVID is estimated to change behavior of households that have, in the past, sought public shelter for similar or lesser impending storms. A range of 5,687 to 7,229 households may be expected to no longer seek public shelter and shelter within the region. This equates to a range of 17,630 to 22,409 residents that are likely to no longer seek public shelter.

Analysis 3 finds that concern about COVID is altering households' previous propensity to evacuate and is inducing some households to now seek public shelter, although the number of households that may be expected to exhibit this pattern of behavior is very low relative to either the total number of households or the total population. In addition, nearly all of the households that indicate COVID as one of the reasons for altering behavior also indicate that COVID is the primary reason. Thus, the minimum estimate is nearly indistinguishable from the maximum estimate. Nonetheless, estimates are that 482 households will no longer evacuate under the COVID environment but, rather, will seek public shelter within the region. This translates into 1,492 residents.

Analysis 4 finds that there is substantial departure in behavior towards evacuation from the region for households that have an erstwhile propensity to seek public shelter within the region. This COVID-induced change is expected to impact the behavior of a range of households, from 14,940 to 18,170. This equates to a minimum of 46,314 and a maximum of 56,327 residents expected to exhibit a change in sheltering due to COVID risk perceptions.

Across these four analyses, it is estimated that a minimum 29,206 and a maximum 38,364 households will alter their sheltering behavior due to perceptions related to COVID risk. These households represent 90,539 to 118,927 residents.

A minimum of nearly 6.1 percent and a maximum just over 8.0 percent of all households and all residents in Hampton Roads are expected to depart from previous sheltering behavior due to the COVID environment.

Direction and Magnitude of Movements

Direction & Magnitude of Movements							
Analysis	Branch	Expected Behavior (History)	Movement Direction	Stated Behavior (Current)	Unit	COVID-induced	
						Estimated Movement Min	Estimated Movement Max
1	1	Evacuation	→	Shelter w/in HR	HH	8,097	12,483
					Res	25,101	38,697
2	1	Public Shelter	→	Shelter w/in HR	HH	5,687	7,229
					Res	17,630	22,409
3	2	Evacuation	→	Public Shelter	HH	482	482
					Res	1,494	1,494
4	3	Public Shelter	→	Evacuation	HH	14,940	18,170
					Res	46,314	56,327
<i>Totals:</i>					HH	29,206	38,364
<i>Totals:</i>					Res	90,539	118,927
<i>Totals:</i>						6.1%	8.0%

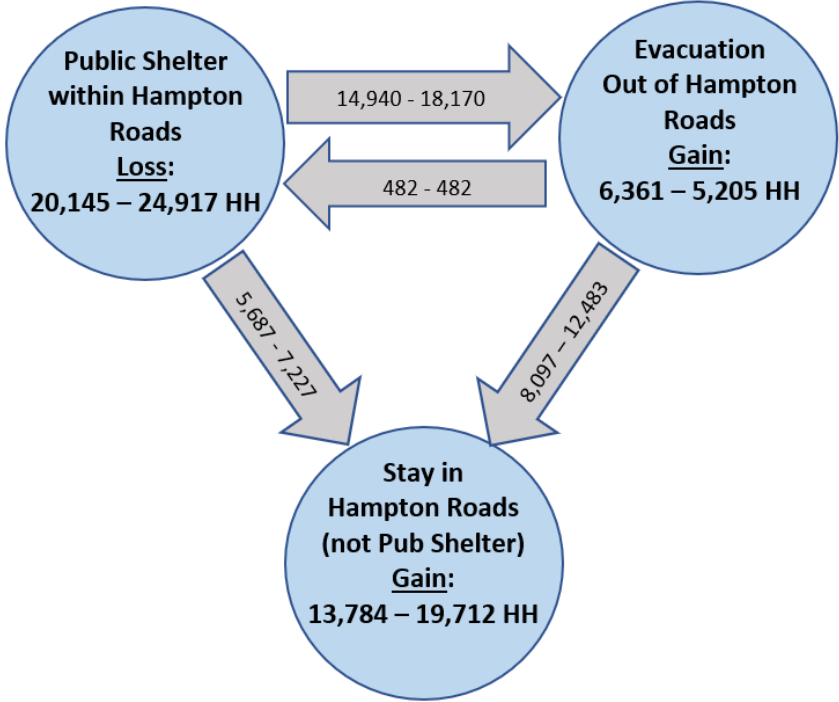
## Household Movement

The figure below illustrates the estimated movement of households stemming from COVID risk perceptions. The three circles represent the classification of households into three branches of potential sheltering behavior. The arrows capture both direction and magnitude of COVID-induced behavioral change. Within the circles are the estimated range in either gain or loss expected for this sheltering behavior under the COVID environment. This method allows us to make relative statements about the direction and magnitude of household behavioral change.

This figure shows that we may expect under the COVID environment a substantial net loss of households seeking public shelter. That is, a severe hurricane will witness a decrease of a minimum 20,145 and maximum 24,917 households that would otherwise have sought public shelter. This reflects a substantial loss relative to the number of households seeking public shelter for a severe hurricane without the presence of COVID. These households, which have departed from their former sheltering choice behavior, are estimated to either now evacuate out of the region or stay in Hampton Roads. It is estimated that, among these erstwhile public sheltering households, a range between 14,940 and 18,170 households will now elect to evacuate out of the Hampton Roads region and a range between 5,687 and 7,227 households will now elect to stay in Hampton Roads at a venue other than a public shelter. A few households anticipate flowing into public shelters (482 households).

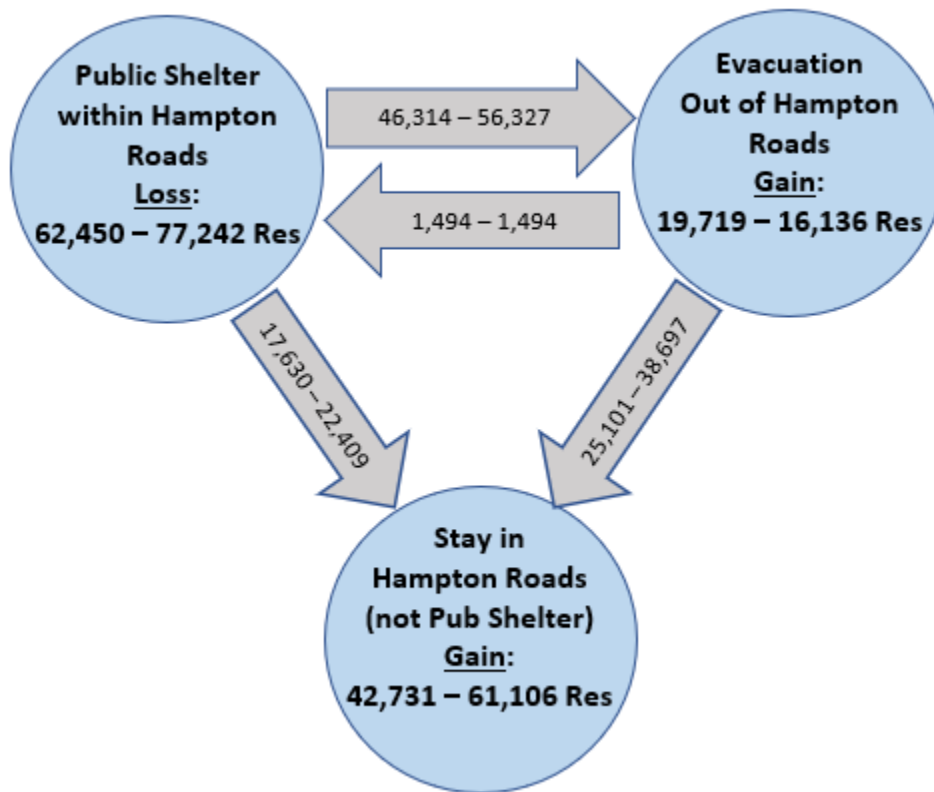
The perceived risk of COVID exposure has also altered the propensity to evacuate out of the Hampton Roads in several ways. An estimated range of 8,097 to 12,483 households will alter their propensity to evacuate and will now remain in Hampton Roads, although not at a public shelter. Note that, overall, it is estimated that under COVID there will be a net gain of 5,000 to 6,000 households evacuating from the region. This reflects the expectation that, although many are choosing to not to evacuate and remain in the region, a relatively greater number of households are changing from the propensity to shelter in a public shelter and now evacuate.

It is clear that the largest shift in sheltering behavior evidenced in the data are for a sizable increase in the number of households remaining in the region (staying in locations other than a public shelter). Estimated is that a range of an additional 13,784 to 19,712 households may be expected to remain in the region. These are households that would have otherwise either evacuated or sheltered in a public shelter.



## Population Movement

The figure below illustrates the estimated movement of Hampton Roads residents stemming from COVID risk perceptions. These figures are proportional relative to the estimates for household behavioral change shown in previous figure. Again, note under the COVID environment the projected large movement (loss) of individuals seeking public shelter, the gain in individuals evacuating from the region, and the sizable increase in residents staying in Hampton Roads.





## Part 7: Branch 1 – Shelter within Hampton Roads, but not within a Public Shelter

This Part 7 of the report summarizes responses to Branch 1 questions. This line of inquiry is tailored specifically for the households that anticipate sheltering within Hampton Roads, although not within a public shelter.

Each Branch 1 variable is further explored by controlling for seven key variables of interest:

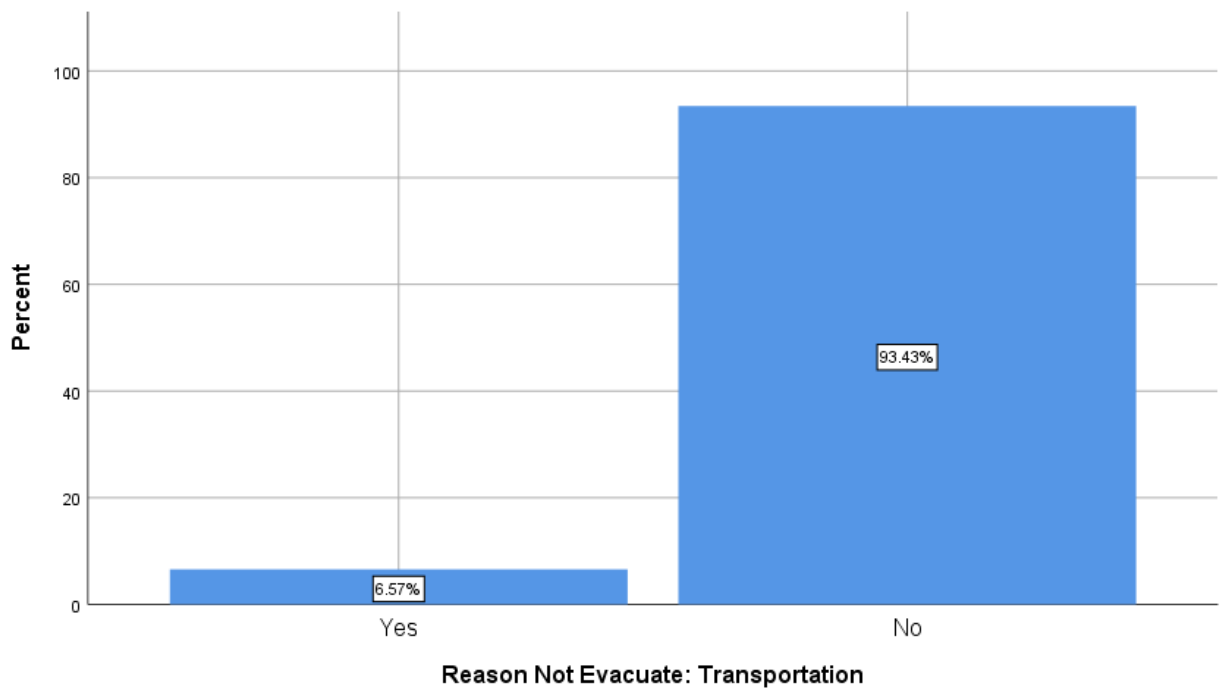
1. Medically Fragile Household
2. Household Vulnerability
3. Household COVID Proximity
4. Low-to-Modest Income Household
5. Low and Modest Income Household
6. Granulated Household Income
7. Evacuation Zone

About 52 percent of households indicate they will not evacuate out of the region and will instead shelter within the region. Among those households sheltering in the region, about 3.9 percent anticipate seeking public shelter. Excluding the households seeking public shelter, households were asked a series of questions regarding concerns about COVID exposure, reasons for not evacuating, reasons for not going to a public shelter, and whether their likelihood of going to a public shelter would increase given specific changes in shelter operations such as implementation of social distancing, vigorous cleaning schedules, and non-congregate options such as hotel rooms. They were also asked about their previous evacuation and sheltering experience.

## Reason Not Evacuate: Transportation

Just under 7 percent of households that plan to shelter in a home within Hampton Roads report concerns about not having reliable transportation as a reason for not evacuating.

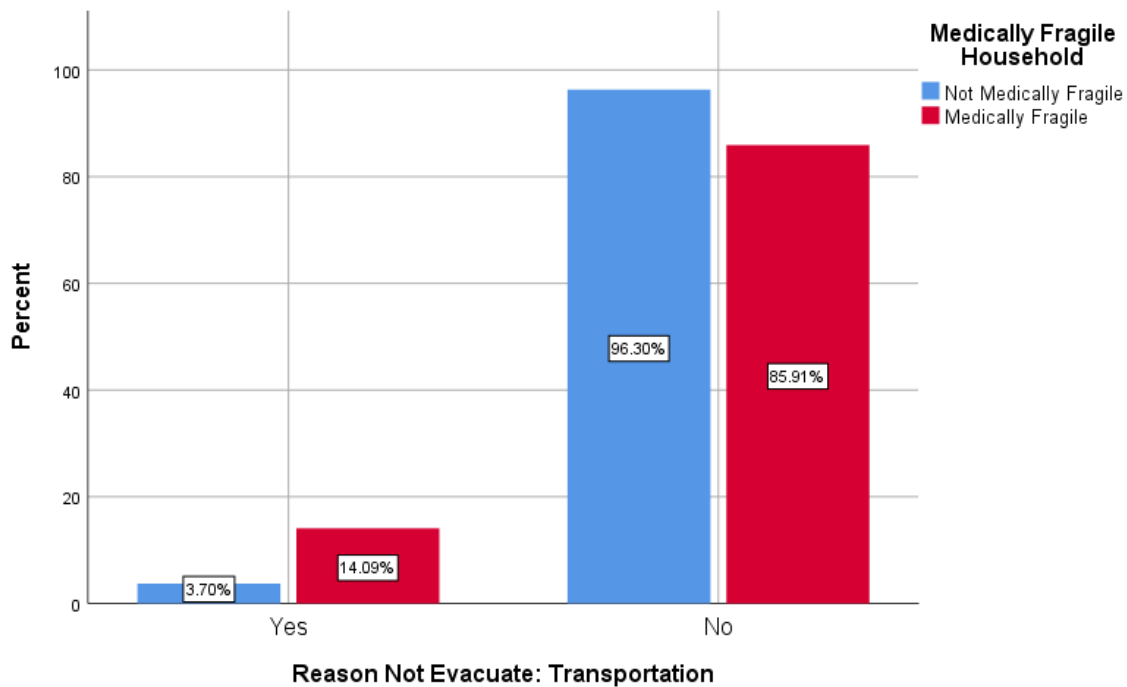
However, not having reliable transportation as a reason for not evacuating the region does not fall equally across all groups or geographies. On the following pages are additional charts reporting this 7 percent across the control variables.



..by..Medically Fragile Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Medically Fragile Household (medically fragile and not medically fragile) that cite lack of transportation as a reason for not evacuating.

Just over 14 percent of medically fragile households, and about 4 percent of not medically fragile households, report concerns about not having reliable transportation as a reason for not evacuating.



..by..Household Vulnerability

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions of households with different Household Vulnerability (low, moderate, high, and hyper vulnerability households) that indicate not evacuating due to lack of reliable transportation.

Household vulnerability is associated a lack of reliable transportation as a reason for not evacuating. Over 2 percent of low vulnerability households report concerns about not having reliable transportation while moderate vulnerability, high vulnerability, and hyper vulnerability households report roughly 4, 6, and 18 percent, respectively.

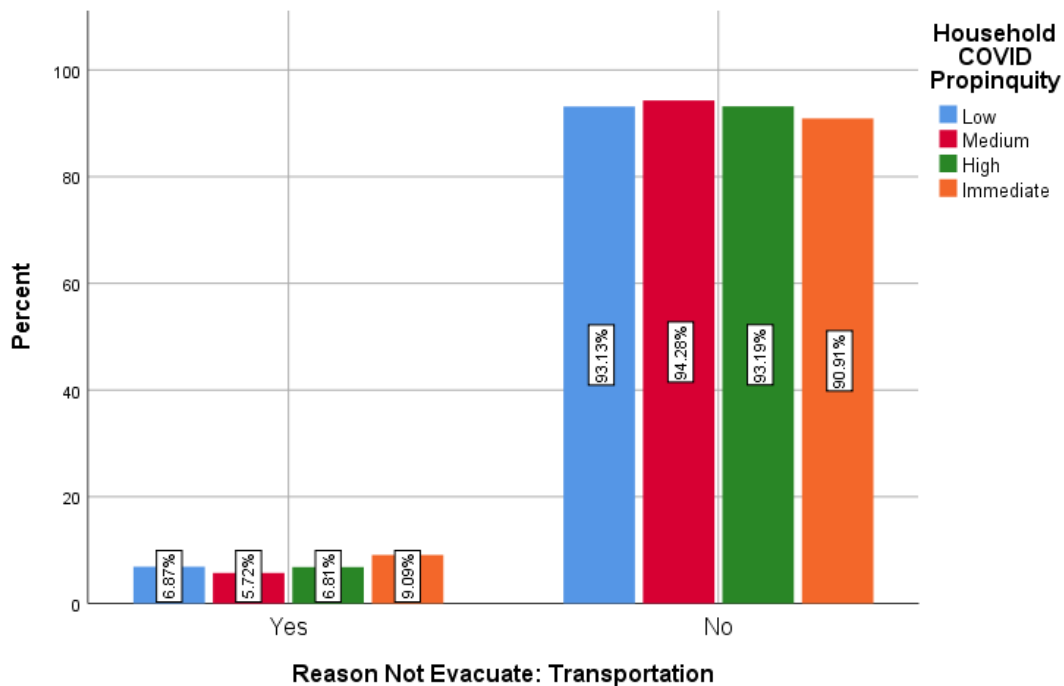
Hyper vulnerable households sheltering in place within the region are at greater risk to suffering from the storm’s impact. Lack of access to reliable transportation by hyper vulnerable households is likely to depress evacuation of this population.



..by..Household COVID Propinquity

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions of households with different household COVID propinquity (low, medium, high, and immediate COVID propinquity households) that indicate not evacuating due to lack of reliable transportation.

There does not appear to be a relationship between household COVID propinquity and not having reliable transportation as a reason for not evacuating out of the region. About 7 percent of households with low COVID propinquity, 6 percent of households with medium COVID, 7 percent of households with high COVID propinquity s, and 9 percent of households with immediate COVID propinquity cite lack of reliable transportation as a reason for not evacuating.

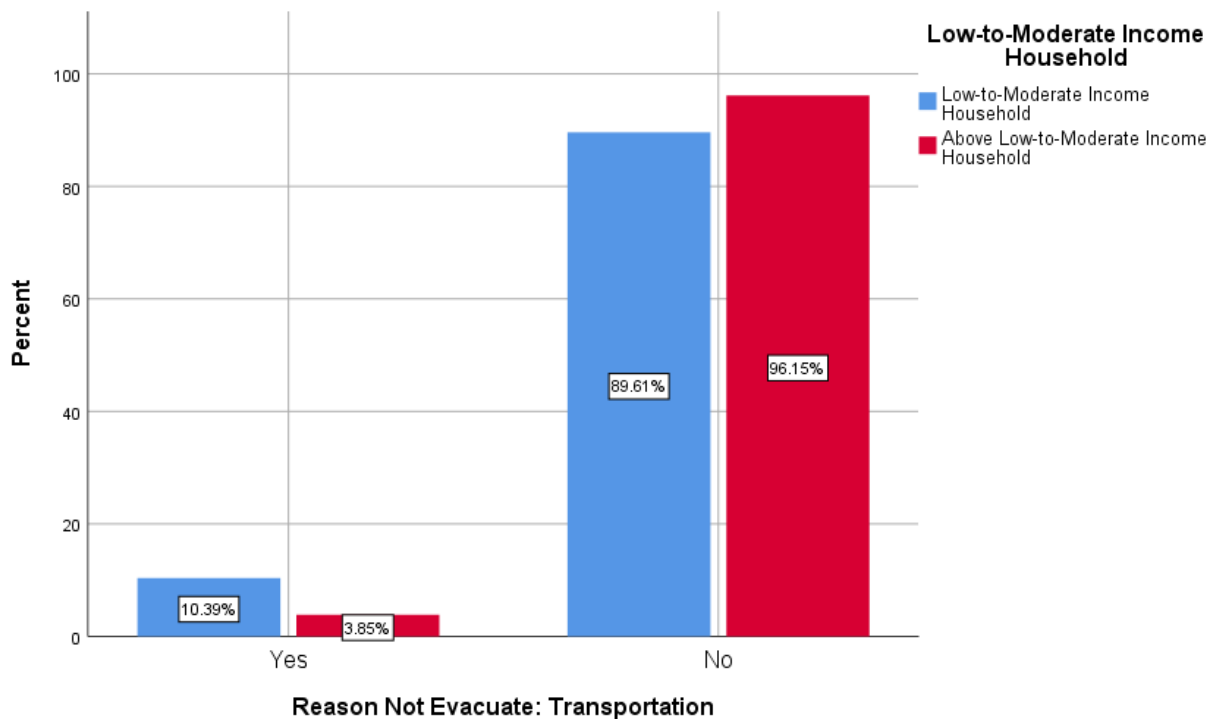


..by..Low-to-Moderate Income Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions of Low-to-Moderate Income Households that indicate not evacuating due to lack of reliable transportation.

About 10 percent of low-to-moderate income households and about 4 percent of above LMI households that plan not to evacuate from the region and instead will shelter in a home report not having reliable transportation as a reason for not evacuating.

The lack of reliable transportation is a noted reason why lower income households choose to stay home instead of evacuating the region during a storm event.

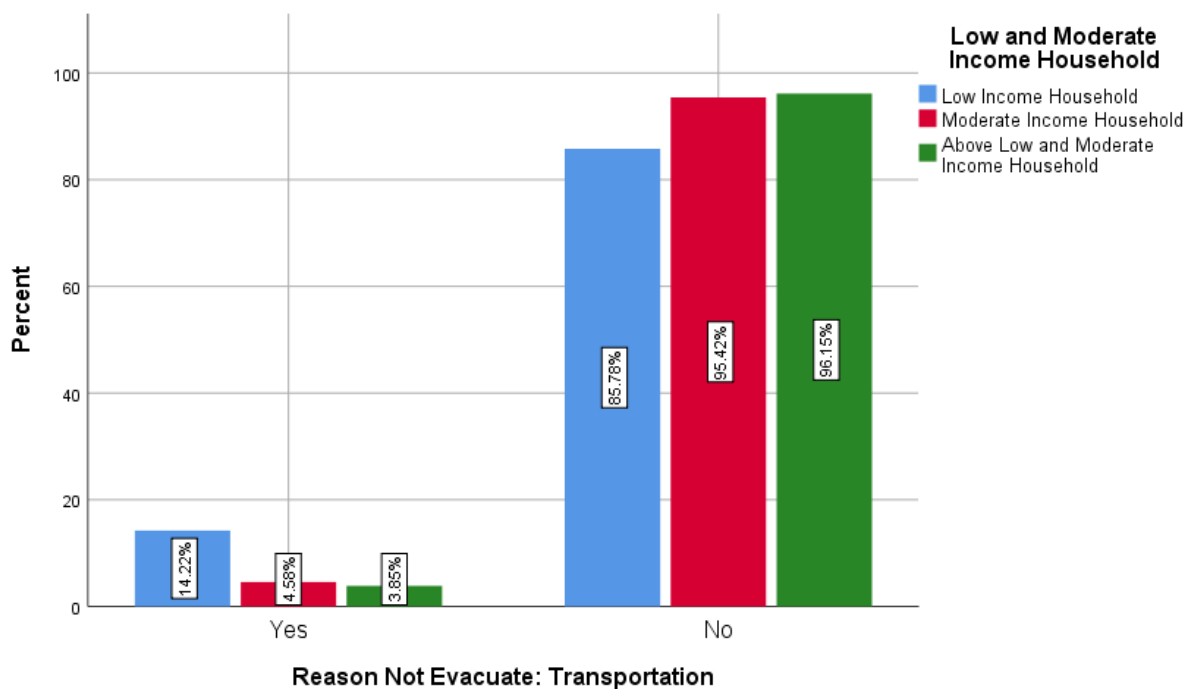


..by..Low and Moderate Income Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions of Low and Moderate Income Households (disaggregated into low income, moderate income, and above low and moderate income households) that indicate not evacuating due to lack of reliable transportation.

About 14 percent of low income households, 5 percent of moderate income households, and 4 percent of above low and moderate income households that are unlikely to evacuate from the region and plan to shelter in a home report not having reliable transportation as a reason for not evacuating.

The lack of reliable transportation has a disparate impact upon low income households propensities to evacuate, relative to the other income households.

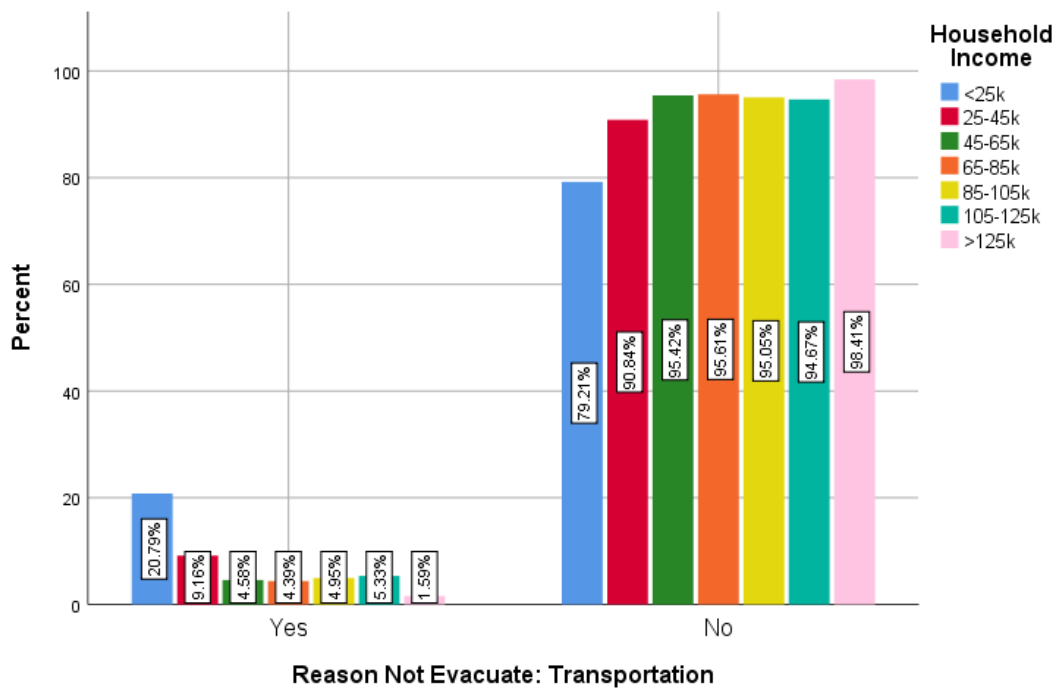


..by..Granulated Household Income

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions of households with different income levels (disaggregated into seven household income gradients) that indicate not evacuating due to lack of reliable transportation.

Almost 21 percent of households in the lowest income category (less than \$25K) that are unlikely to evacuate from the region and plan to shelter in a home also report not having reliable transportation as a reason for not evacuating.

The lack of reliable transportation is especially prominent among lower income households as a reason to shelter in place, rather than evacuate, during a storm event.

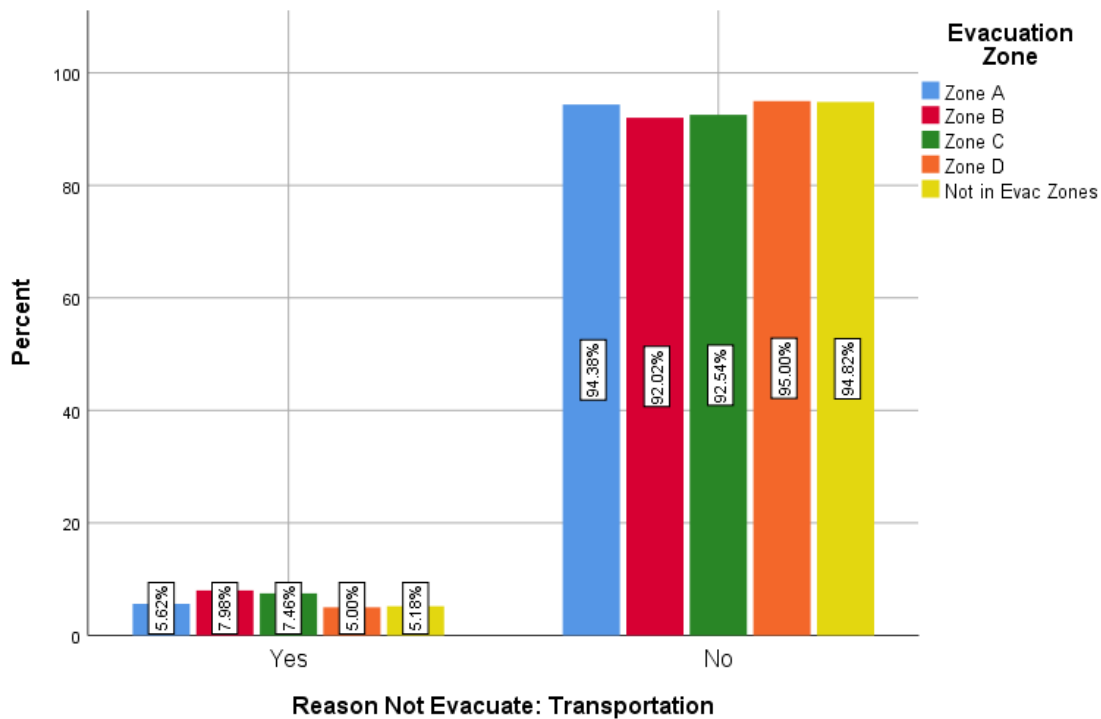




..by..Evacuation Zone

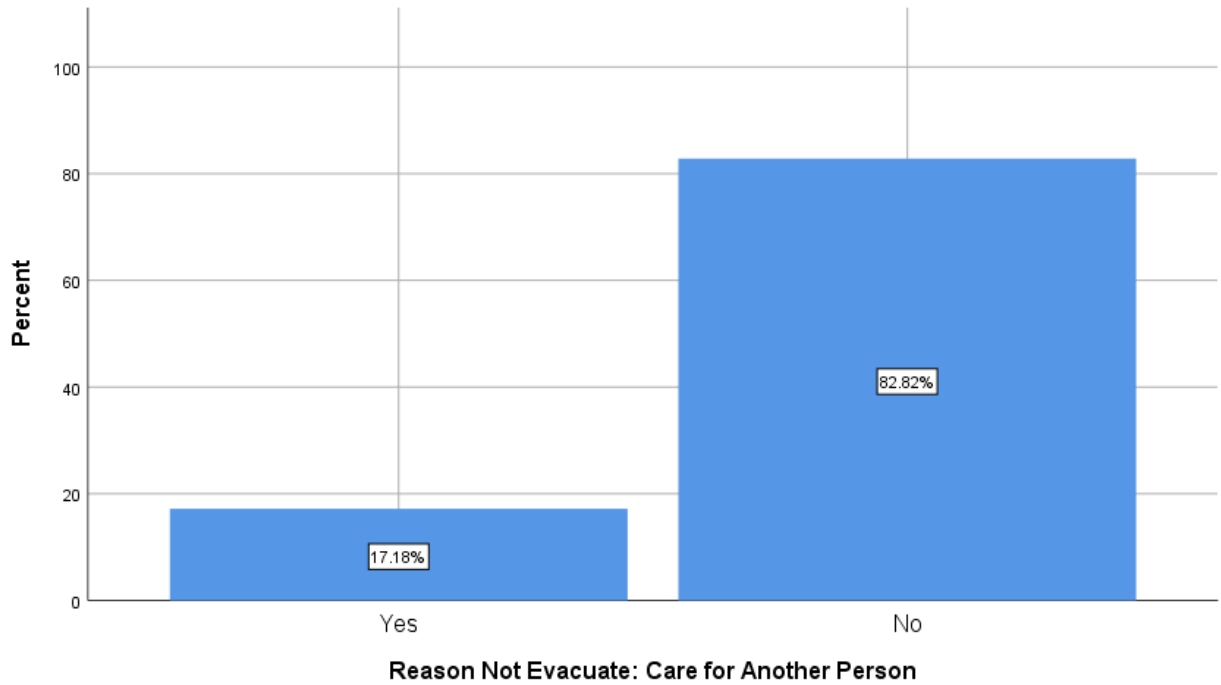
The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions of households within specific evacuation zones (Zones A-D and areas not within an evacuation zone) that indicate not evacuating due to lack of reliable transportation.

Between 5 percent and 8 percent of households in the different evacuation zones report not having transportation as a reason for not evacuating. While zones B and C have a greater percentage indicating yes relative to other Zones, there does not appear to be a relationship between evacuation zone and lack of transportation as a reason for not evacuating.



## Reason Not Evacuate: Care for Another Person

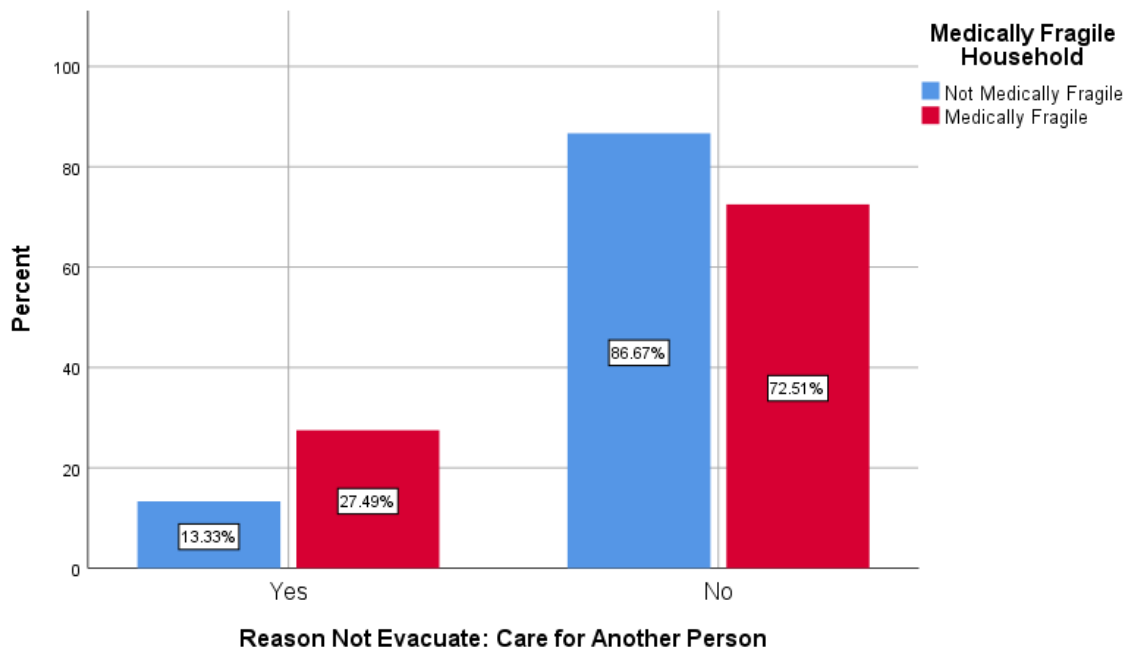
Over 17 percent of households cite having to take care of somebody else who does not want to leave or cannot leave the area as a reason for not evacuating out of the region. The seven charts on the following pages will examine this reason controlling for household characteristics.



..by..Medically Fragile Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within medically fragile households that indicate not evacuating because of the need to care for another person.

As shown in the chart below, households categorized as medically fragile are twice as likely to mention this reason for not evacuating. Just over 27 percent of medically fragile households and about 13 percent of not medically fragile households cite having to take care of somebody else who does not want to leave or cannot leave the area as a reason for not evacuating out of the region.

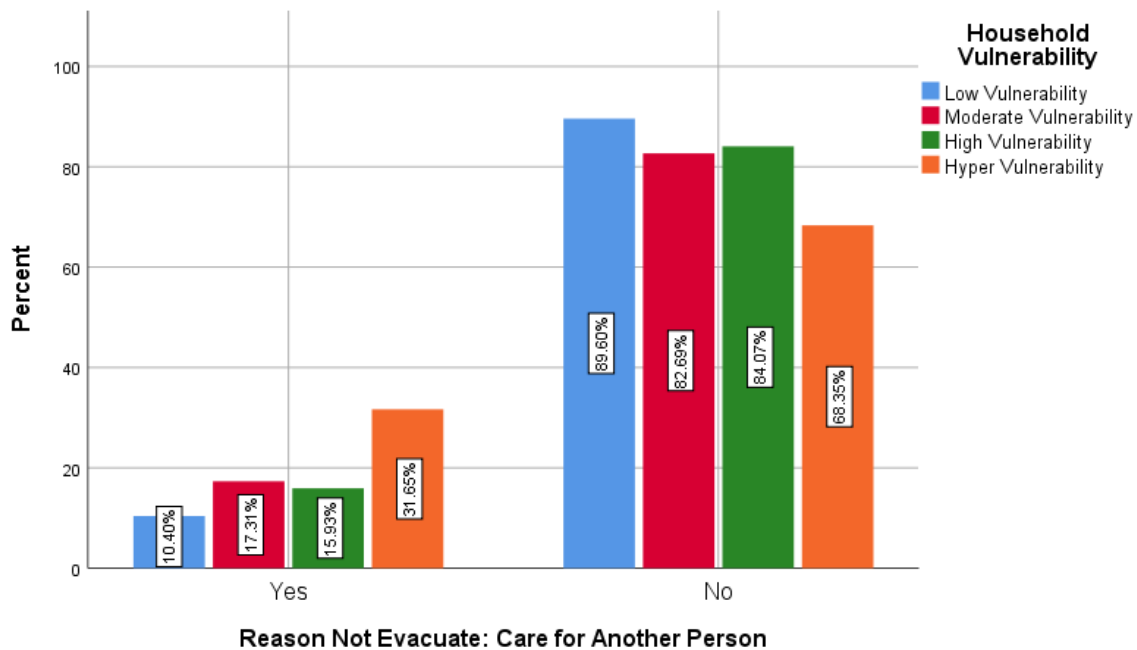


..by..Household Vulnerability

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions of households with different vulnerability levels (disaggregated into low, moderate, high, and hyper vulnerability households) that indicate not evacuating due to having to care for another person.

In terms of vulnerability, the following households cite having to take care of somebody else who does not want to leave or cannot leave the area as a reason for not evacuating out of the region: 10 percent of low vulnerability households, 17 percent of moderate vulnerability households, 16 percent of high vulnerability households, and 32 percent of hyper vulnerability households. Households characterized as hyper vulnerability households have a higher proportion of households that would not evacuate because of the need to care for another person.

Therefore, households with the highest vulnerability were more likely to cite having to take care of somebody else who does not want to leave or cannot leave the area as a reason for not evacuating out of the region.

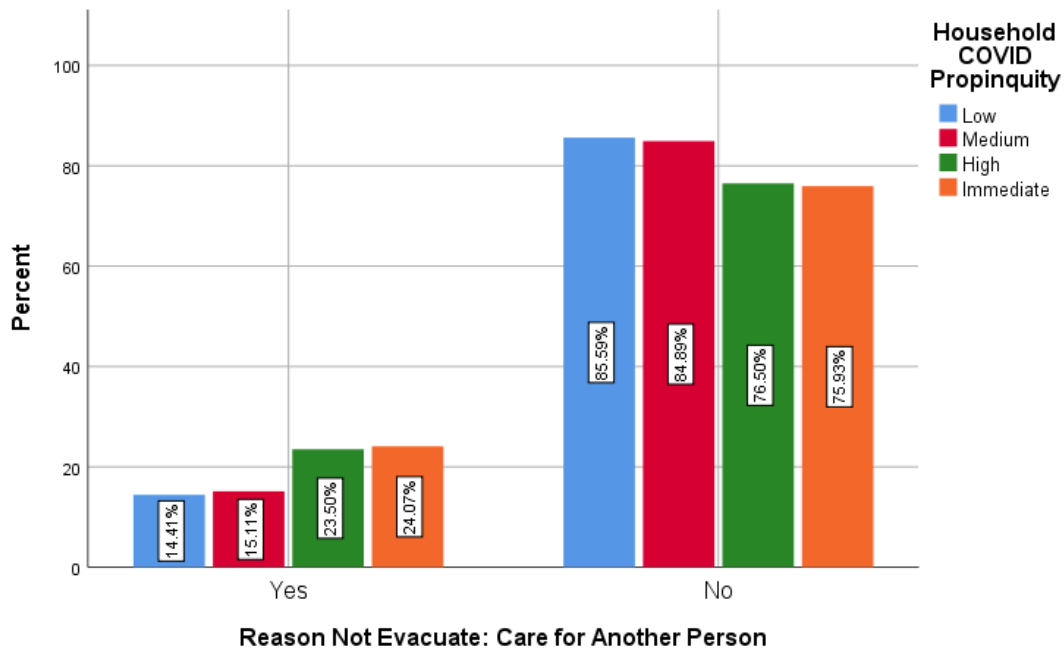


..by..Household COVID Propinquity

The chart below illustrates ,among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions of households with different household COVID propinquity (low, medium, high, and immediate COVID propinquity households) that indicate one reason for not evacuating is the lack of transportation.

In terms of COVID propinquity, the following households cite having to take care of somebody else who does not want to leave or cannot leave the area as a reason for not evacuating out of the region: 14 percent of low COVID propinquity households, 15 percent of medium COVID propinquity households, 24 percent of high COVID propinquity households, and 24 percent of immediate COVID propinquity households.

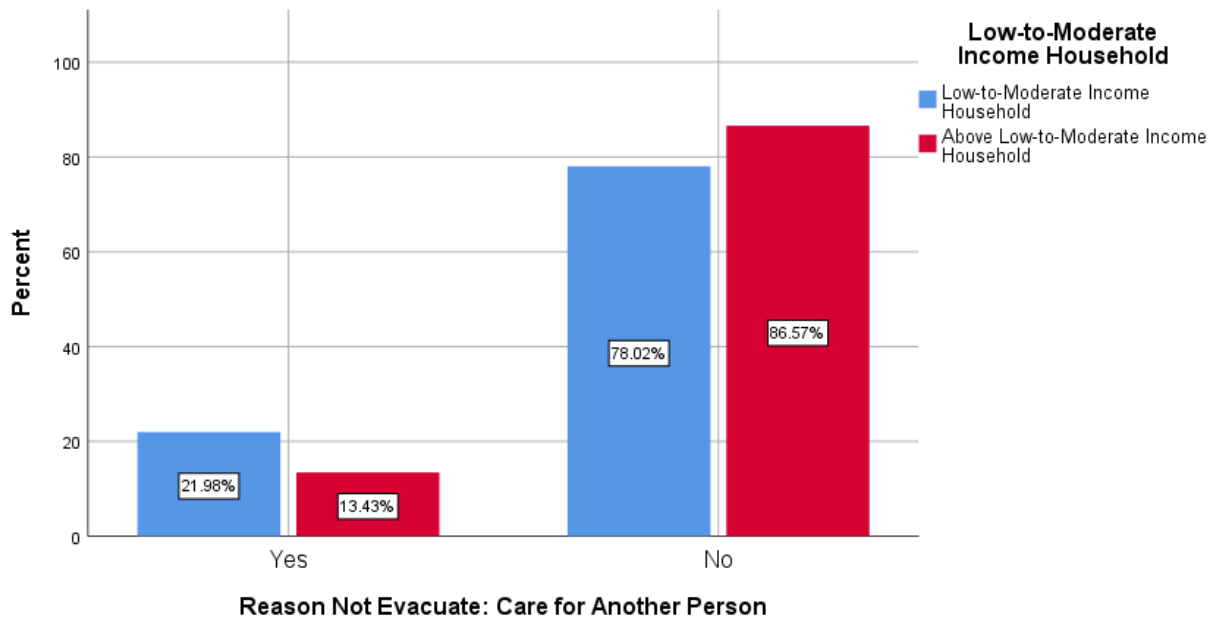
Therefore, as the household COVID propinquity increased, households were more likely to cite having to take care of somebody else who does not want to leave or cannot leave the area as a reason for not evacuating out of the region.



..by..Low-to-Moderate Income Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions of low-to-moderate income households that also indicate not evacuating because of the need to care for another person.

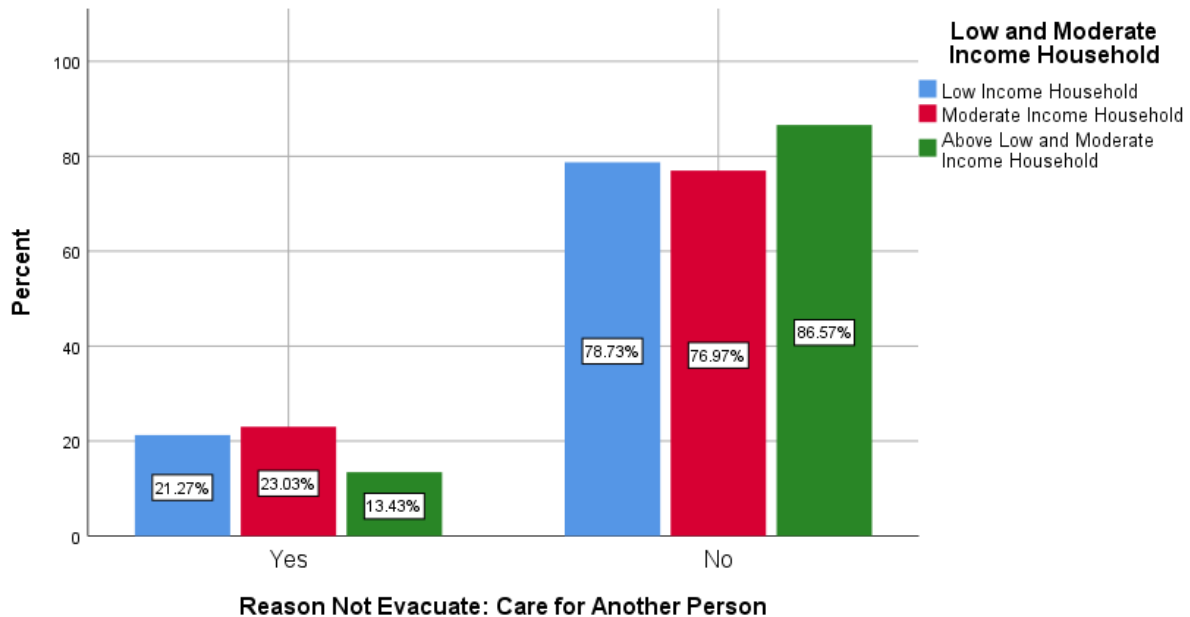
Almost 22 percent of low-to-moderate income households and about 13 percent of above low-to-moderate households cite having to take care of somebody else who does not want to leave or cannot leave the area as a reason for not evacuating out of the region. Therefore, the lower the household income, families were more likely to report having to take care of someone that does not want to leave or cannot leave as a reason for staying home.



..by..Low and Moderate Income Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions of low and moderate income households that indicate not evacuating because of the need to care for another person.

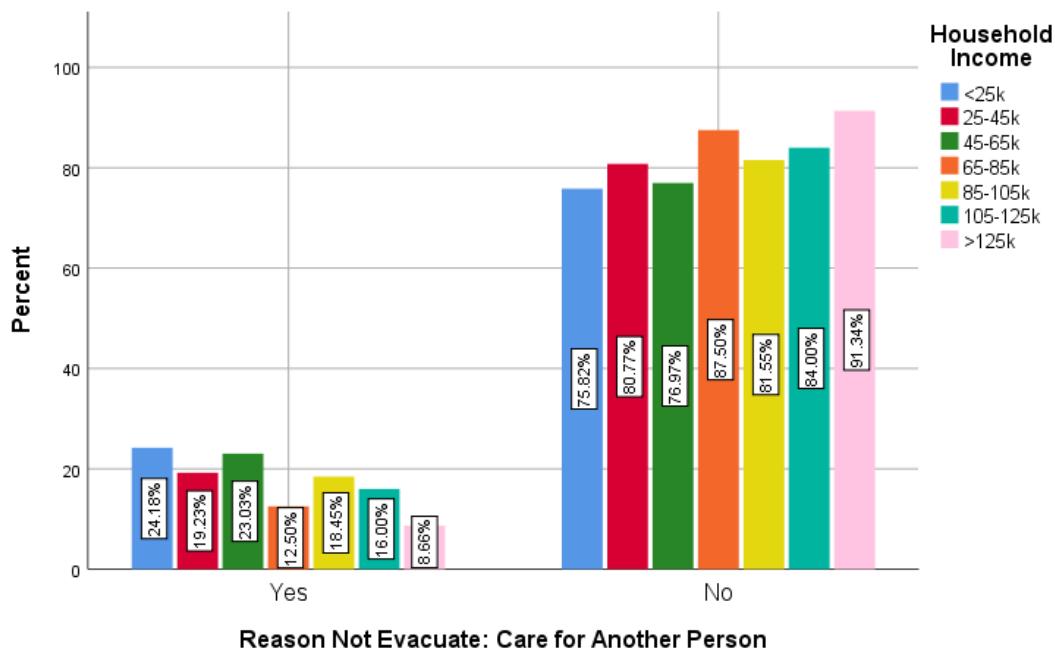
About 21 percent of low income households, 23 percent of moderate income households, and 13 percent of above moderate-income households, cite having to take care of somebody else who does not want to leave or cannot leave the area as a reason for not evacuating out of the region.



..by..Granulated Household Income

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions of households with different income levels (disaggregated into seven household income gradients) that indicate having to care for another person as a reason for not evacuating.

Over 24 percent of households in the lowest income category less than \$25K) reported caring for another person as a reason for not evacuating. Almost 9 percent of households in the lowest income category less than \$25K) report having to take care of somebody else who does not want to leave or cannot leave the area as a reason for not evacuating out of the region.

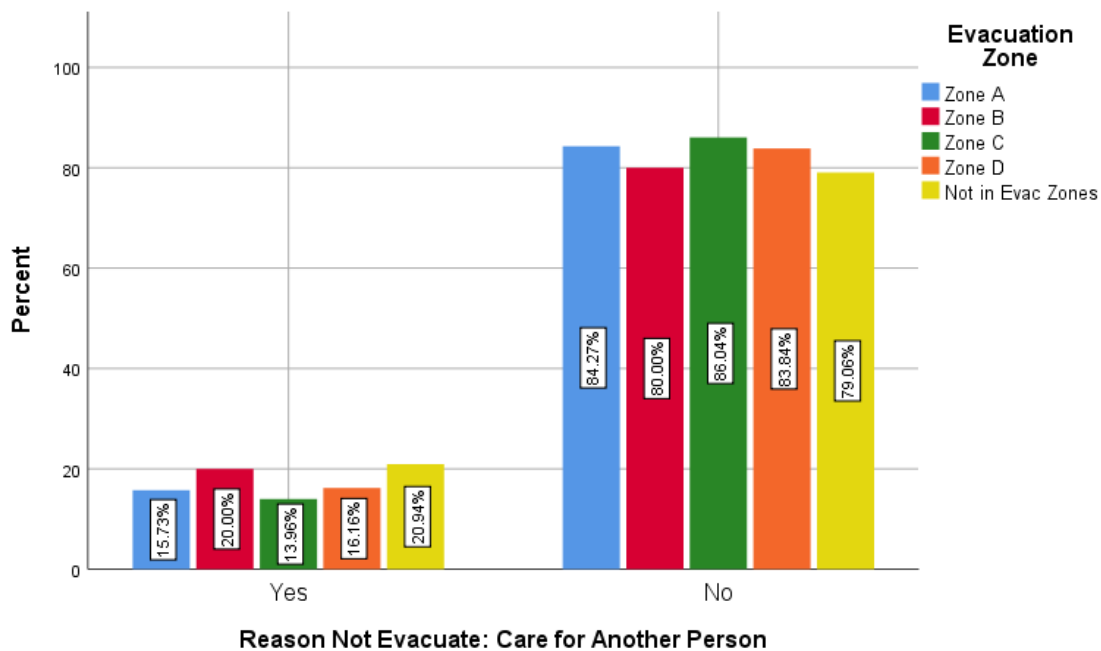




..by..Evacuation Zone

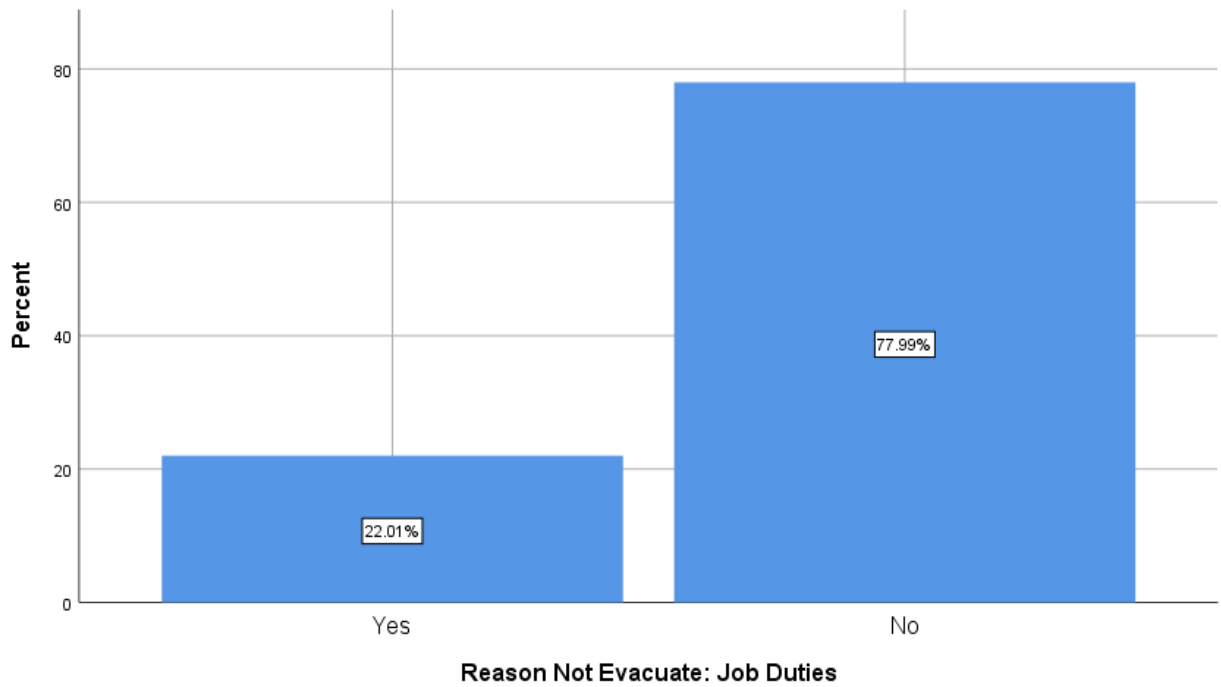
The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions of households within specific evacuation zones (Zones A-D and areas not within an evacuation zone) that indicate not evacuating because of the need to care for another person.

There does not appear to be a relationship between evacuation zone and needing to care for another person as a reason for not evacuating.



## Reason Not Evacuate: Job Duties

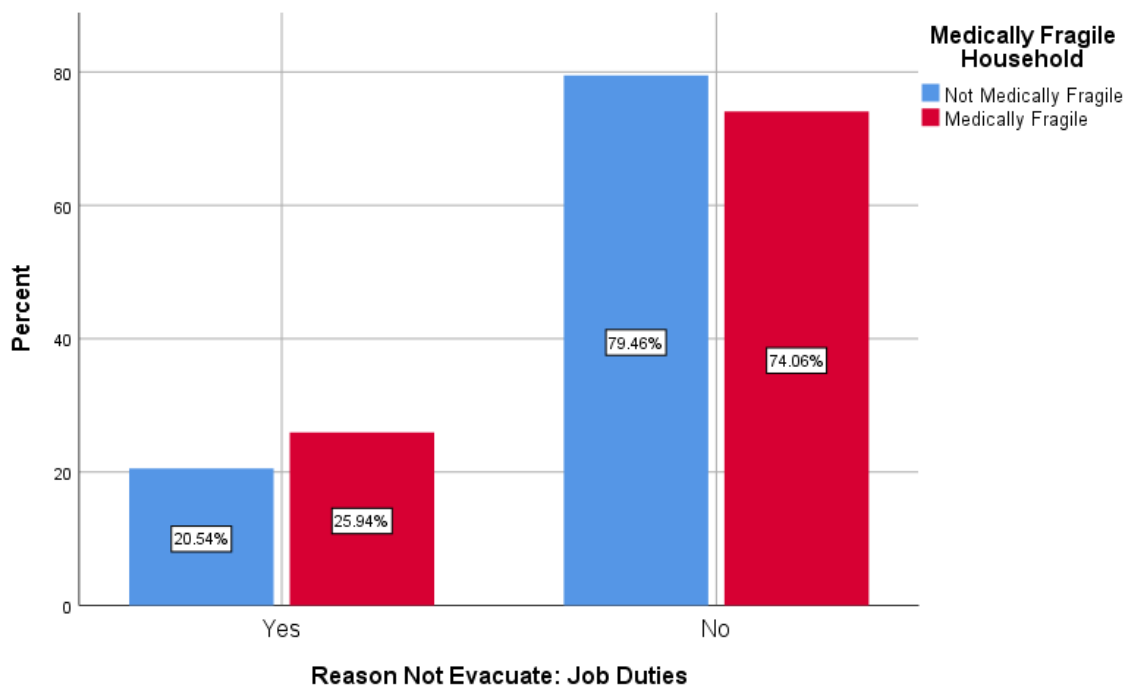
Roughly 22 percent of households cite job duties as a reason for not evacuating out of the region. The seven charts on the following pages will examine this reason controlling for household characteristics.



..by..Medically Fragile Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across Reason Not Evacuate: Job Duties (yes, no).

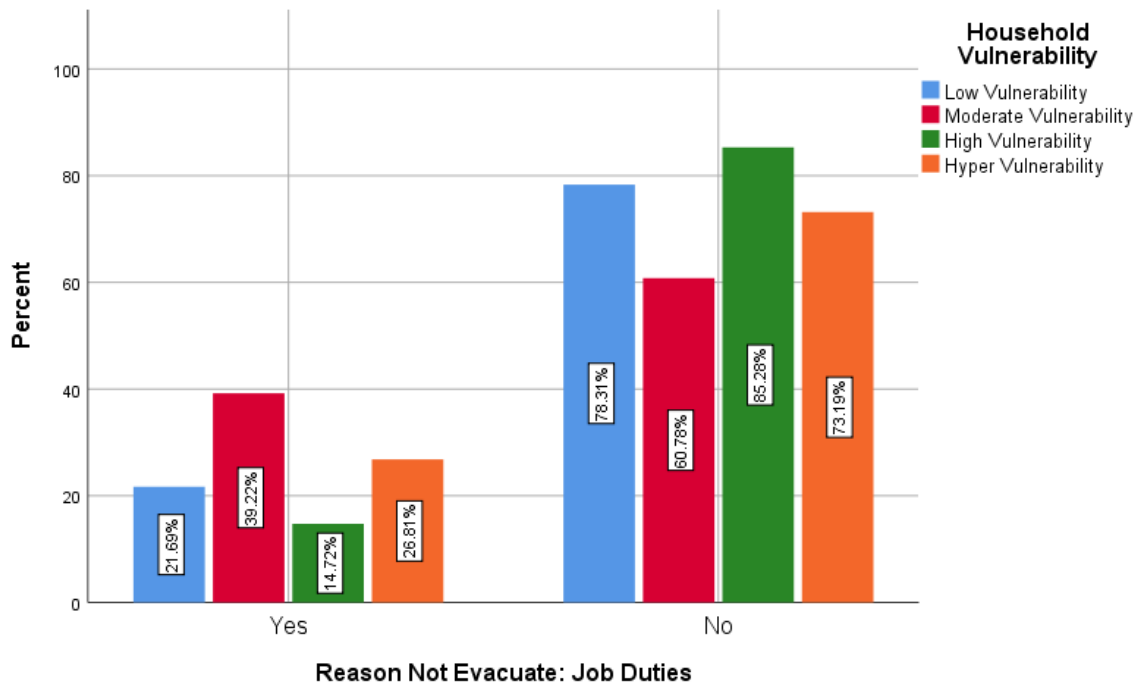
The chart shows medically fragile households, relative to not medically fragile households, cite job-related reasons keeping them in the region rather than evacuating. Just under 26 percent of medically fragile households cite having to remain in the region for job duties as a reason for not evacuating out of the region compared to about 21 percent of not medically fragile households.



..by..Household Vulnerability

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across Reason Not Evacuate: Job Duties (yes, no).

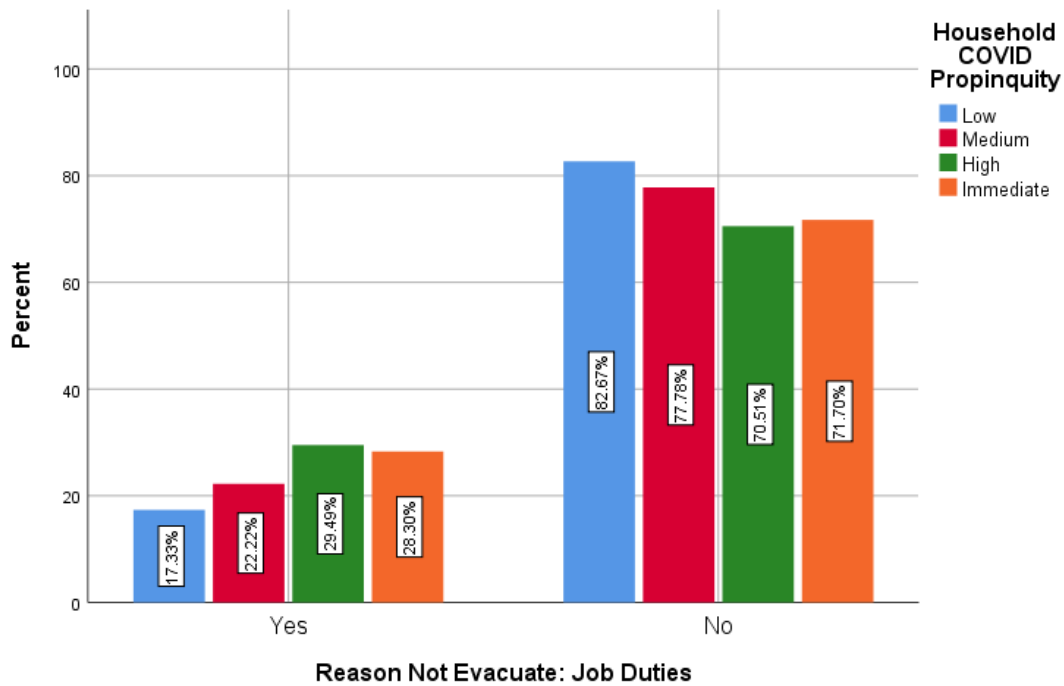
Across household vulnerability, the following proportions remain in the region to do a job as a reason for not evacuating out of the region: low vulnerability households (22 percent), moderate vulnerability households (39 percent), high vulnerability households (15 percent) and hyper vulnerability households (27 percent).



..by..Household COVID Propinquity

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across Reason Not Evacuate: Job Duties (yes, no).

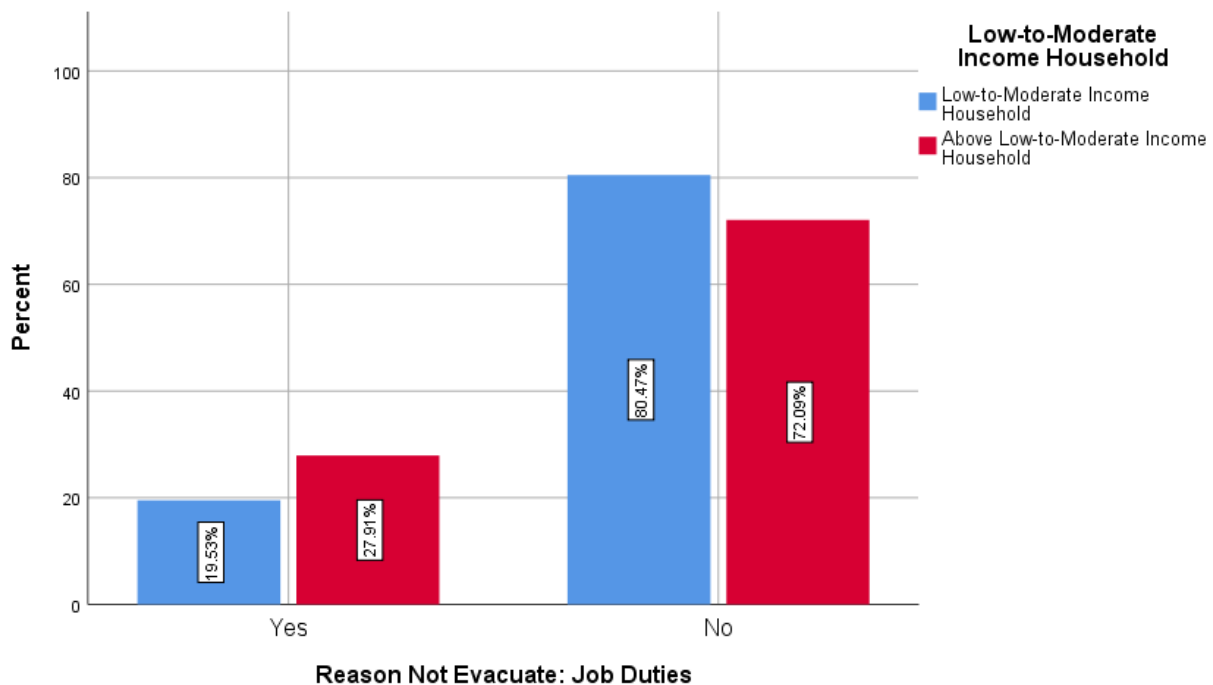
Job duties are more likely to be cited as a reason to stay in the region among high and immediate COVID propinquity households, relative to medium and low COVID propinquity households. The following households cite having to remain in the region to do a job as a reason for not evacuating out of the region: low COVID propinquity (17 percent), medium COVID propinquity (22 percent), high COVID propinquity (29 percent) and immediate COVID propinquity (28 percent).



..by..Low-to-Moderate Income Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across Reason Not Evacuate: Job Duties (yes, no).

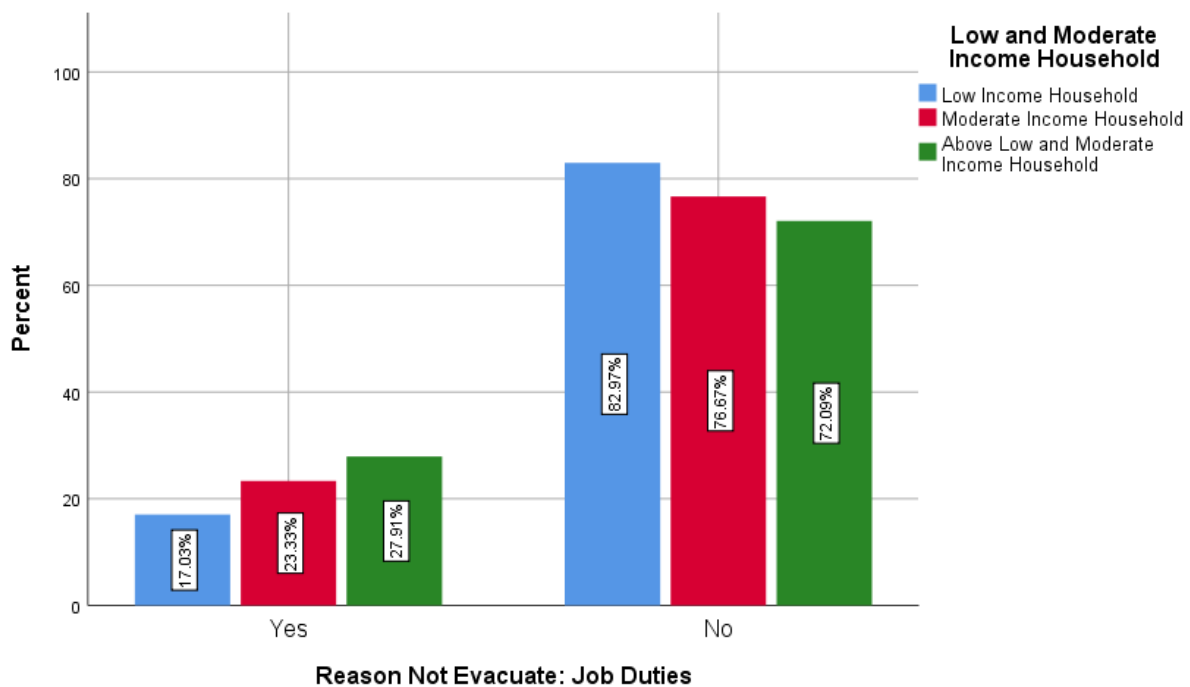
About 20 percent of low-to-moderate income households and about 28 percent of above low-to-moderate income households cite having to remain in the region to do a job as a reason for not evacuating out of the region. About 17 percent of low-income households, about 23 percent of moderate-income households, and about 28 percent of above moderate-income households, cite having to remain in the region to do a job as a reason for not evacuating out of the region. Therefore, it appears that families with higher household incomes are more likely to stay home for employment reasons.



..by..Low and Moderate Income Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across Reason Not Evacuate: Job Duties (yes, no).

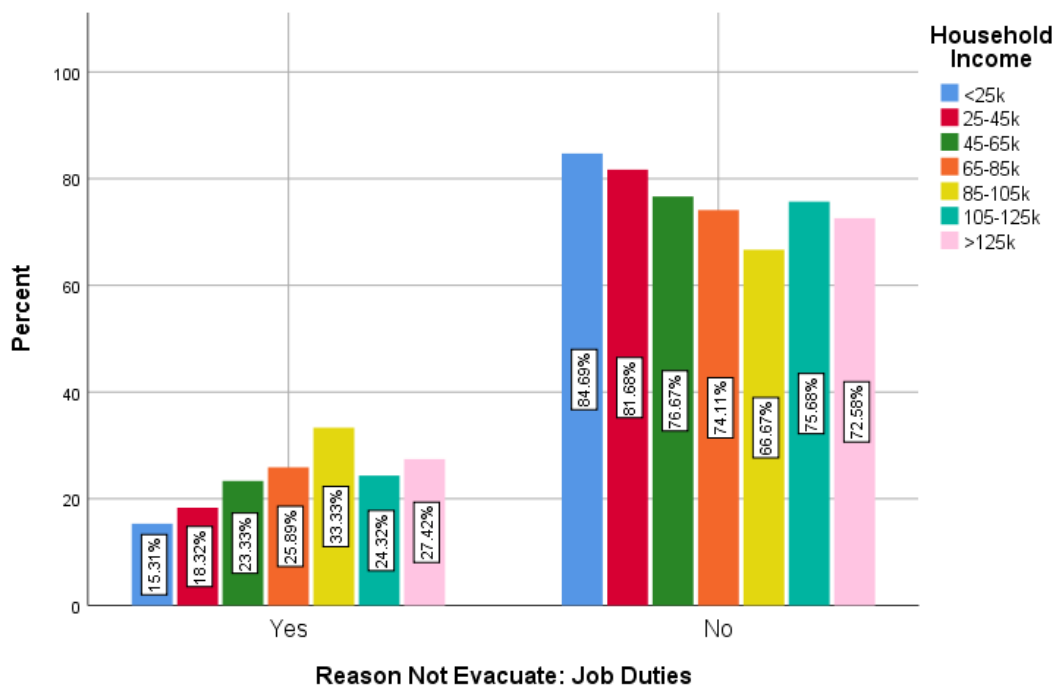
Job duties are more likely to be cited as a reason to stay in the region among above low and moderate income households, relative to lesser income households. Nearly 28 percent of low and moderate income households cite this as a reason relative to just over 13 percent for low income households. This may be a function of employment and professional job occupation, such as protective services or medical or government. That is, low income households are less likely to have a member in occupations that may be deemed essential relative to higher income households.



..by..Granulated Household Income

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Household Income (disaggregated into seven household income gradients) across Reason Not Evacuate: Job Duties (yes, no).

Job duties increasingly are more likely to cited as a reason to stay in the region from <25k households through 105k households. Then, beyond this, the percentages drop for households above 105k. This increase and drop may be a reflection of the high pay ceilings of occupations such as protective services and essential personnel. In addition, this also may reflect a smaller percentage of higher income households (above 105k) that have members that are protective services and essential personnel.

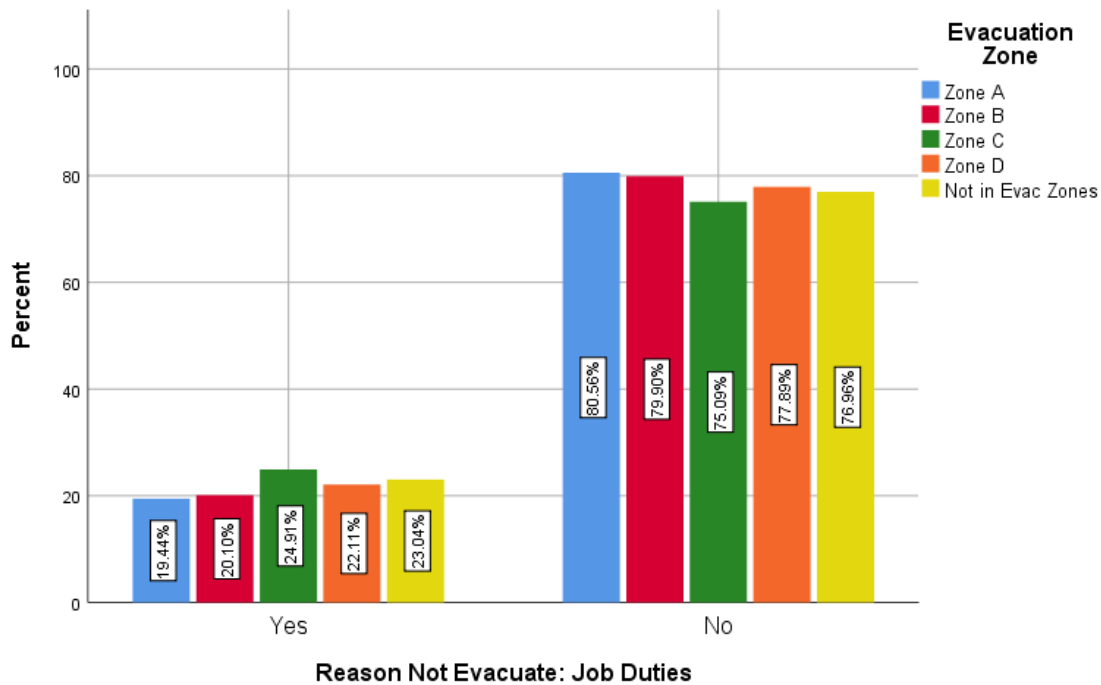




..by..Evacuation Zone

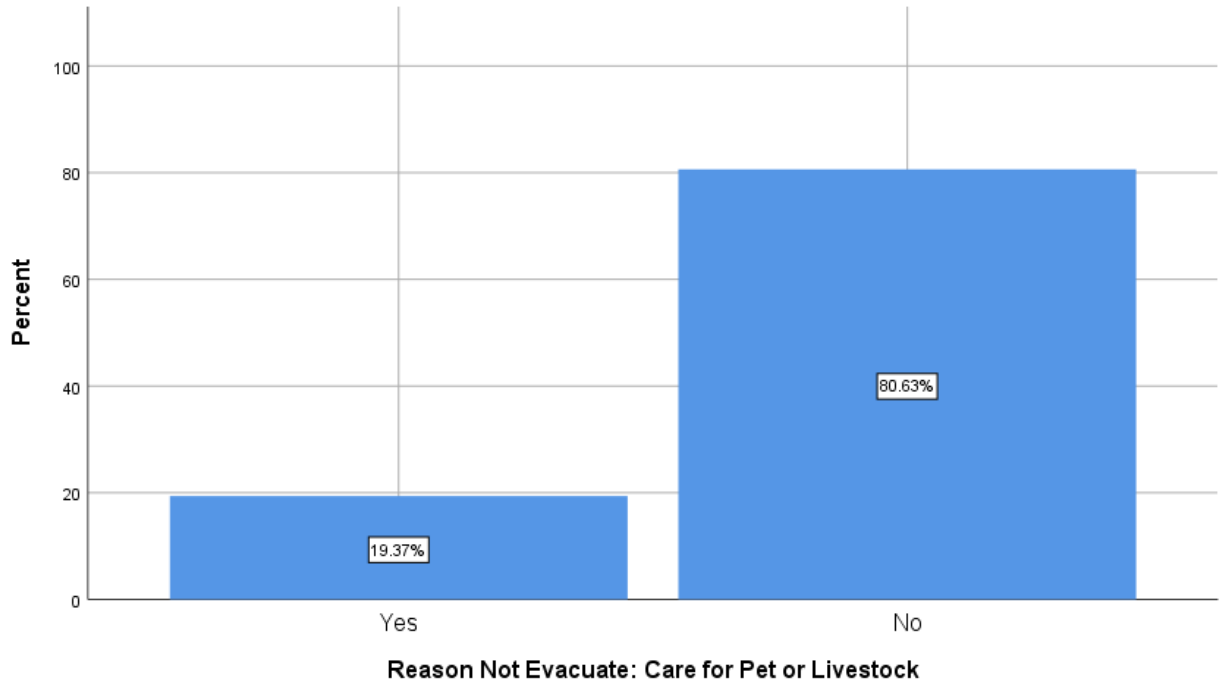
The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across Reason Not Evacuate: Job Duties (yes, no).

Protective services and essential personnel households are more likely to reside in evacuation zones away from the water relative to households without members that are protective services and essential personnel. That is, Zone A and B are less likely to have households with protective services and essential personnel relative to the other zones.



## Reason Not Evacuate: Care for Pet or Livestock

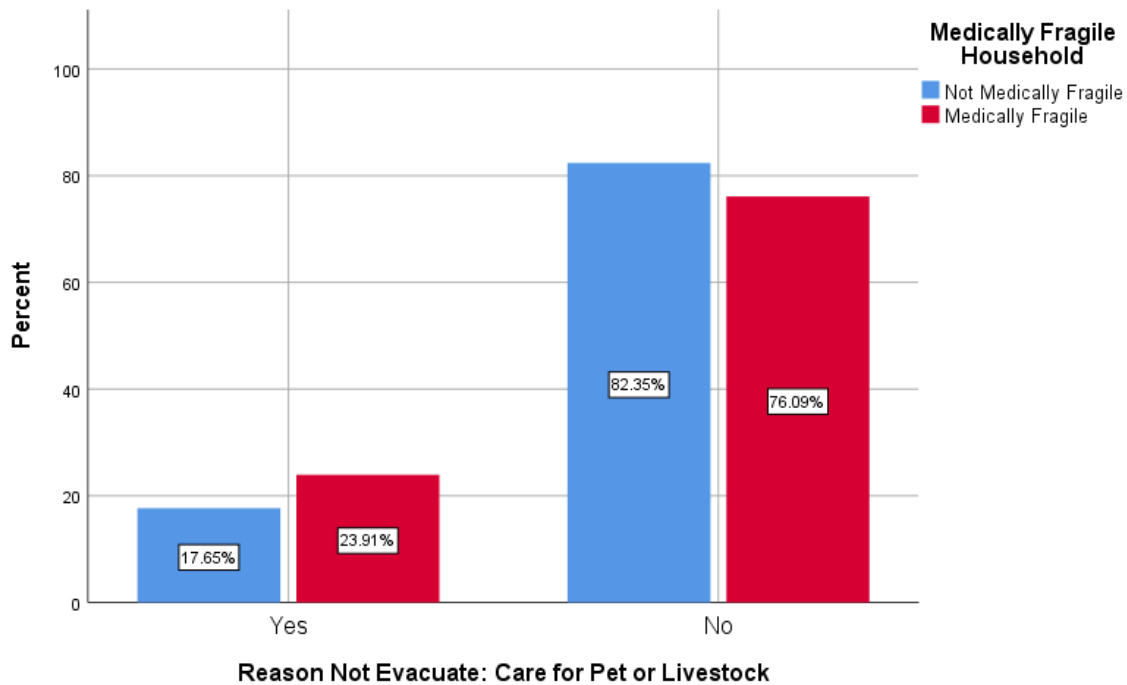
As shown, choosing to remain in the region to care for a pet or livestock is a reason cited by over 19 percent of those who will not evacuate and instead seek shelter in a home. The seven charts on the following pages will examine this reason controlling for household characteristics.



..by..Medically Fragile Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across Reason Not Evacuate: Care for Pet or Livestock (yes, no).

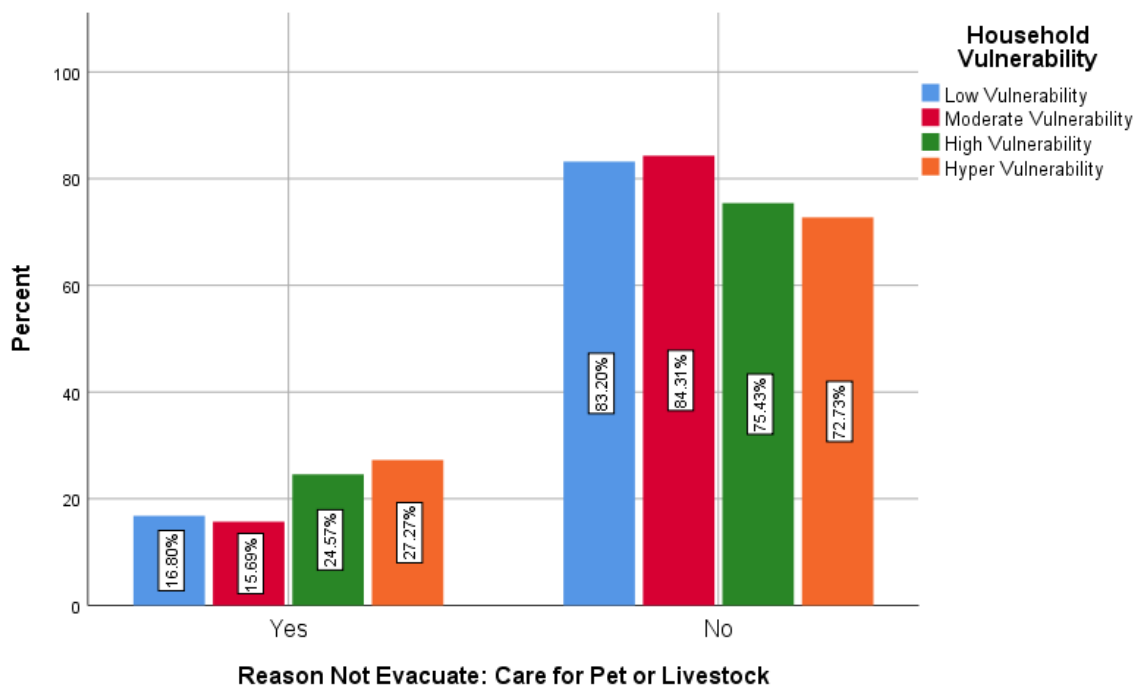
A larger proportion of medically fragile households cite responsibilities to care for a pet or livestock as a reason to stay the region rather than evacuating, relative to not medically fragile households. About 24 percent of medically fragile households and about 18 percent of not medically fragile households report having to remain in the region to care for a pet or livestock as a reason for not evacuating and choosing to shelter in a home.



..by..Household Vulnerability

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across Reason Not Evacuate: Care for Pet or Livestock (yes, no).

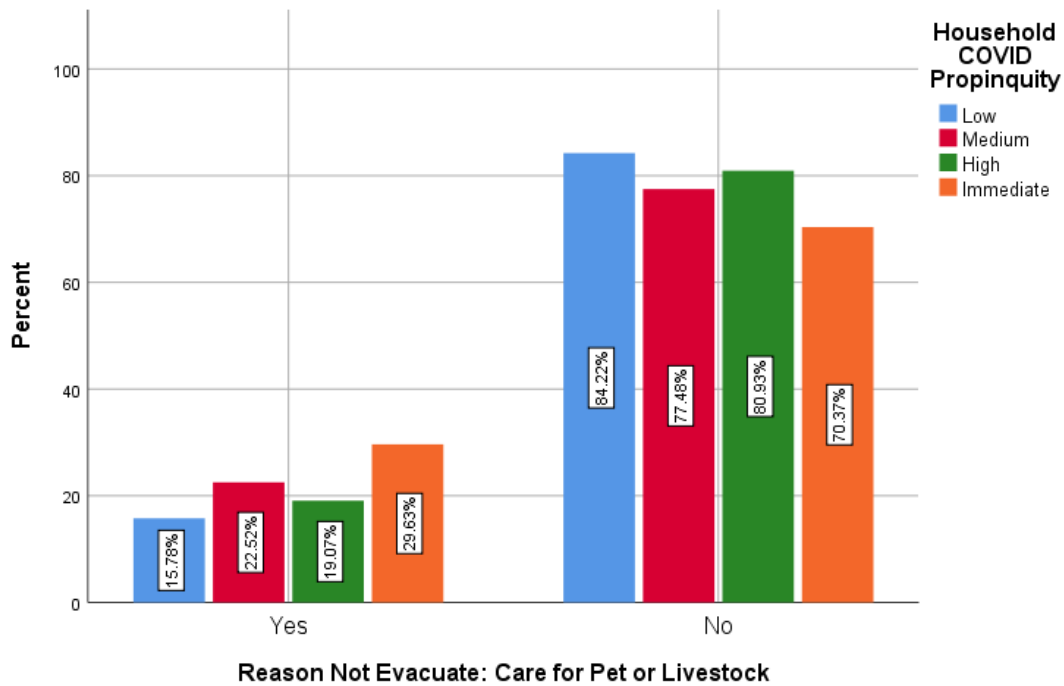
High and hyper vulnerability households are more likely, relative to moderate and low vulnerability households, to cite care for a pet or livestock as a reason for not evacuating. In terms of vulnerability, the following households report having to remain in the region to care for a pet or livestock as a reason for not evacuating: low vulnerability households (17 percent), moderate vulnerability households (16 percent), high vulnerability households (25 percent) and hyper vulnerability households (27 percent).



..by..Household COVID Propinquity

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across Reason Not Evacuate: Care for Pet or Livestock (yes, no).

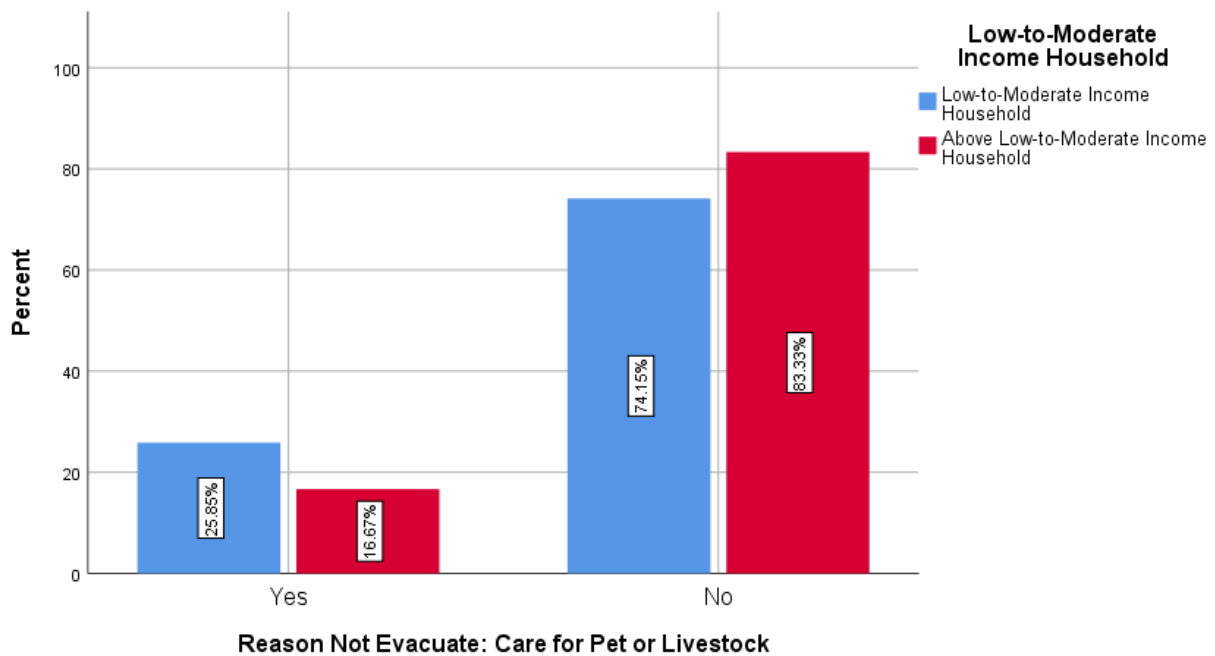
Immediate COVID propinquity households are more likely to remain in the region due to a pet or livestock, relative to other households. In terms of COVID propinquity, the following households report having to remain in the region to care for a pet or livestock as a reason for not evacuating and choosing to shelter in a home: low COVID propinquity (16 percent), medium COVID propinquity (22 percent), high COVID propinquity (19 percent) and immediate COVID propinquity (30 percent).



..by..Low-to-Moderate Income Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across Reason Not Evacuate: Care for Pet or Livestock (yes, no).

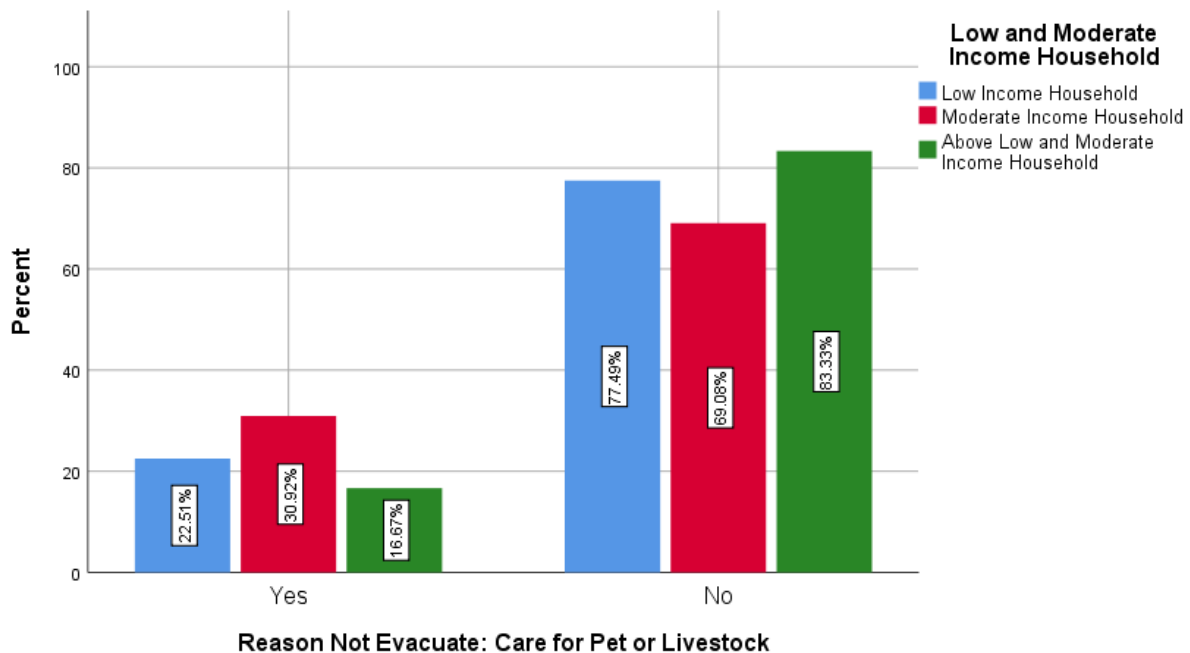
Low-to-moderate income households are more likely, relative to above low-to-moderate income households, to remain in the due to care for a pet or livestock. About 26 percent of low-to-moderate income households and about 17 percent of above low-to-moderate income households report having to remain in the region to care for a pet or livestock as a reason for not evacuating and choosing to shelter in a home.



..by..Low and Moderate Income Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across Reason Not Evacuate: Care for Pet or Livestock (yes, no).

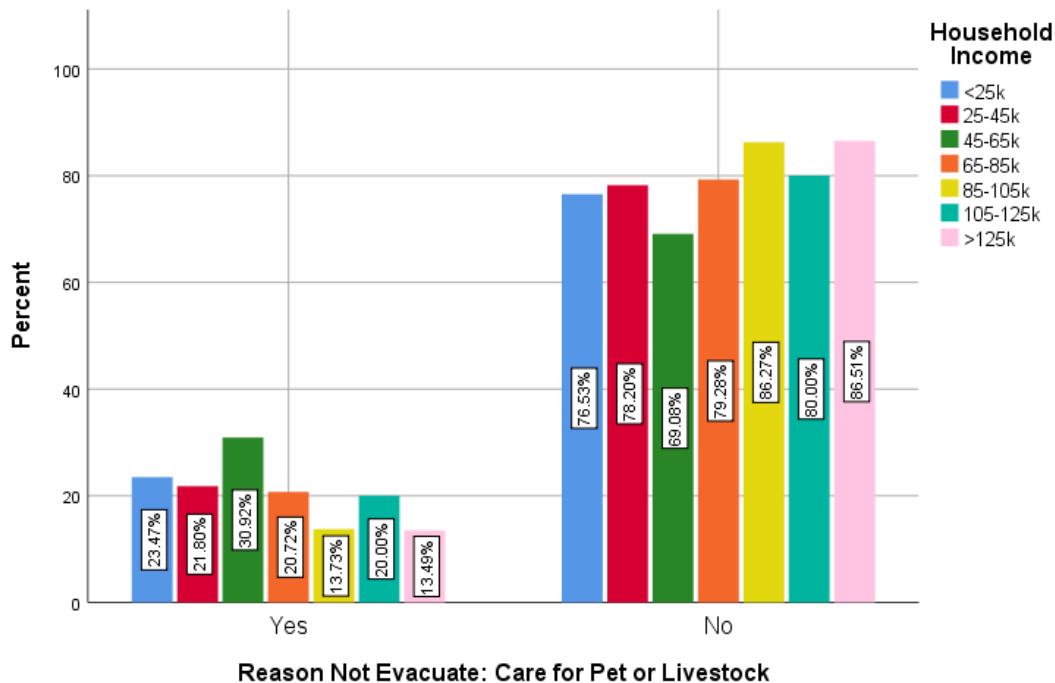
Moderate income households are more likely, relative to other income households, to cite care for a pet or livestock as a reason for not evacuating. About 23 percent of low-income households, about 31 percent of moderate-income households, and nearly 17 percent of above moderate income households, report having to remain in the region to care for a pet or livestock as a reason for not evacuating.



..by..Granulated Household Income

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Household Income (disaggregated into seven household income gradients) across Reason Not Evacuate: Care for Pet or Livestock (yes, no).

Generally, lower income households through 65k income households are more likely to cite care for a pet or livestock as a reason for not evacuating, relative to households above 65k. Specifically, households within the range of 45-65k are more likely, relative to other households, to cite care for a pet or livestock as a reason for not evacuating.

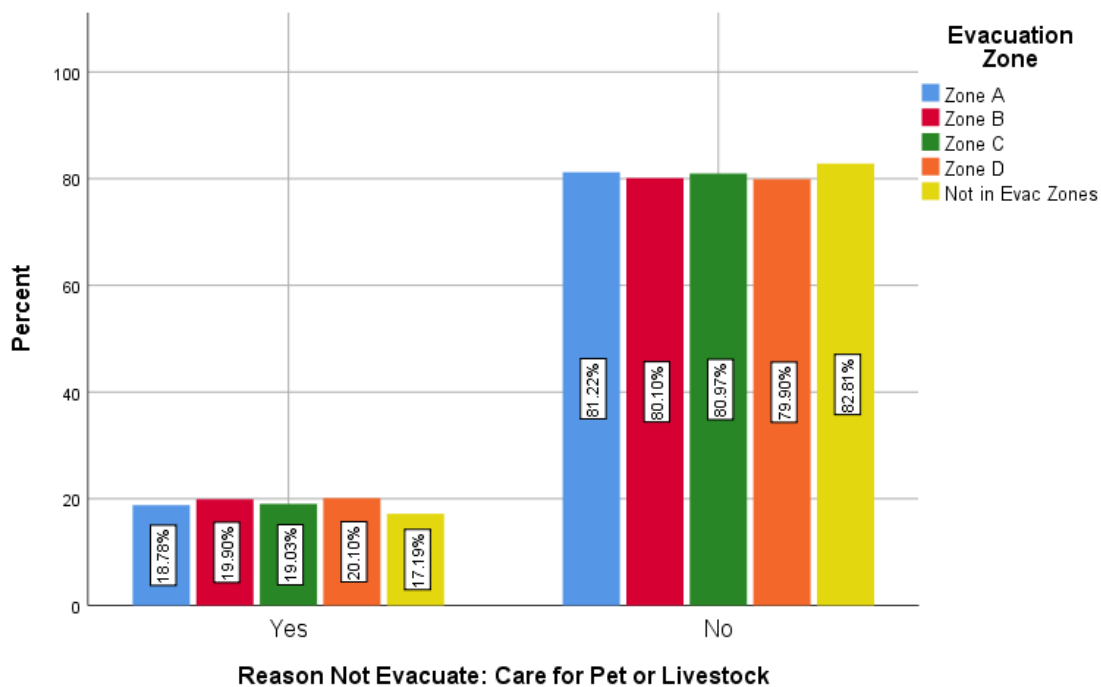




..by..Evacuation Zone

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across Reason Not Evacuate: Care for Pet or Livestock (yes, no).

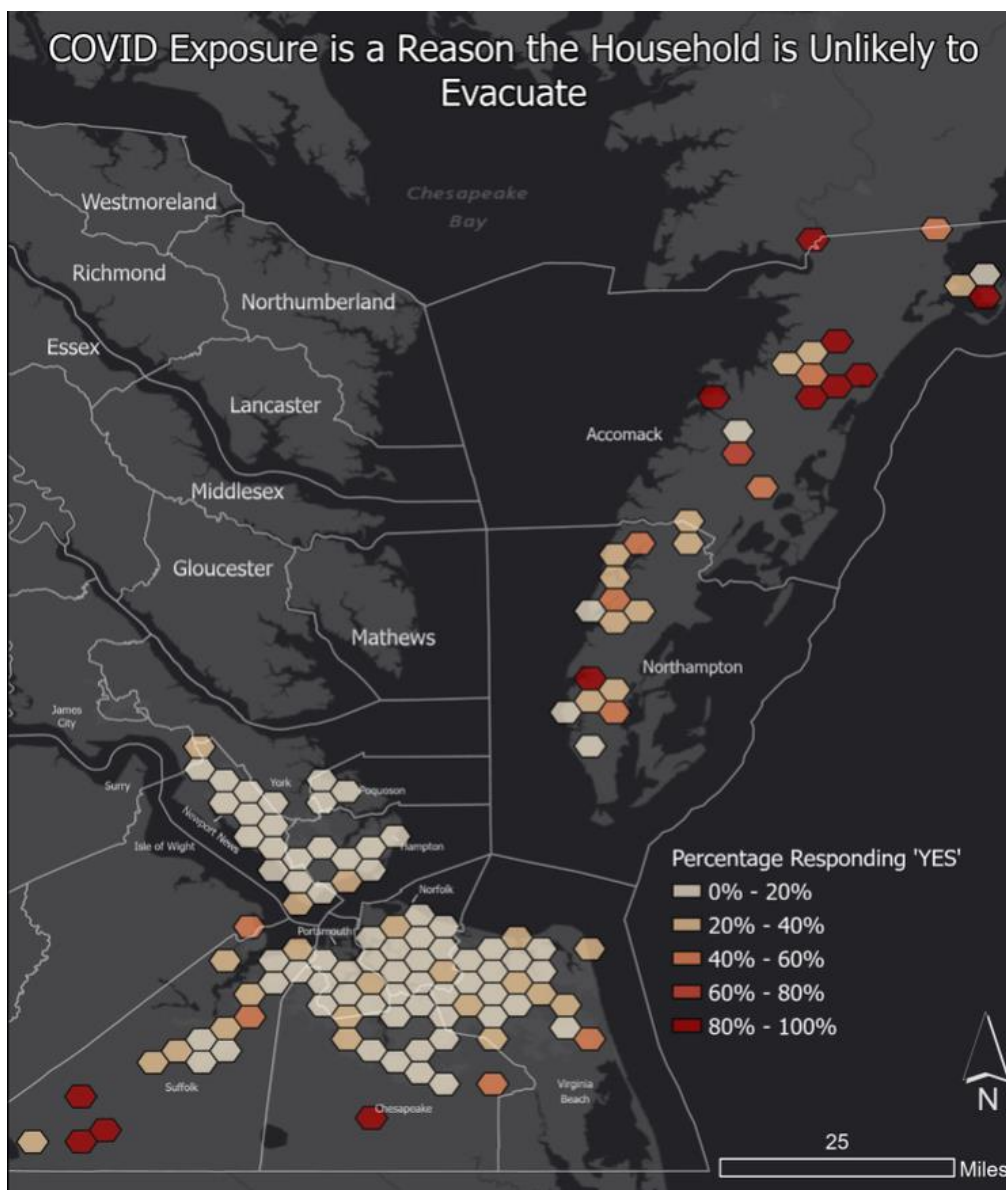
The likelihood of reporting care for pet or livestock as a reason not to evacuate is not conditioned by the location of the household evacuation zone-wise.



## Reason Not Evacuate: Concern COVID Exposure (Map)

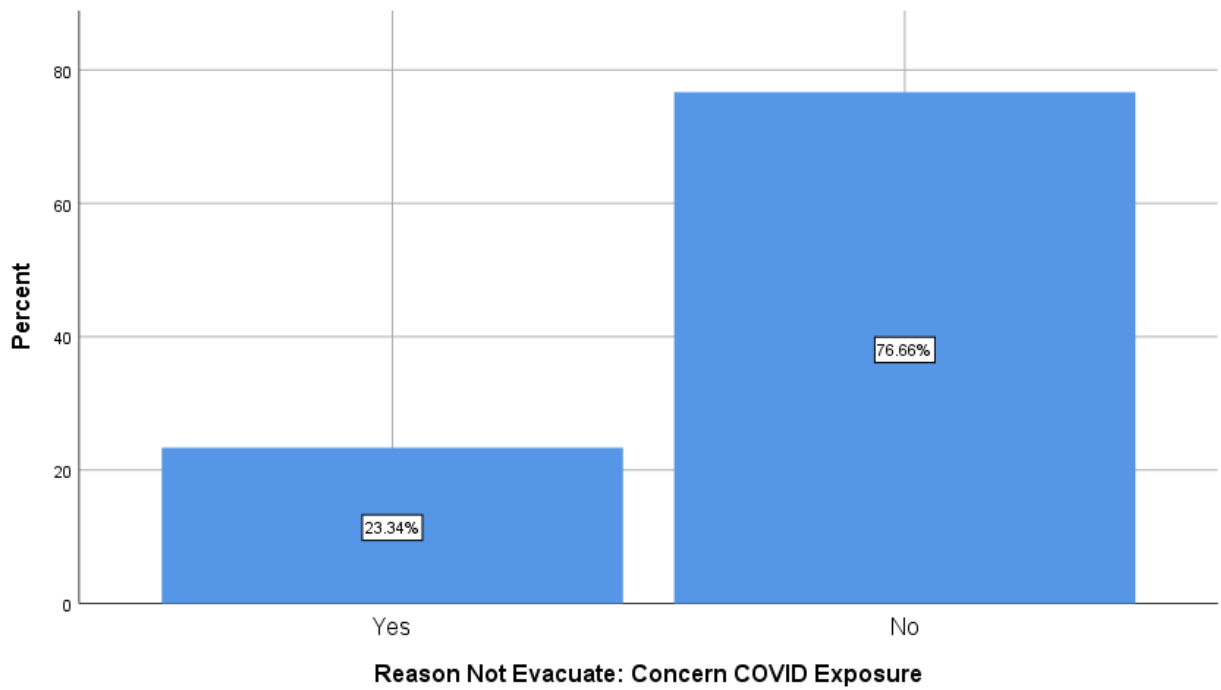
The below hexagonal cluster map illustrates the percent of households within hexagonal areas that report 'yes,' unlikely to evacuate out of region due to concern about exposure to COVID.

Each polygon contains geolocated study cases. The percent of 'yes' responses within a polygon is associated with a particular color coding; more yes responses are associated with darker colors representing the intensity of concern about COVID exposure in a spatial sense. As illustrated, several neighborhoods in Accomack, Northampton, southern Suffolk, and southern Chesapeake have high concern relative to other areas across the region.



## Reason Not Evacuate: Concern COVID Exposure

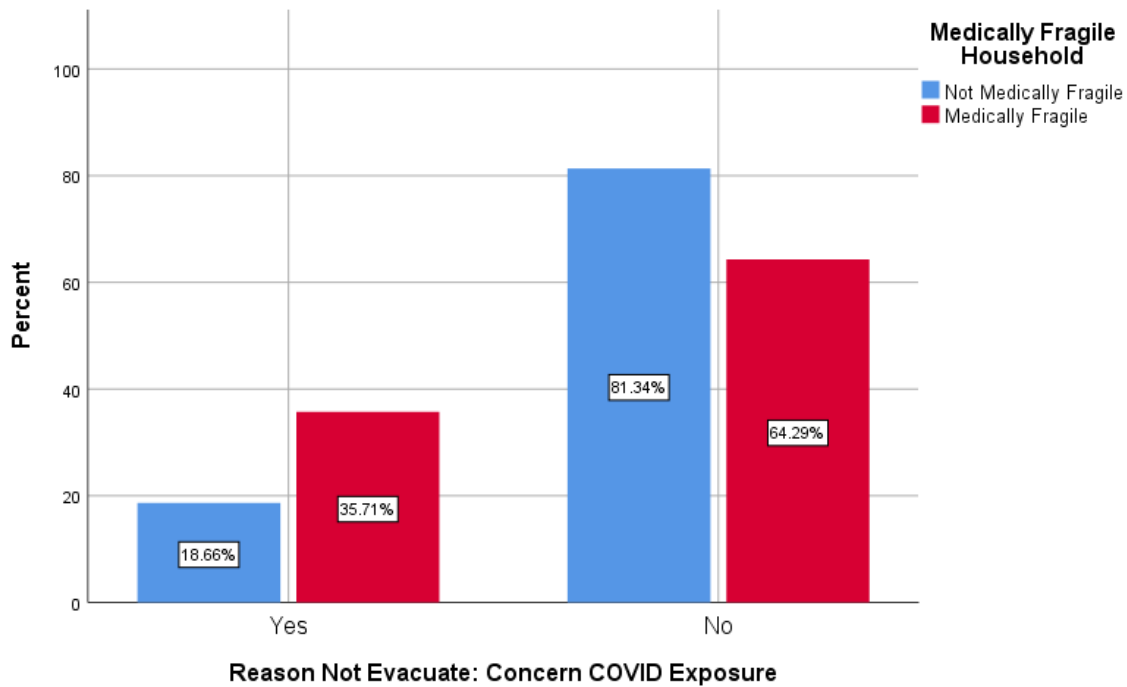
The chart below summarizes the role of COVID in the decision not to evacuate. About 23 percent of households that plan to shelter in a home report cite one of the reasons they are unlikely to evacuate is concerns related to COVID exposure during this hurricane season should a significant hurricane approach the region. The seven charts on the following pages will examine this reason controlling for household characteristics.



..by..Medically Fragile Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across Reason Not Evacuate: Concern COVID Exposure (yes, no).

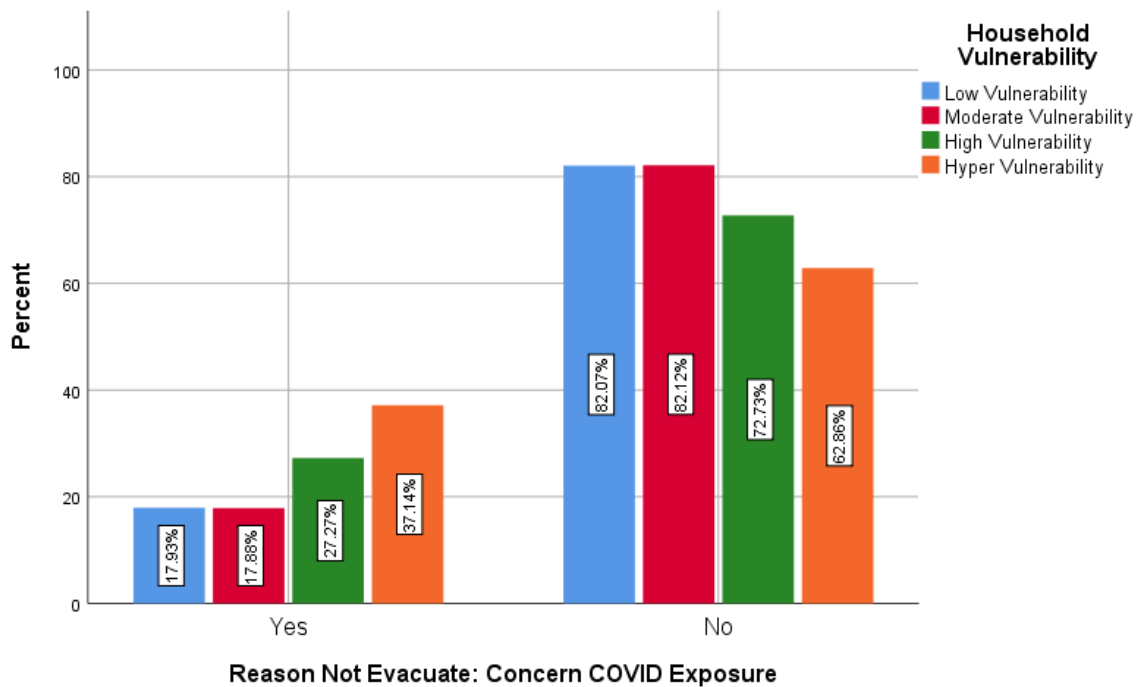
Medically fragile households are more likely, relative to not medically fragile households, to cite concern about COVID exposure as one of the reasons for the household not being likely to evacuate. About 36 percent of medically fragile households and about 19 percent of not medically fragile households cite COVID exposure as one of the reasons for the household not being likely to evacuate.



..by..Household Vulnerability

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across Reason Not Evacuate: Concern COVID Exposure (yes, no).

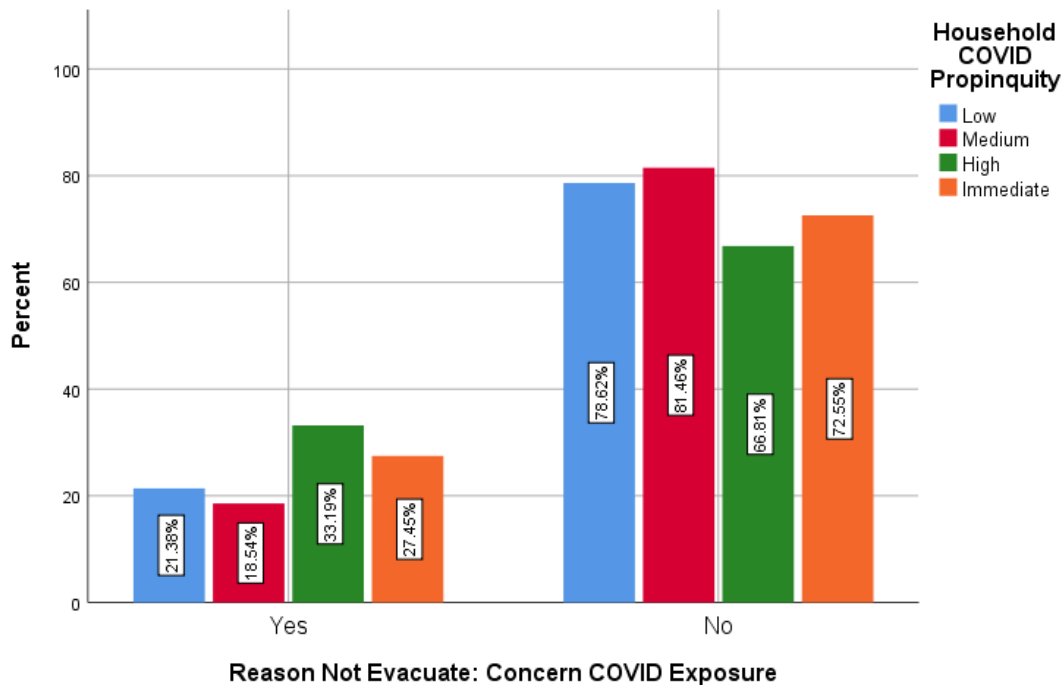
Hyper and high vulnerability households are more likely, relative to moderate and low vulnerability households, to cite concern about COVID exposure as one of the reasons for the household not being likely to evacuate. Over 37 percent of hyper vulnerability households and just under 18 percent of low vulnerability households cite COVID exposure as one of the reasons for the household not being likely to evacuate. Specifically: low vulnerability households (18 percent), moderate vulnerability households (18 percent), high vulnerability households (27 percent) and hyper vulnerability households (37 percent).



..by..Household COVID Propinquity

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across Reason Not Evacuate: Concern COVID Exposure (yes, no).

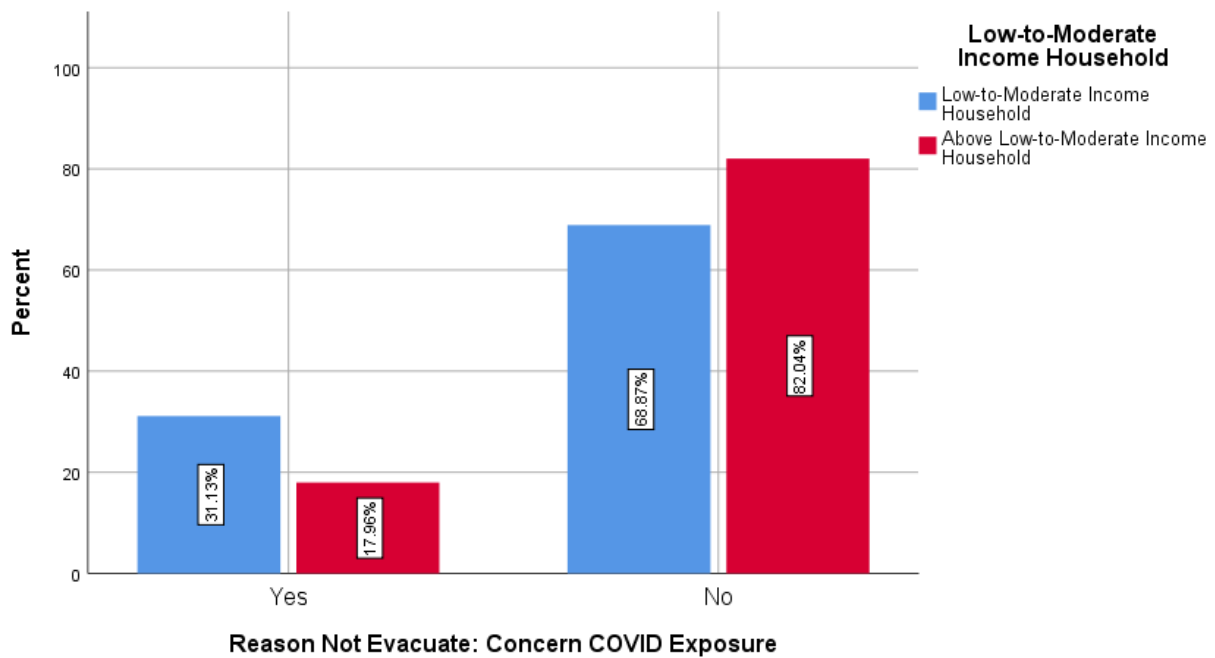
In terms of COVID propinquity, the following households cite concerns about COVID exposure as one of the reasons for the household not being likely to evacuate during this hurricane season should a significant hurricane approach the region: low COVID propinquity (21 percent), medium COVID propinquity (19 percent), high COVID propinquity (33 percent) and immediate COVID propinquity (27 percent).



..by..Low-to-Moderate Income Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across Reason Not Evacuate: Concern COVID Exposure (yes, no).

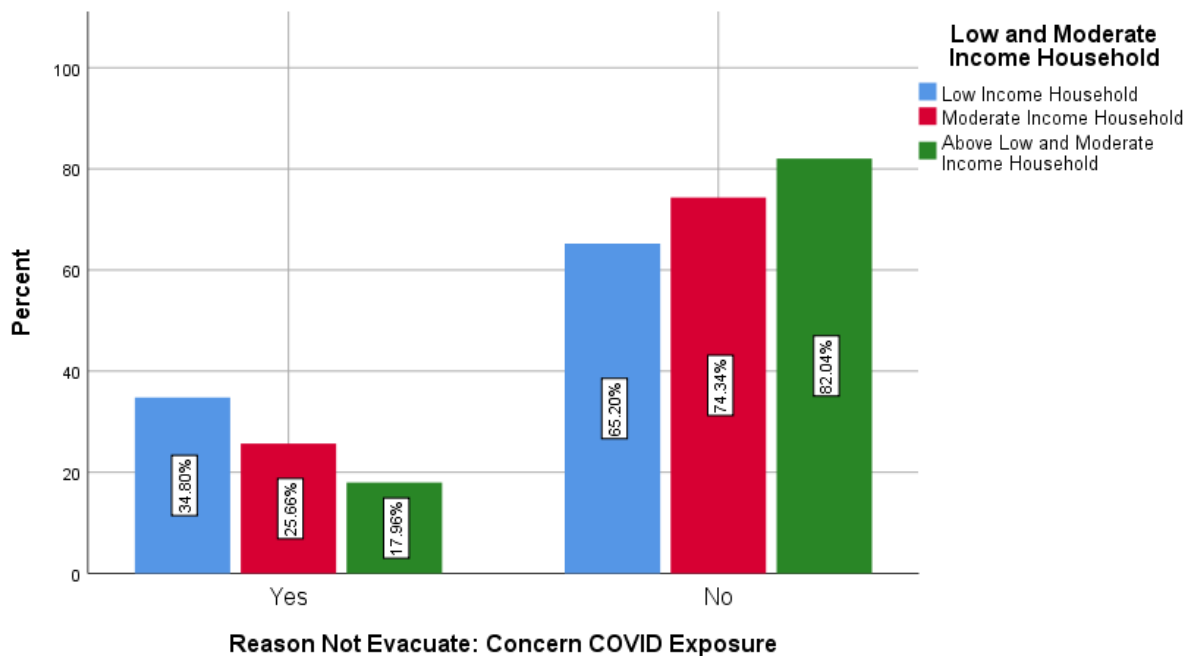
Low-to-moderate income households are more likely, relative to above low-to-moderate income households, to cite concern about COVID exposure as one of the reasons for the household not being likely to evacuate. Approximately 31 percent of low-to-moderate income households and about 18 percent of above low-to-moderate income households cite concerns about COVID exposure as one of the reasons for the household not being likely to evacuate during this hurricane season should a significant hurricane approach the region.



..by..Low and Moderate Income Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across Reason Not Evacuate: Concern COVID Exposure (yes, no).

Low income households are more likely, relative to other income households, to cite concern about COVID exposure as one of the reasons for the household not being likely to evacuate. Nearly 35 percent of low income households, 26 percent of above moderate income households, and nearly 18 percent of households above these incomes cite concerns about COVID exposure as one of the reasons for the household not being likely to evacuate during this hurricane season should a significant hurricane approach the region.

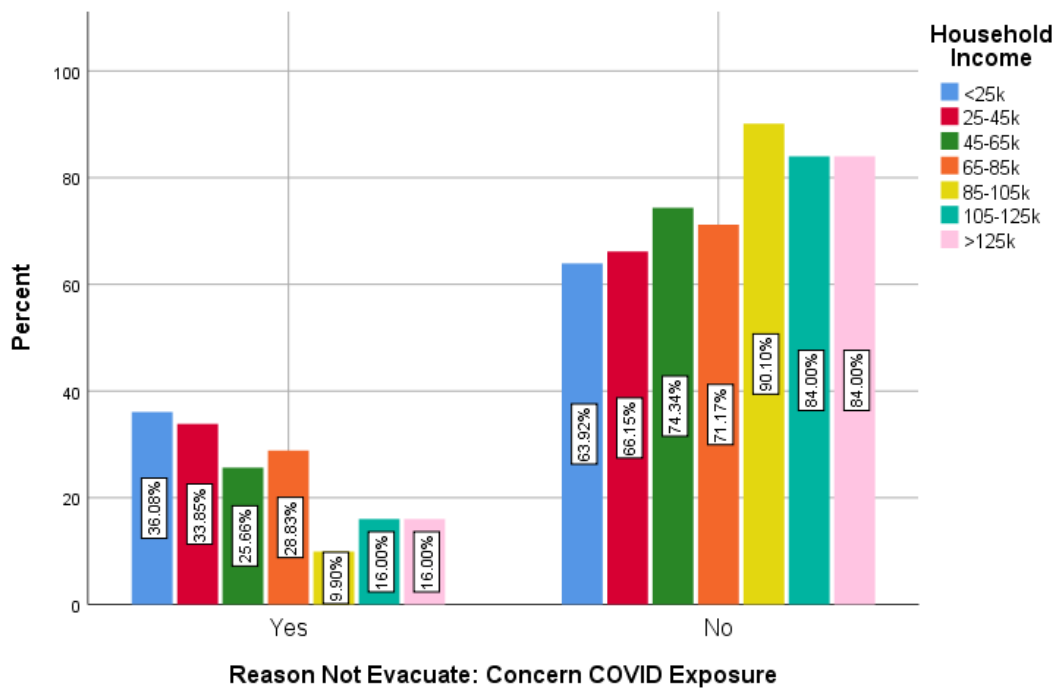




..by..Granulated Household Income

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Household Income (disaggregated into seven household income gradients) across Reason Not Evacuate: Concern COVID Exposure (yes, no).

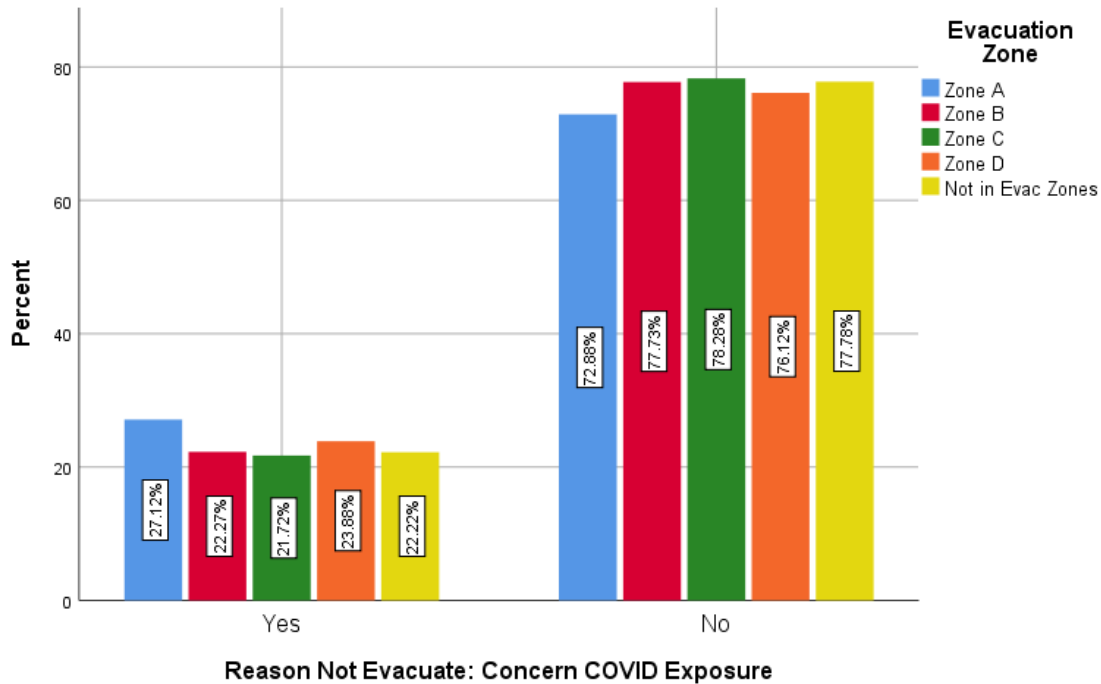
Across a more granulated income, there is a general trend where lower income households are more likely, relative to higher income households, to cite concern about COVID exposure as one of the reasons for the household not being likely to evacuate. Just over 36 percent of households <25k cite COVID, where this proportion is half this or less among income groups above 85k.



..by..Evacuation Zone

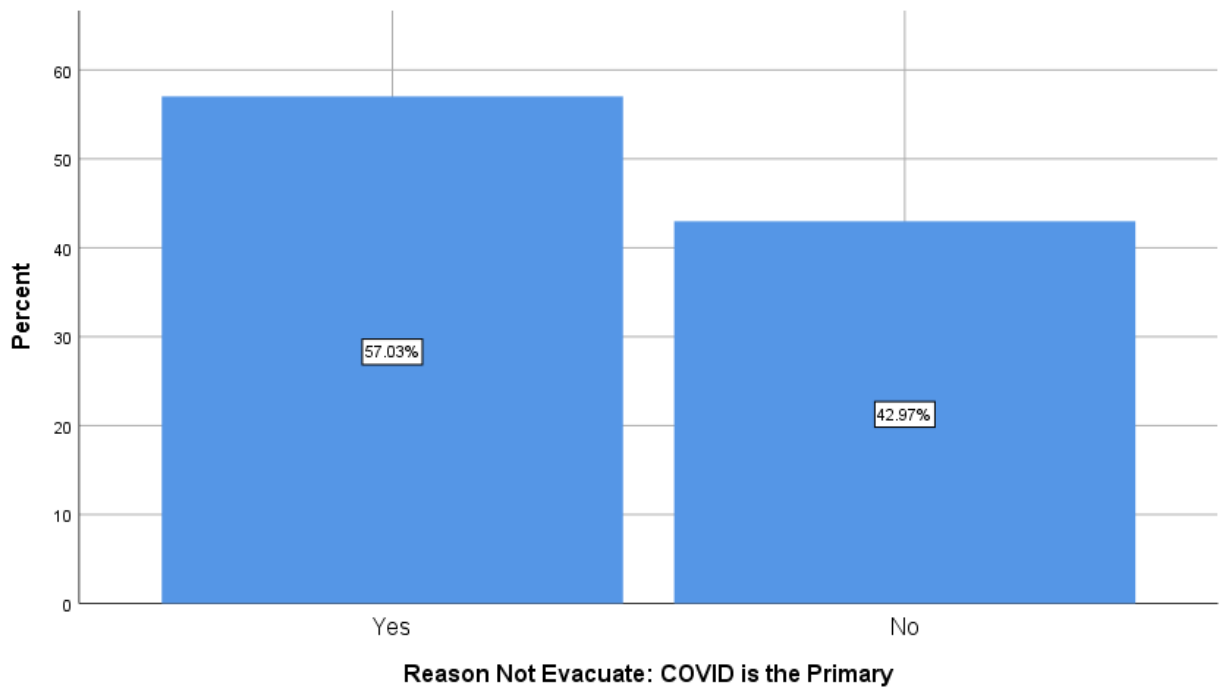
The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across Reason Not Evacuate: Concern COVID Exposure (yes, no).

Evacuation Zone A households are more likely, relative to other evacuation zone households, to cite concern about COVID exposure as one of the reasons for the household not being likely to evacuate.



## Reason Not Evacuate: COVID is the Primary

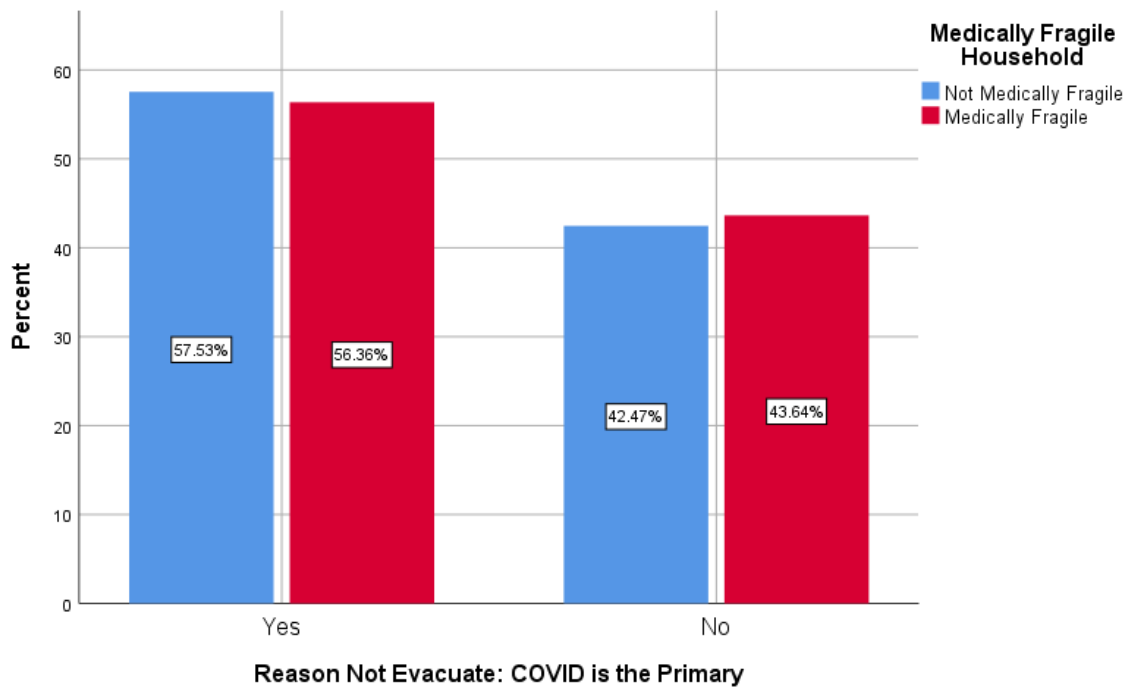
As illustrated below, among those planning to shelter in a home or places other than a public shelter within Hampton Roads and citing COVID as one of the reasons for not evacuating the region, just over 57 percent of households cite concern about exposure to COVID as the *primary* reason the households are unlikely to evacuate out of the region. The seven charts on the following pages will examine this reason controlling for household characteristics.



..by..Medically Fragile Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads and citing COVID as one of the reasons for not evacuating the region, the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across Reason Not Evacuate: COVID is the Primary (yes, no).

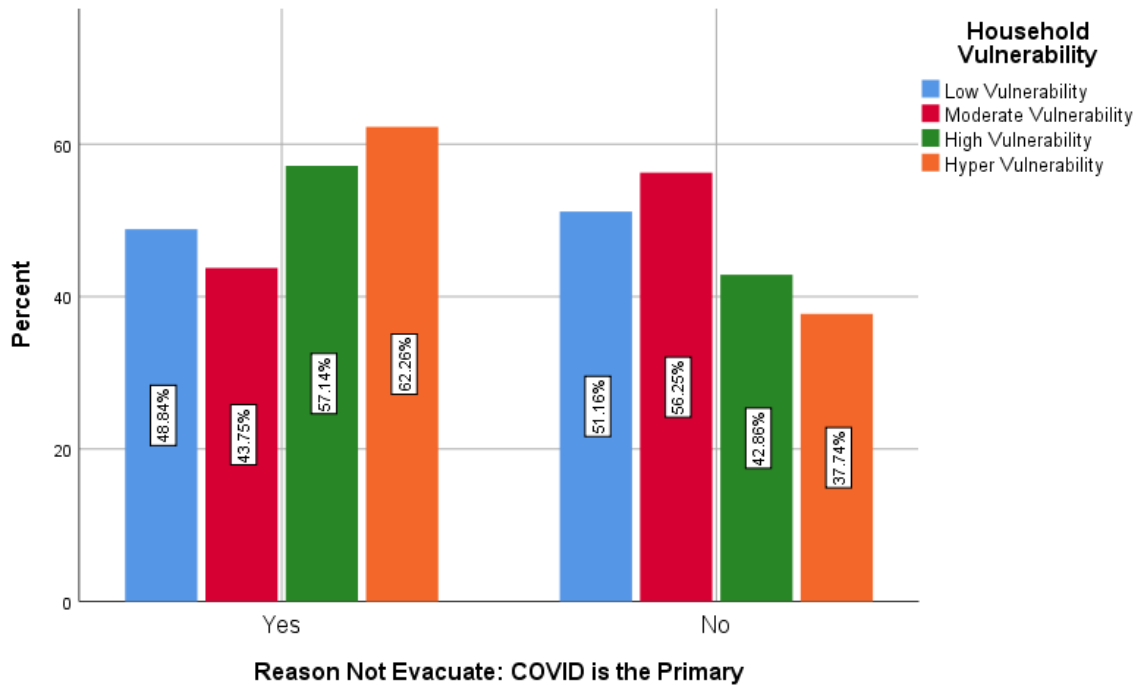
Statistically indistinguishable are the proportion within medically fragile households and within not medically fragile households that cite COVID as the primary among the reasons not to evacuate. That is, roughly 57 percent within both types of households cite COVID as the primary among the reasons not to evacuate.



..by..Household Vulnerability

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads and citing COVID as one of the reasons for not evacuating the region, the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across Reason Not Evacuate: COVID is the Primary (yes, no).

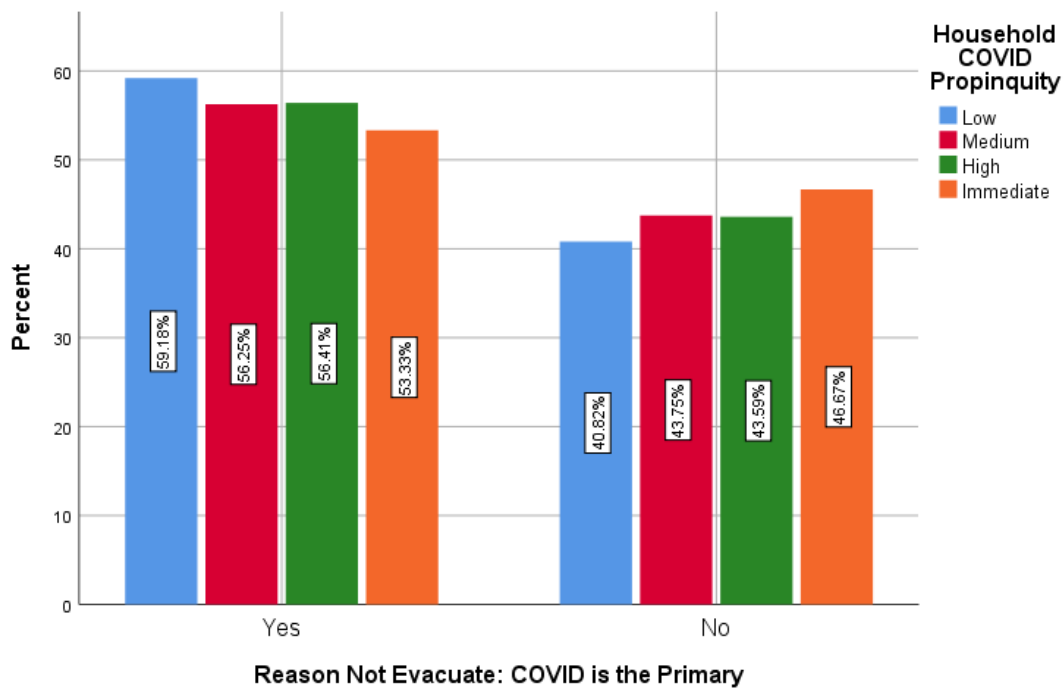
Hyper and high vulnerability households, relative to moderate and low vulnerability households, are more likely to cite COVID as the primary among the reasons not to evacuate. That is, over 62 percent of hyper vulnerability households relative to just under 49 percent of low vulnerability households cite COVID as the primary among the reasons not to evacuate.



..by..Household COVID Propinquity

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads and citing COVID as one of the reasons for not evacuating the region, the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across Reason Not Evacuate: COVID is the Primary (yes, no).

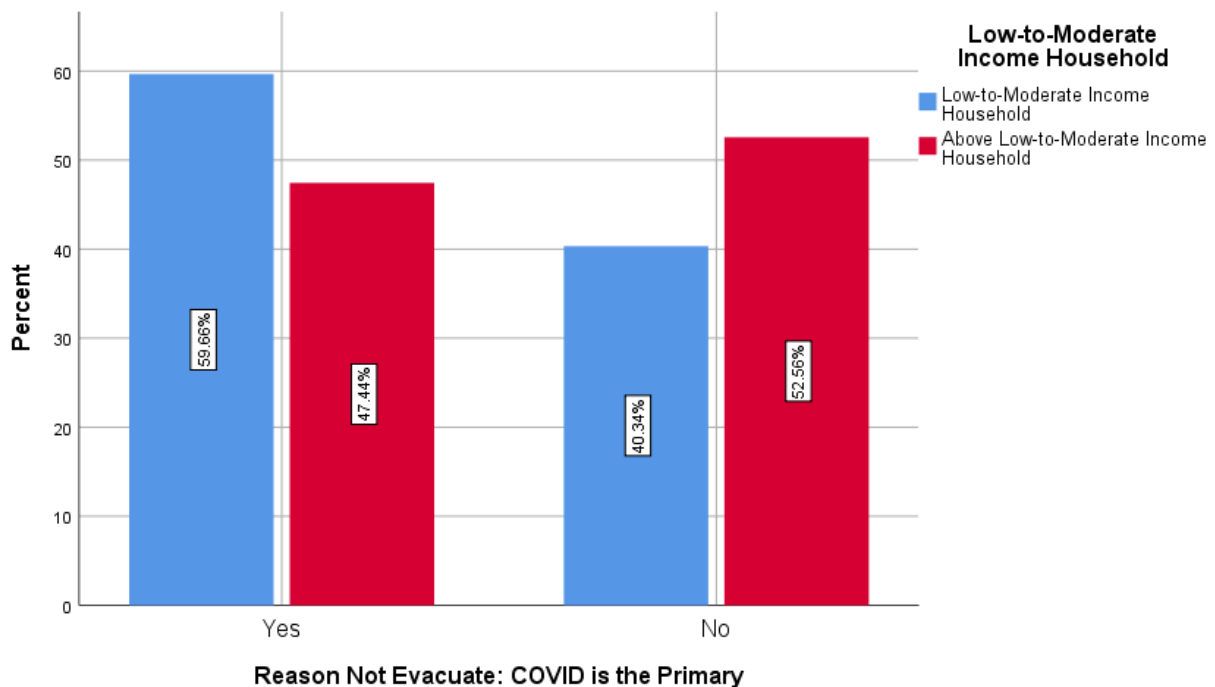
Low COVID propinquity households, relative to immediate COVID propinquity households, are more likely to cite COVID as the primary among the reasons not to evacuate. That is, over 59 percent of low COVID propinquity households relative to just over 53 percent of low COVID propinquity households cite COVID as the primary among the reasons not to evacuate. Specifically: low COVID propinquity (59 percent), medium COVID propinquity (56 percent), high COVID propinquity (56 percent) and immediate COVID propinquity (53 percent).



..by..Low-to-Moderate Income Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads and citing COVID as one of the reasons for not evacuating the region, the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across Reason Not Evacuate: COVID is the Primary (yes, no).

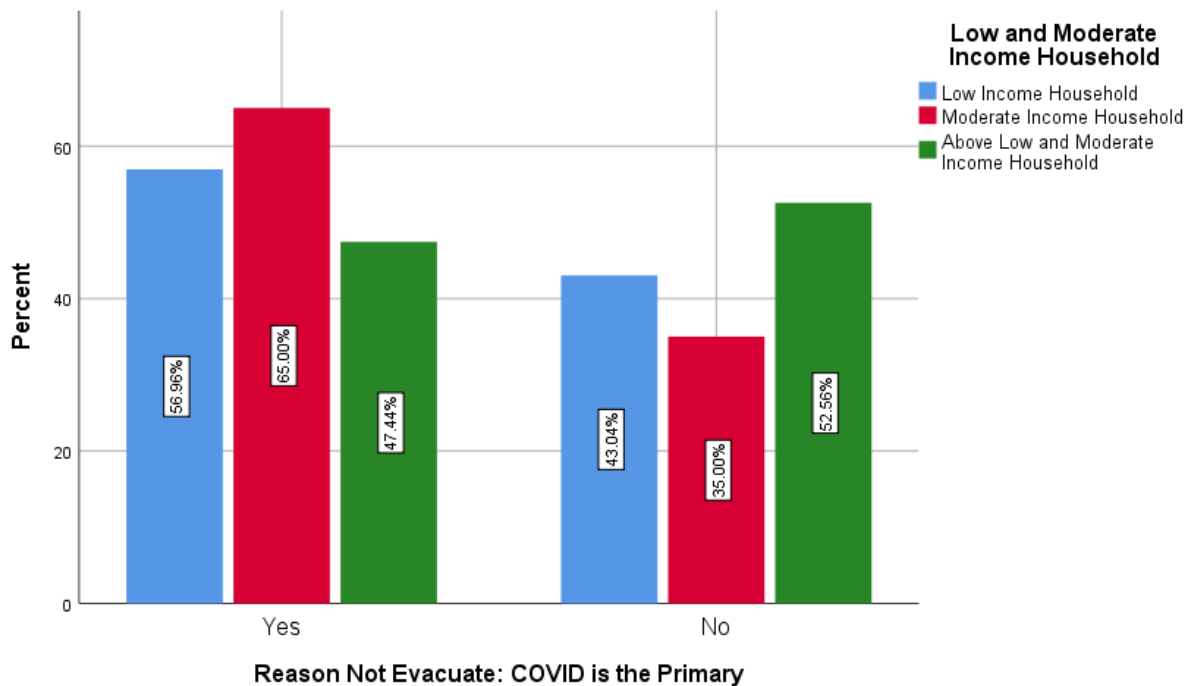
Low-to-moderate income households, relative to above low-to-moderate households, are more likely to cite COVID as the primary among the reasons not to evacuate. That is, approximately 60 percent of low-to-moderate income households and about 47 percent of above low-to-moderate income households cite concerns about virus exposure as the primary reason for the household not being likely to evacuate.



..by..Low and Moderate Income Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads and citing COVID as one of the reasons for not evacuating the region, the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across Reason Not Evacuate: COVID is the Primary (yes, no).

About 57 percent of low income households, about 65 percent of moderate income households, and about 47 percent of above low and moderate income households, cite concerns about COVID exposure as the primary reason for the household not being likely to evacuate.

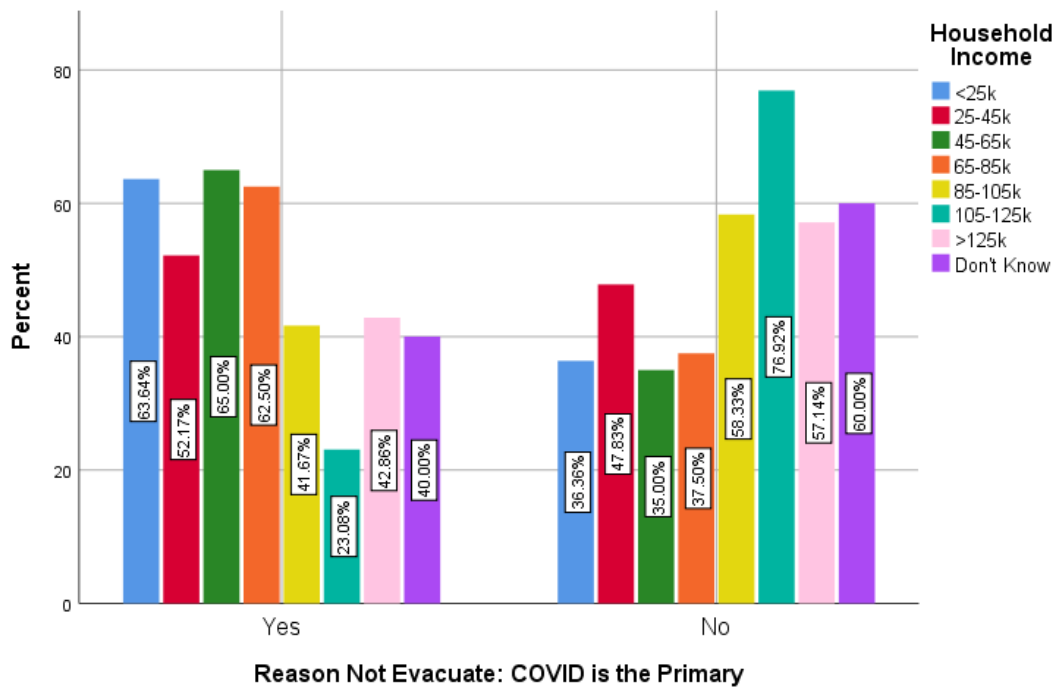




..by..Granulated Household Income

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads and citing COVID as one of the reasons for not evacuating the region, the proportions within Household Income (disaggregated into seven household income gradients) across Reason Not Evacuate: COVID is the Primary (yes, no).

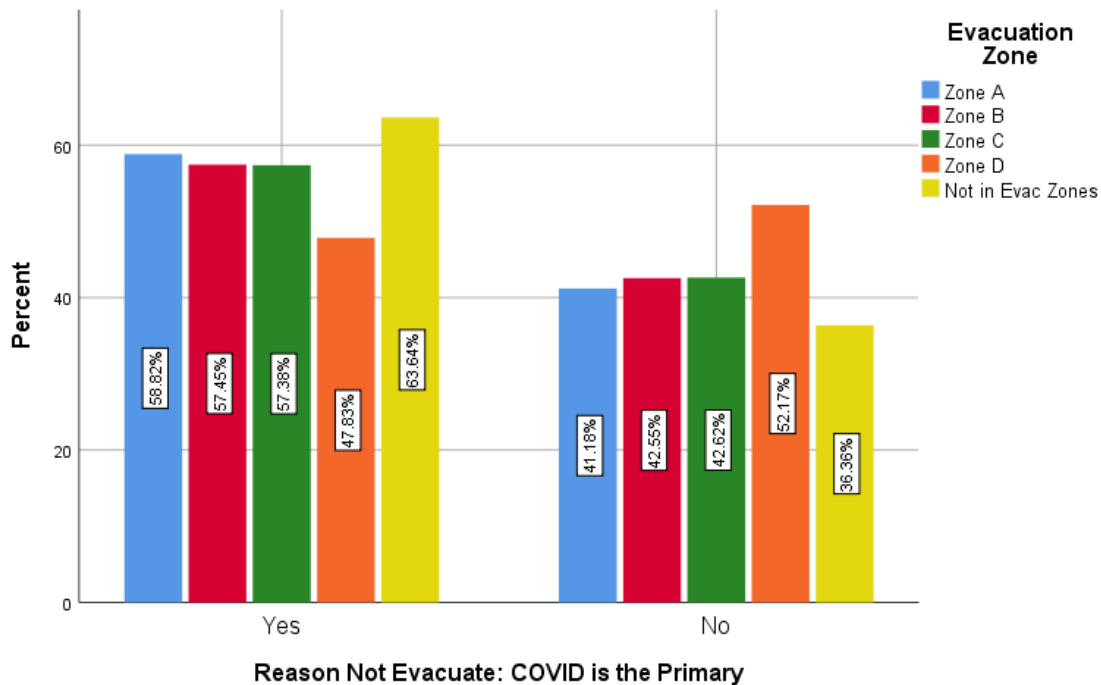
Generally, households less than 65k are more likely, relative to households above 65k, to cite concerns about COVID exposure as the primary reason for the household not being likely to evacuate.



..by..Evacuation Zone

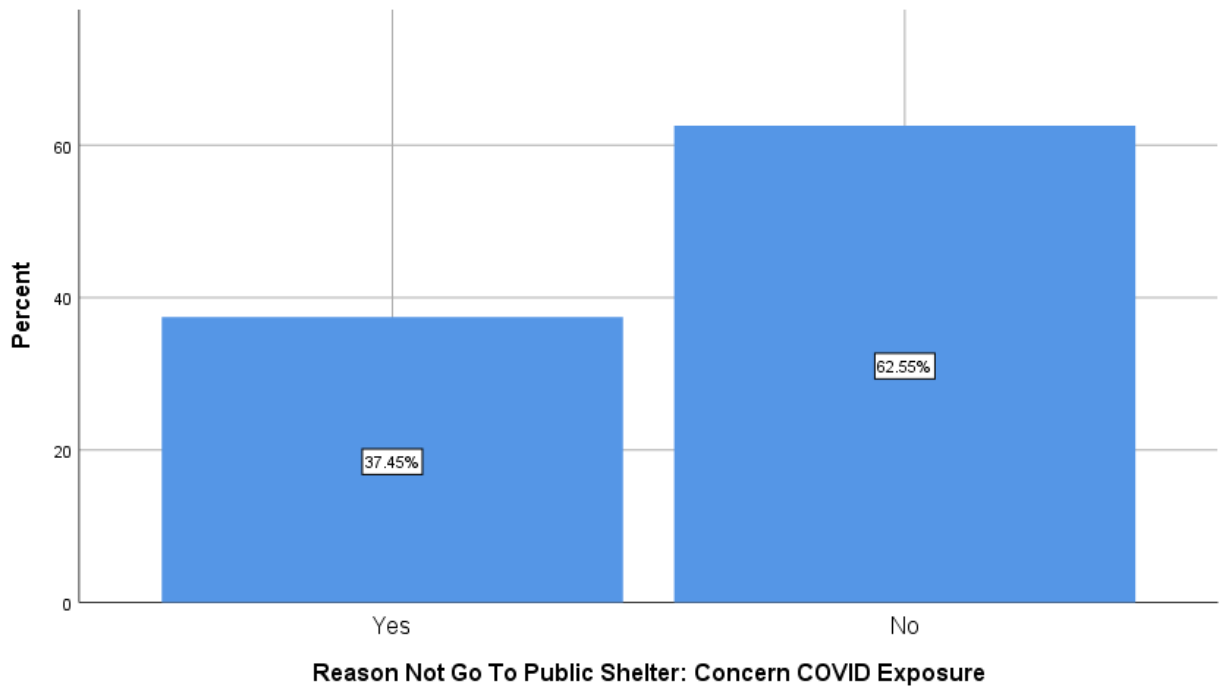
The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads and citing COVID as one of the reasons for not evacuating the region, the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across Reason Not Evacuate: COVID is the Primary (yes, no).

Households in Zone D are less likely, relative to households in Zones A, B, and C, to cite concerns about COVID exposure as the primary reason for the household not being likely to evacuate. This may be a reflection of households in Zone D not being as proximate to tidal surge relative to Zone A, B, and C households. That is, a central reason for Zone D households not evacuating is being farther from the risk rather than concern about COVID. Interesting, though, is that those households altogether outside the evacuation zones report the highest proportion citing COVID as the primary reason, relative to all evacuation zones. This may be a reflection of the urban/rural divide in experiencing COVID. That is, in the Summer and Fall 2020, COVID was being experienced in greater intensities in the less urban (rural) areas of Hampton Roads, notably Accomack and Northampton. Households not in an evacuation zone tend to be in less densely populated areas.



## Reason Not Go To Public Shelter: Concern COVID Exposure

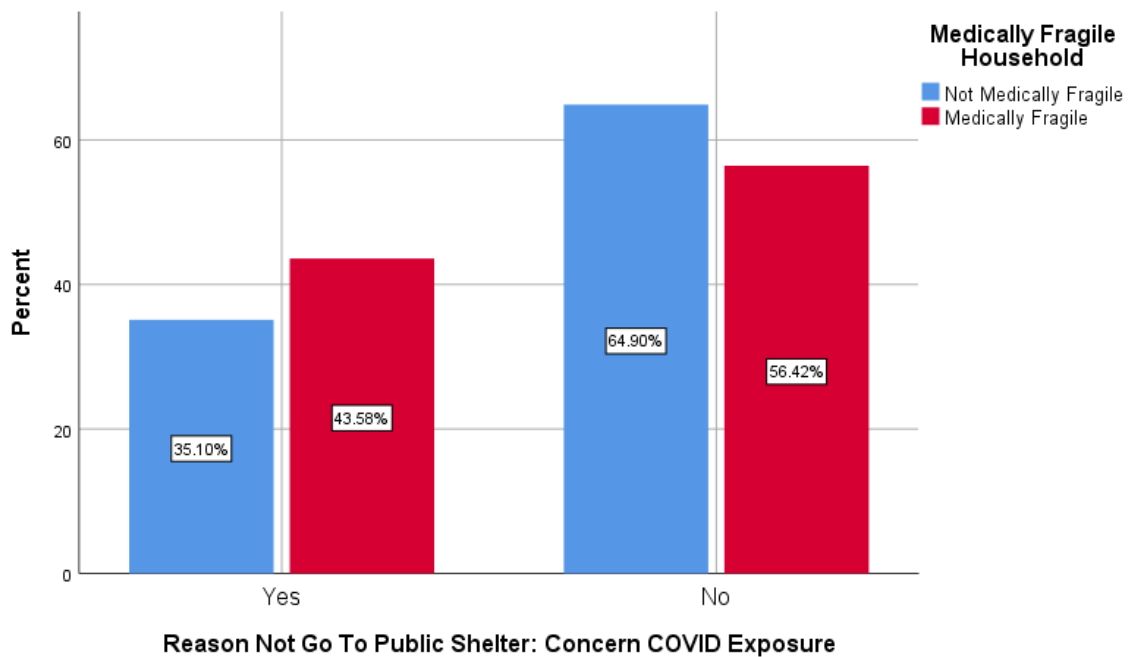
The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, over 37 percent of households report one of the reasons they are unlikely to seek public shelter is concerns related to COVID exposure. The seven charts on the following pages will examine this reason controlling for household characteristics.



..by..Medically Fragile Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across Reason Not Go To Public Shelter: Concern COVID Exposure (yes, no).

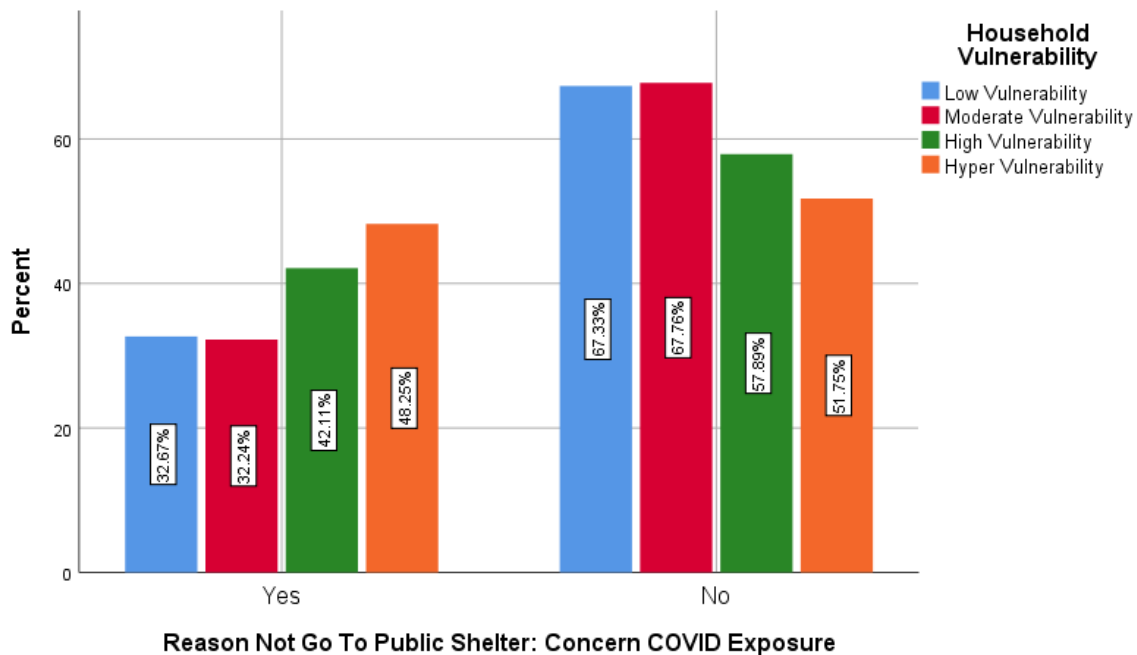
Medically fragile households, relative to not medically fragile households, are more likely to report concern about COVID exposure as a reason for the household not being likely to seek public shelter, nearly 44 percent and just over 35 percent, respectively.



..by..Household Vulnerability

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across Reason Not Go To Public Shelter: Concern COVID Exposure (yes, no).

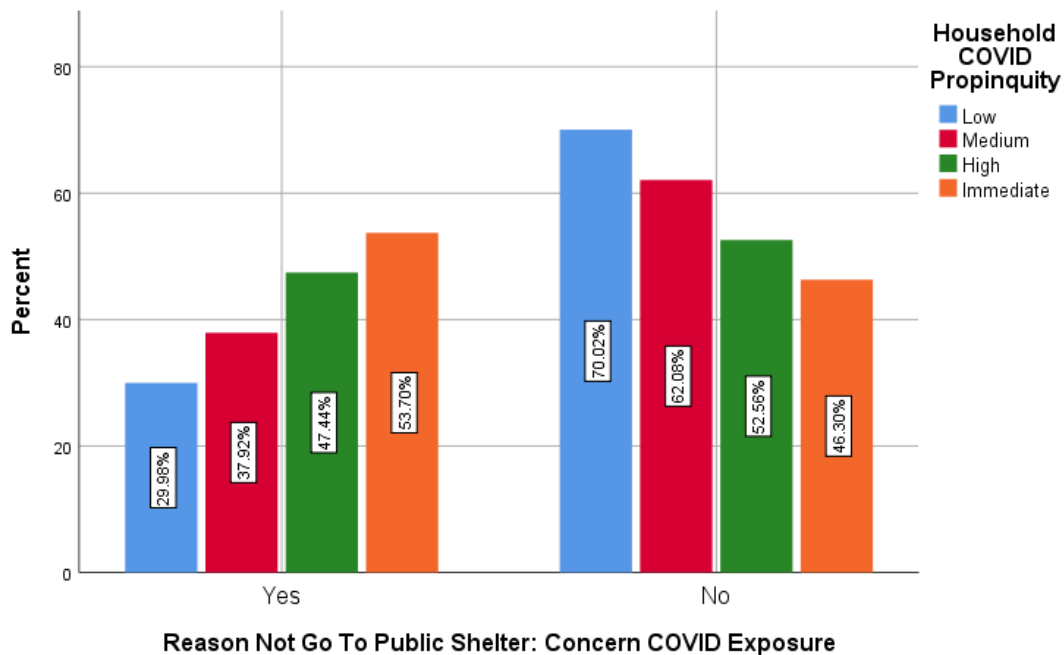
Hyper and high vulnerability households are more likely, relative to moderate and low vulnerability households, to report concern about COVID exposure as a reason for the household not being likely to go to a public shelter. Specifically: low vulnerability (33 percent), moderate vulnerability (32 percent), high vulnerability (42 percent) and hyper vulnerability (48 percent).



..by..Household COVID Propinquity

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across Reason Not Go To Public Shelter: Concern COVID Exposure (yes, no).

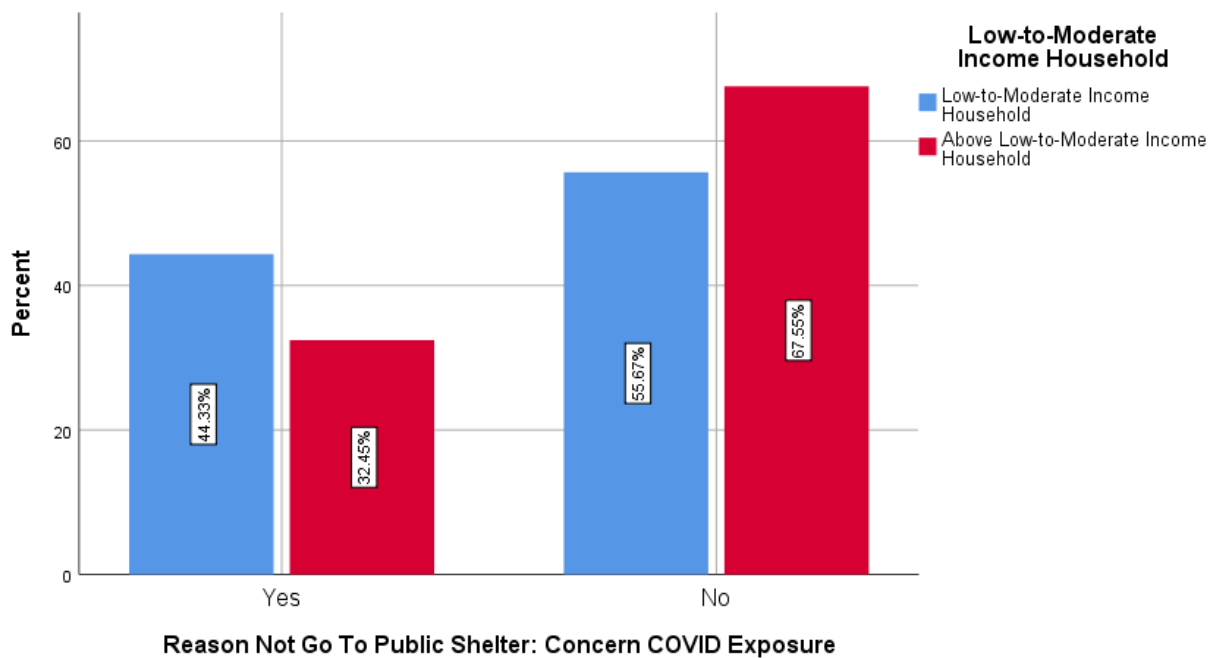
The higher the household experience with COVID, the more likely the households are to report concern about COVID exposure as a reason for the household not likely to seek public shelter. Immediate and high COVID propinquity households are more likely, relative to medium and low COVID propinquity households, to report concern about COVID exposure as a reason for the household not being likely to go to a public shelter. Specifically: low COVID propinquity (30 percent), medium COVID propinquity (38 percent), high COVID propinquity (47 percent) and immediate COVID propinquity (54 percent).



..by..Low-to-Moderate Income Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across Reason Not Go To Public Shelter: Concern COVID Exposure (yes, no).

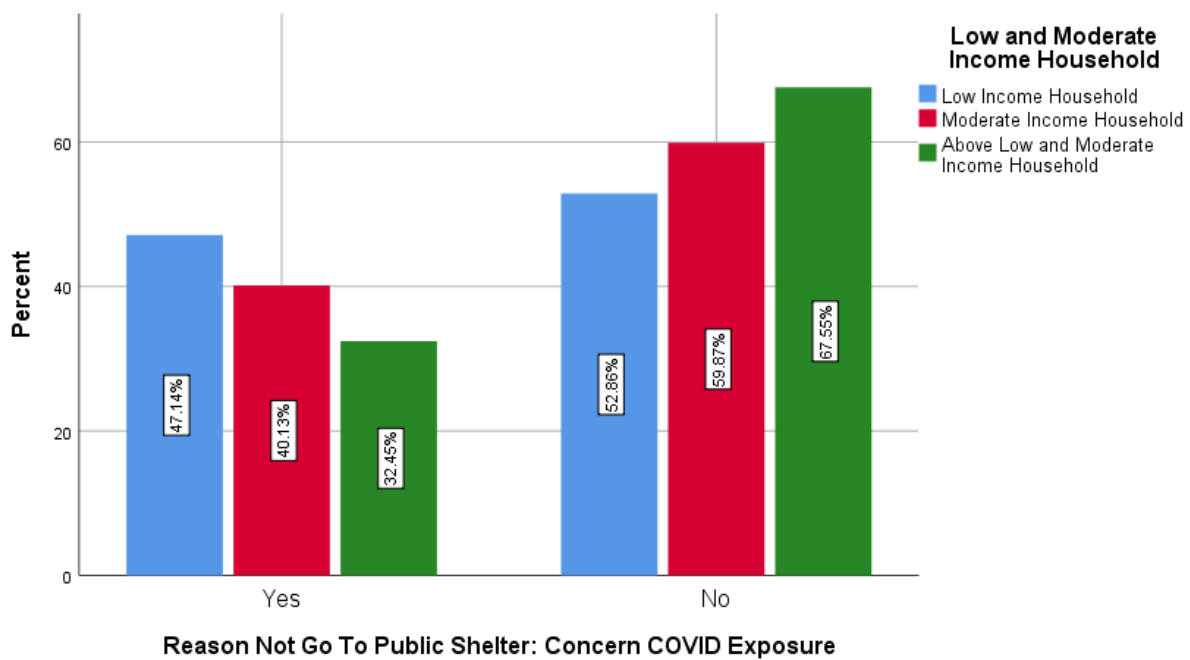
Low-to-moderate income households are more concerned about COVID exposure relative to above low-to-moderate income households. Approximately 44 percent of low-to-moderate income households and about 32 percent of above low-to-moderate income households cite concern about COVID exposure as a reason for the household not being likely to seek public shelter.



..by..Low and Moderate Income Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across Reason Not Go To Public Shelter: Concern COVID Exposure (yes, no).

Low income households are more concerned about COVID exposure relative to moderate income and above low and moderate income households. Just over 44 percent of low income, 40 percent moderate income, and just above 32 percent above these incomes cite concern about COVID exposure as a reason for the household not being likely to seek public shelter.

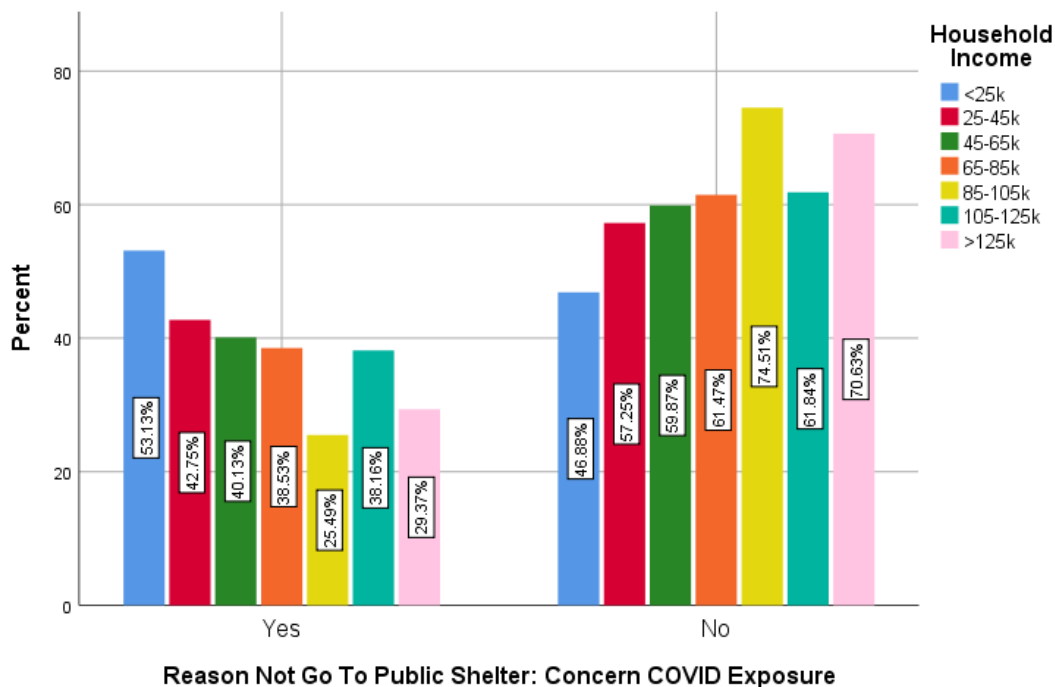




..by..Granulated Household Income

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Household Income (disaggregated into seven household income gradients) across Reason Not Go To Public Shelter: Concern COVID Exposure (yes, no).

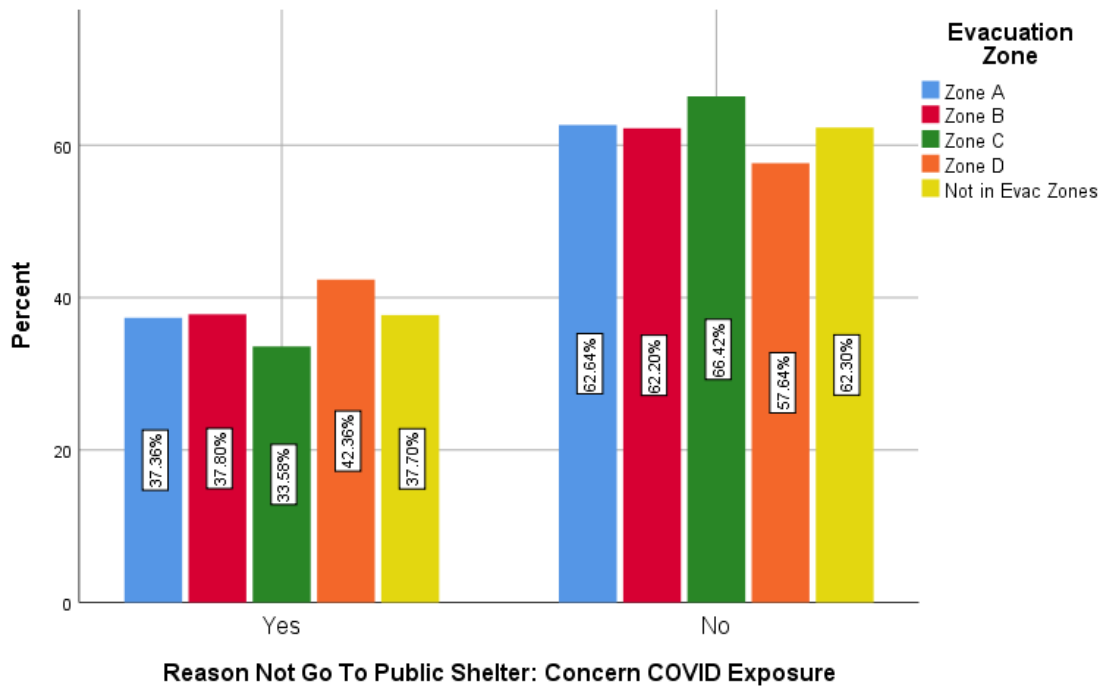
Across a more granulated income, there is a general trend where lower income households are more likely, relative to higher income households, to cite concern about COVID exposure as one of the reasons for the household not likely to seek public shelter. Just above 53 percent of households <25k cite COVID, where this proportion is less than half this 85-105k income households.



..by..Evacuation Zone

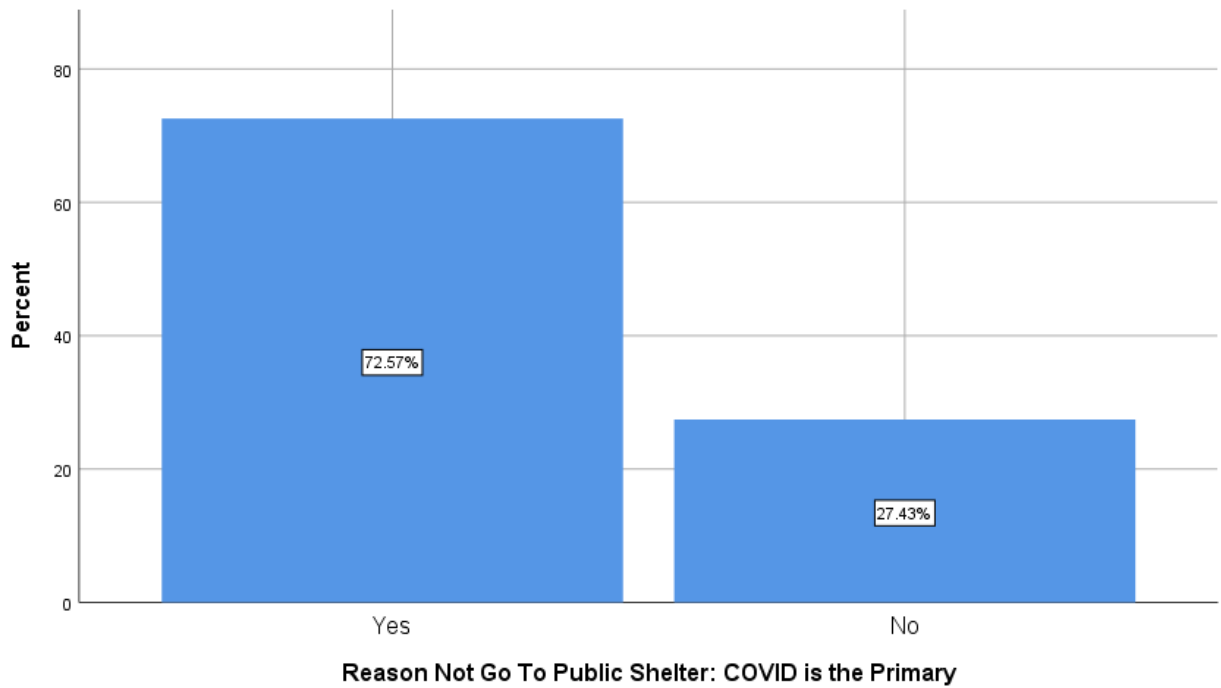
The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across Reason Not Go To Public Shelter: Concern COVID Exposure (yes, no).

Households in Zone D are less likely, relative to households in Zones A, B, and C, to cite concerns about COVID exposure as the primary reason for the household not seeking public shelter. Over 42 percent of Zone D households relative to just over 37 percent of Zone A households, cite concerns over COVID exposure as a reason not to seek public shelter.



## Reason Not Go To Public Shelter: COVID is the Primary

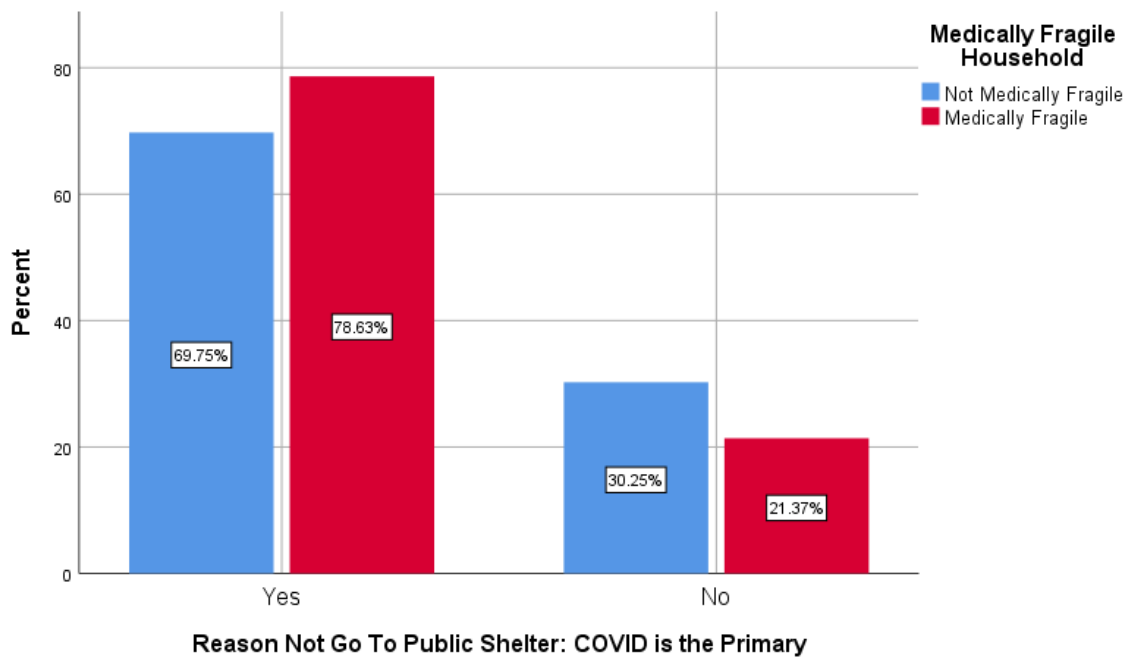
As illustrated below, among those planning to shelter in a home or places other than a public shelter within Hampton Roads and citing COVID as one of the reasons for not seeking public shelter, nearly 73 percent of households cite concern about exposure to COVID as the *primary* reason the households are unlikely to evacuate out of the region. The seven charts on the following pages will examine this reason controlling for household characteristics.



..by..Medically Fragile Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads and citing COVID as one of the reasons for not seeking public shelter, the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across Reason Not Go To Public Shelter: COVID is the Primary (yes, no).

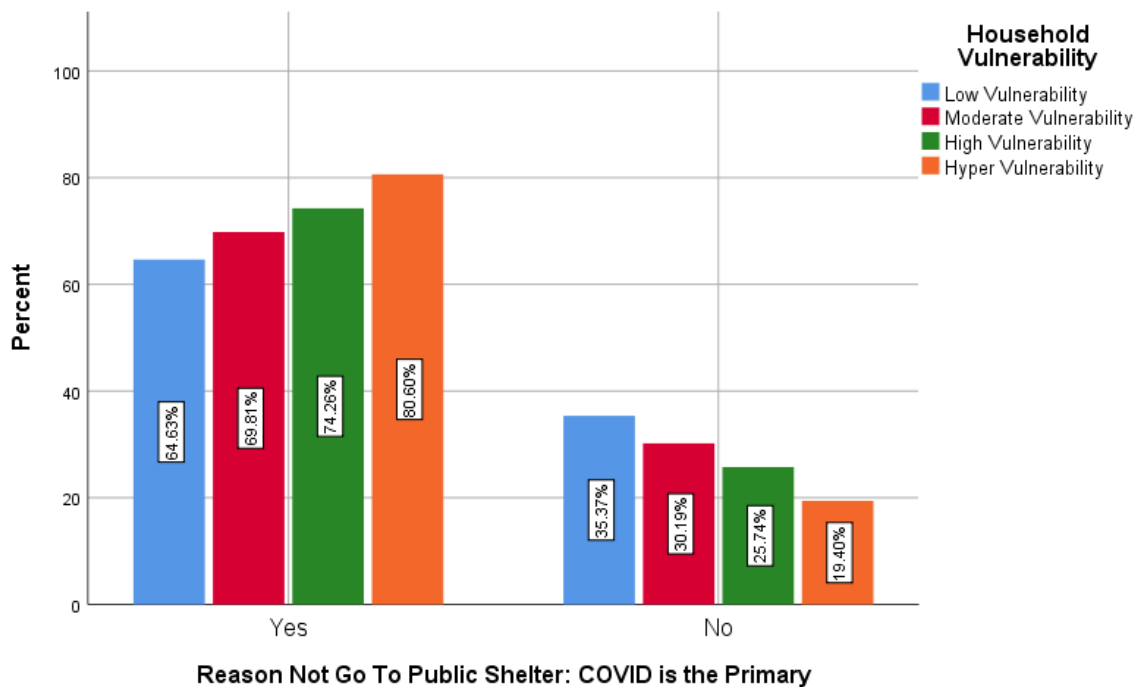
Medically fragile households, relative to not medically fragile households, are more likely to cite COVID as the primary among the reasons not to seek public shelter. That is, nearly 79 percent of medically fragile households and about 70 percent of not medically fragile households cite concerns about virus exposure as the primary reason for the household not seeking public shelter.



..by..Household Vulnerability

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads and citing COVID as one of the reasons for not seeking public shelter, the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across Reason Not Go To Public Shelter: COVID is the Primary (yes, no).

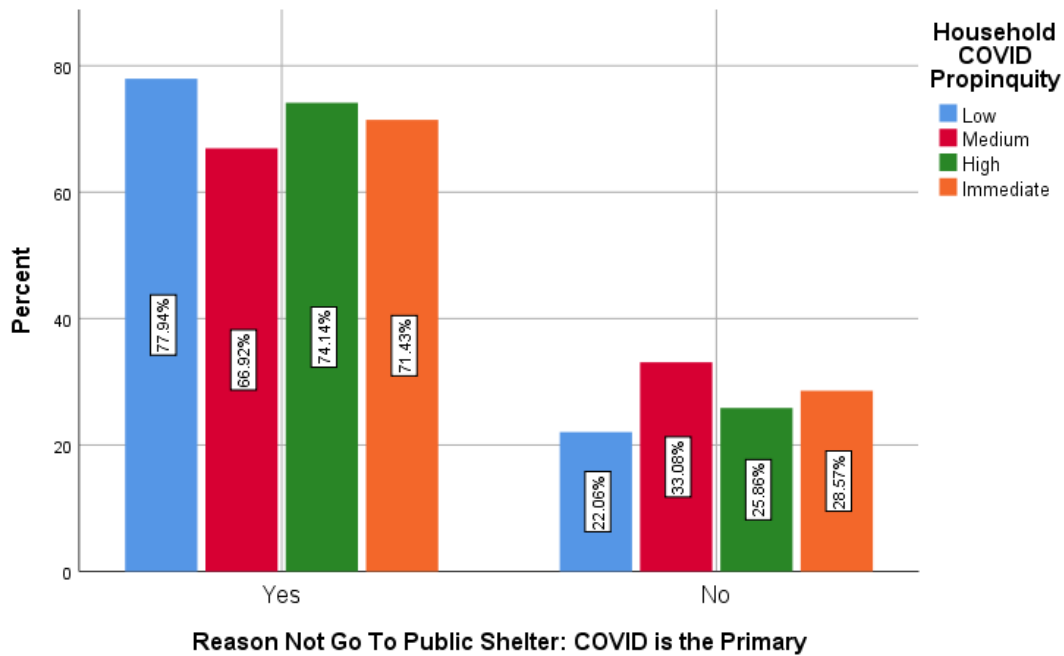
Hyper and high vulnerability households are more likely, relative to moderate and low vulnerability households, are more likely to cite COVID as the primary among the reasons not to seek public shelter. That is, nearly 81 percent of hyper vulnerability households and about 65 percent of low vulnerability households cite concerns about virus exposure as the primary reason for the household not seeking public shelter. Specifically: low vulnerability households (65 percent), moderate vulnerability households (70 percent), high vulnerability households (74 percent) and hyper vulnerability households (80 percent). The more vulnerable the household, the more likely they were to shelter at home due to concerns about COVID exposure.



..by..Household COVID Propinquity

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads and citing COVID as one of the reasons for not seeking public shelter, the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across Reason Not Go To Public Shelter: COVID is the Primary (yes, no).

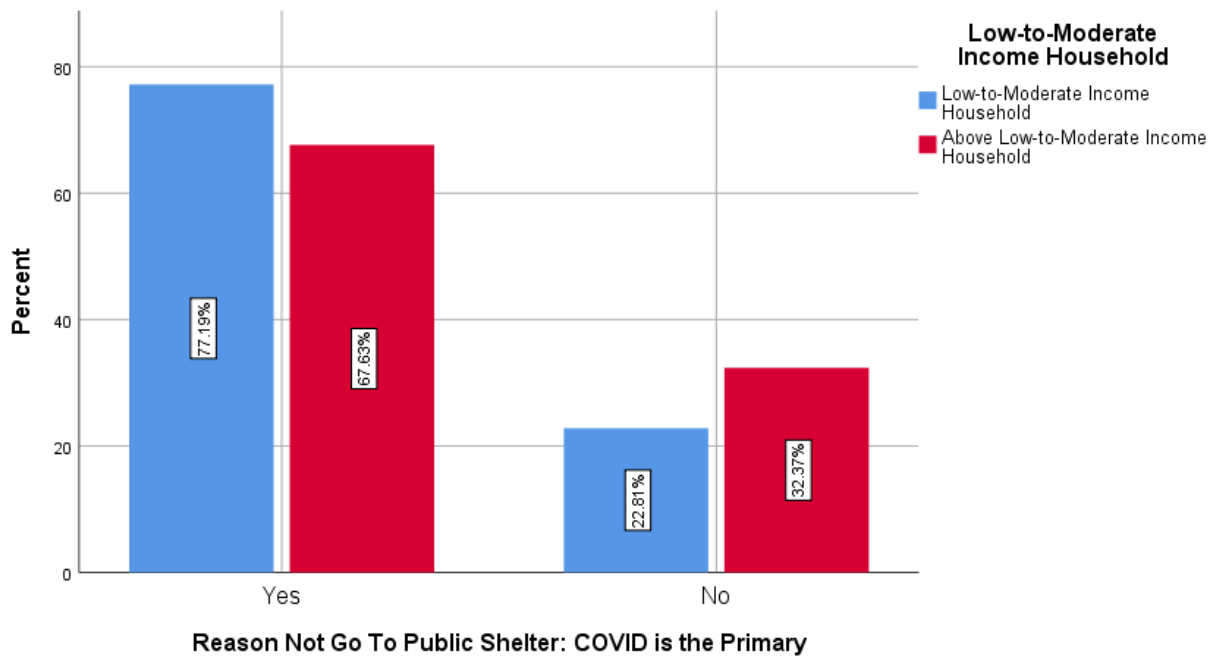
Low COVID propinquity households, relative to other COVID propinquity households, are more likely to cite COVID as the primary among the reasons not to seek public shelter. That is, nearly 78 percent of low COVID propinquity households, relative to over 71 percent of immediate COVID propinquity households, cite COVID as the primary among the reasons not to seek public shelter. Specifically: low COVID propinquity (59 percent), medium COVID propinquity (56 percent), high COVID propinquity (56 percent) and immediate COVID propinquity (53 percent).



..by..Low-to-Moderate Income Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads and citing COVID as one of the reasons for not seeking public shelter, the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across Reason Not Go To Public Shelter: COVID is the Primary (yes, no).

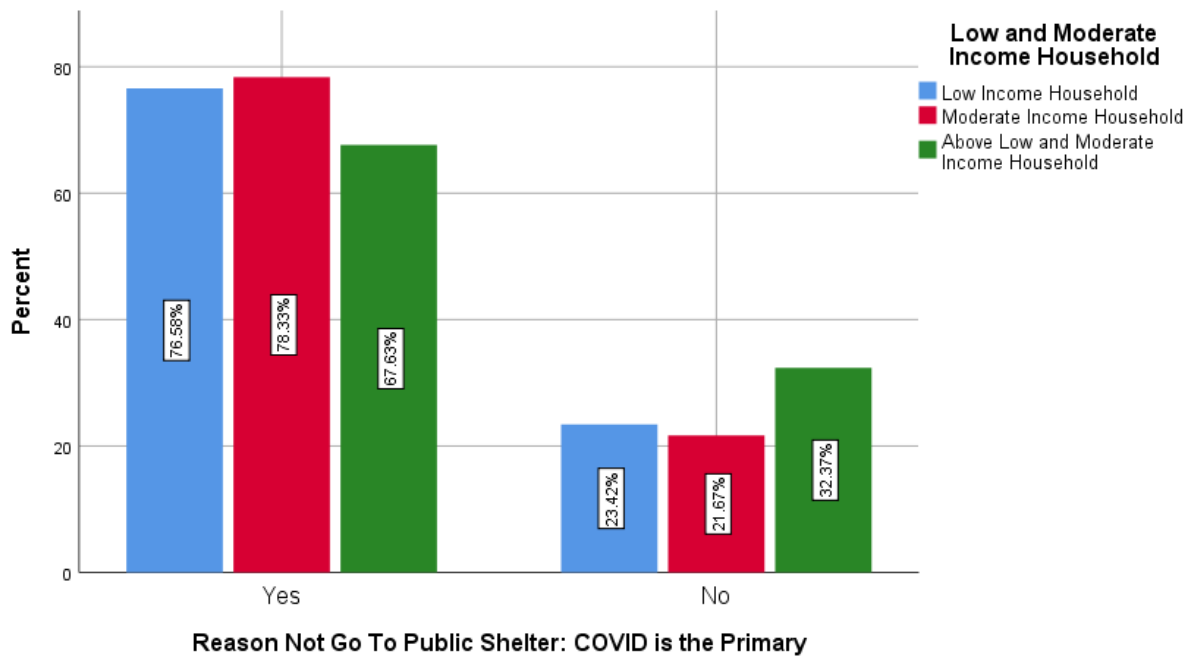
Low-to-moderate income households, relative to above low-to-moderate households, are more likely to cite COVID as the primary among the reasons not to seek public shelter. That is, approximately 77 percent of low-to-moderate income households and about 67 percent of above low-to-moderate income households cite concerns about virus exposure as the primary reason for the household not seeking public shelter.



..by..Low and Moderate Income Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads and citing COVID as one of the reasons for not seeking public shelter, the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across Reason Not Go To Public Shelter: COVID is the Primary (yes, no).

Nearly 77 percent of low income households, about 78 percent of moderate income households, and about 68 percent of above low and moderate income households, cite concerns about COVID exposure as the primary reason for the household not seeking public shelter.

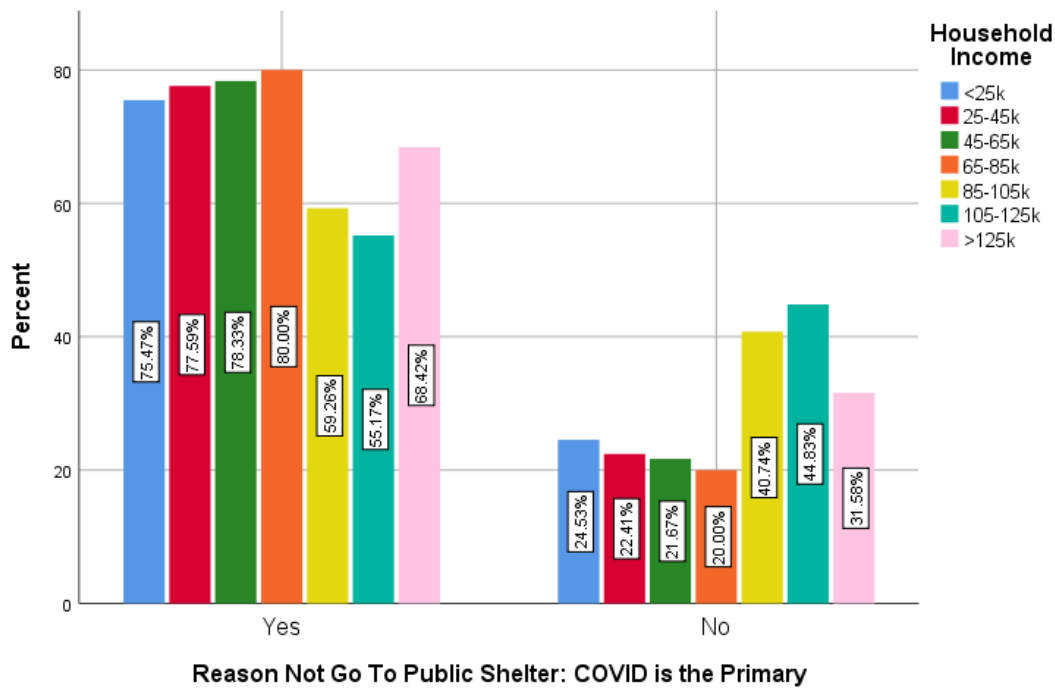




..by..Granulated Household Income

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads and citing COVID as one of the reasons for not seeking public shelter, the proportions within Household Income (disaggregated into seven household income gradients) across Reason Not Go To Public Shelter: COVID is the Primary (yes, no).

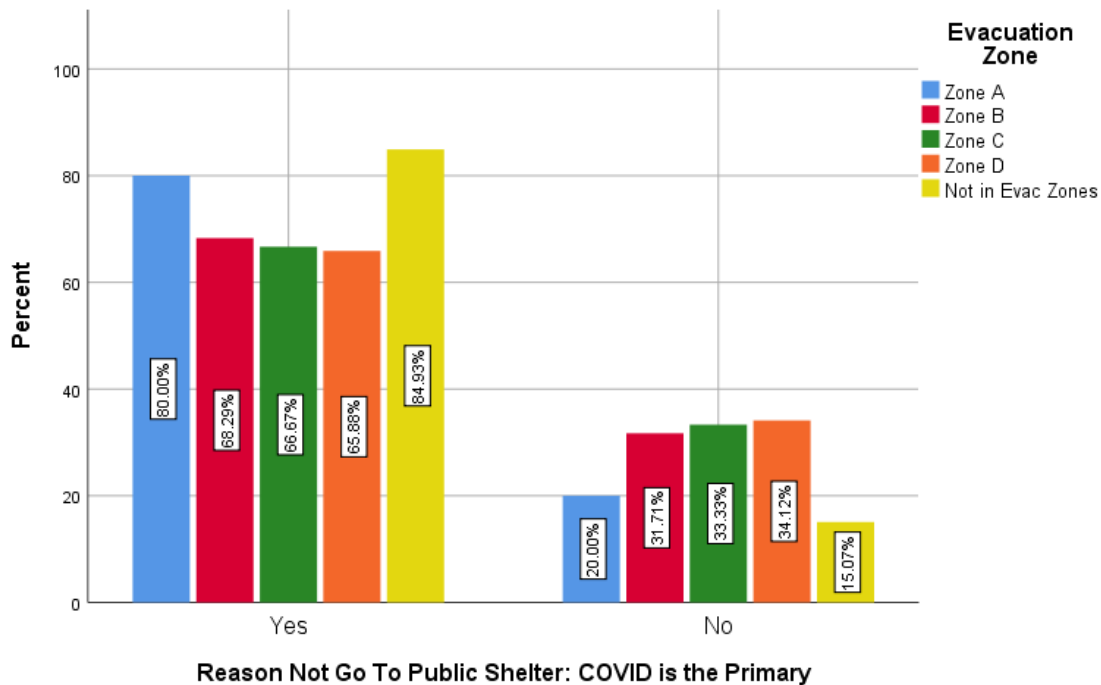
Generally, households less than 85k are more likely, relative to households above 85k, to cite concerns about COVID exposure as the primary reason for the household not seeking public shelter.



..by..Evacuation Zone

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads and citing COVID as one of the reasons for not seeking public shelter, the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across Reason Not Go To Public Shelter: COVID is the Primary (yes, no).

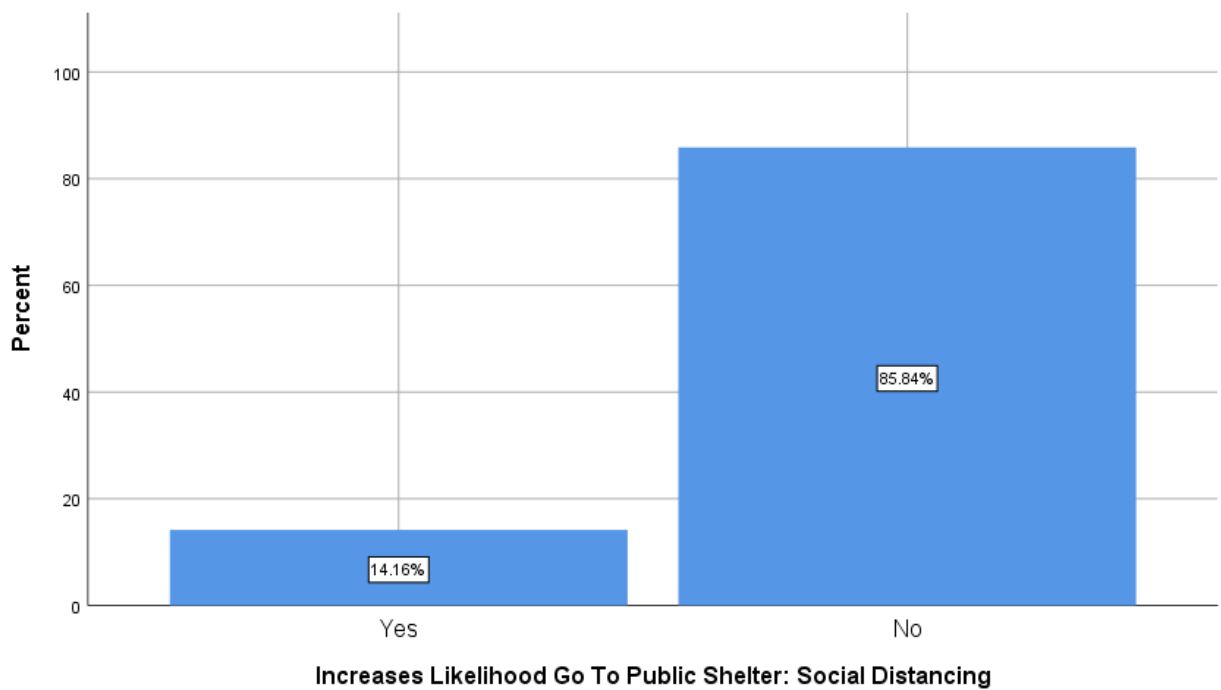
Households in Zone A are more likely, relative to households in Zones B, C, and D, to cite concerns about COVID exposure as the primary reason for the household not seeking public shelter. Those households altogether outside the evacuation zones report the highest proportion citing COVID as the primary reason, relative to all evacuation zones.



## Increases Likelihood Go To Public Shelter: Social Distancing

Reductions in the number of persons and assurances of social distancing within the public shelter are changes to public shelter operations. How such operational changes may impact population behavior, and, more specifically, behaviors of particular groups, is of interest to planners.

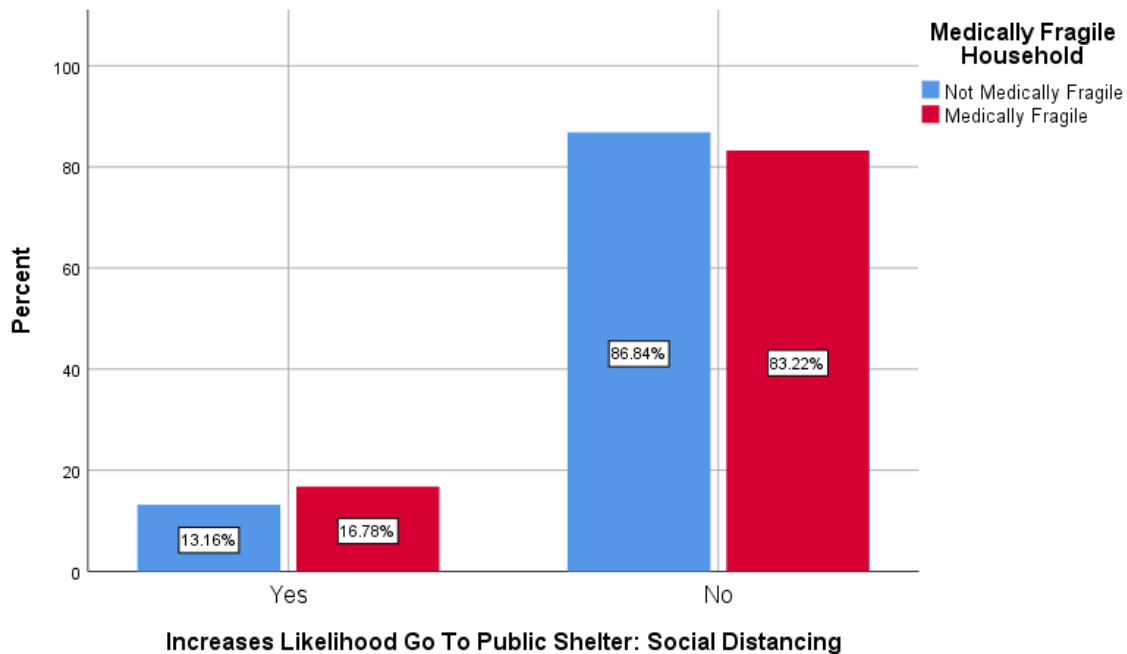
Overall, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, reductions in the number of persons and assurances of social distancing within the public shelter increases the likelihood of seeking public shelter among just over 14 percent of households. The seven charts on the following pages will examine this reason controlling for household characteristics.



..by..Medically Fragile Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across Increases Likelihood Go To Public Shelter: Social Distancing (yes, no).

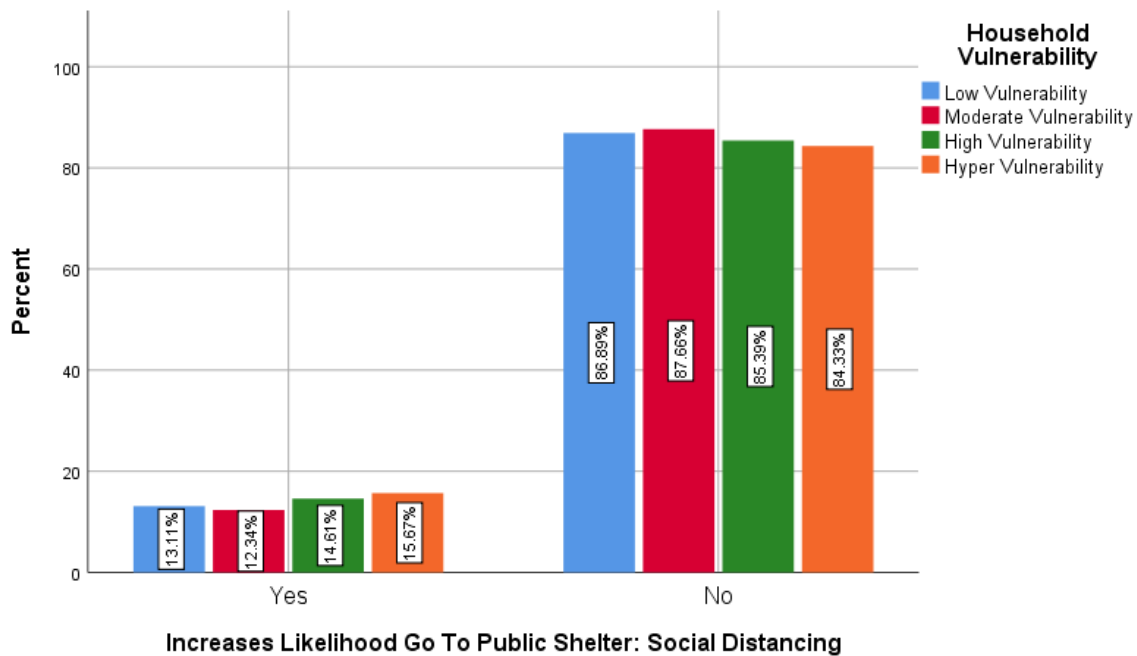
Medically fragile households, relative to not medically fragile households, are more likely to seek public shelter given reductions in the number of persons and assurances of social distancing within the public shelter. Just under 17 percent of medically fragile households and just over 13 percent of not medically fragile households are estimated to increase the likelihood of seeking public shelter given a reduction in the number of persons and assurances of social distancing within the public shelter.



..by..Household Vulnerability

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across Increases Likelihood Go To Public Shelter: Social Distancing (yes, no).

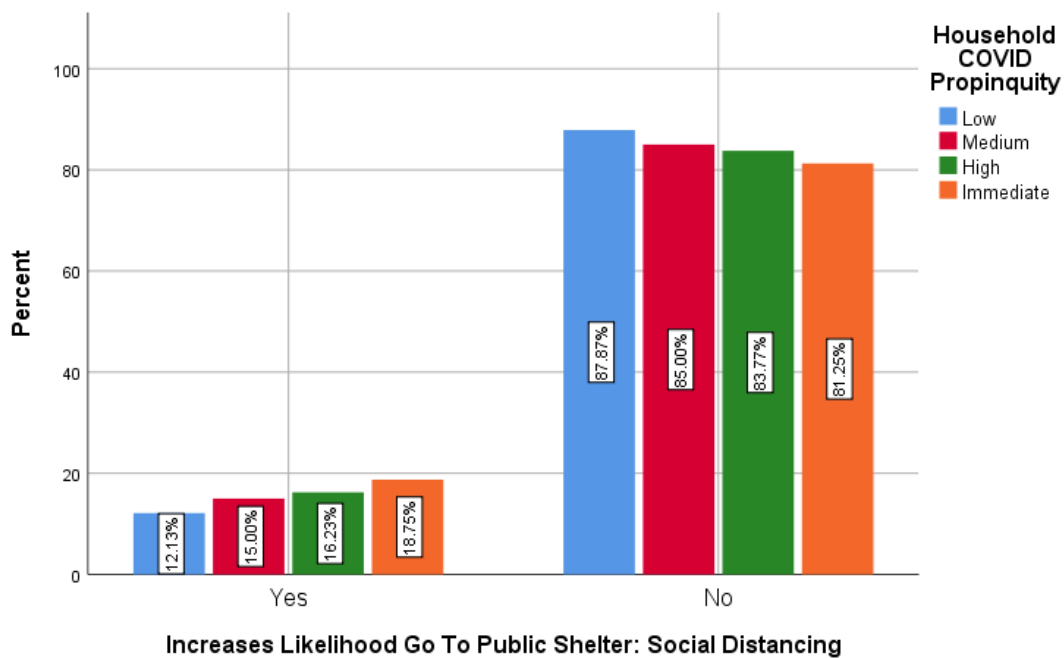
Hyper vulnerability households, relative to low vulnerability households, are slightly more likely to seek public shelter given reductions in the number of persons and assurances of social distancing within the public shelter. Under 16 percent of hyper vulnerable households and just over 13 percent of low vulnerability households are estimated to increase the likelihood of seeking public shelter given a reduction in the number of persons and assurances of social distancing within the public shelter. Specifically: low vulnerability households (13 percent), moderate vulnerability households (12 percent), high vulnerability households (15 percent) and hyper vulnerability households (16 percent).



..by..Household COVID Propinquity

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across Increases Likelihood Go To Public Shelter: Social Distancing (yes, no).

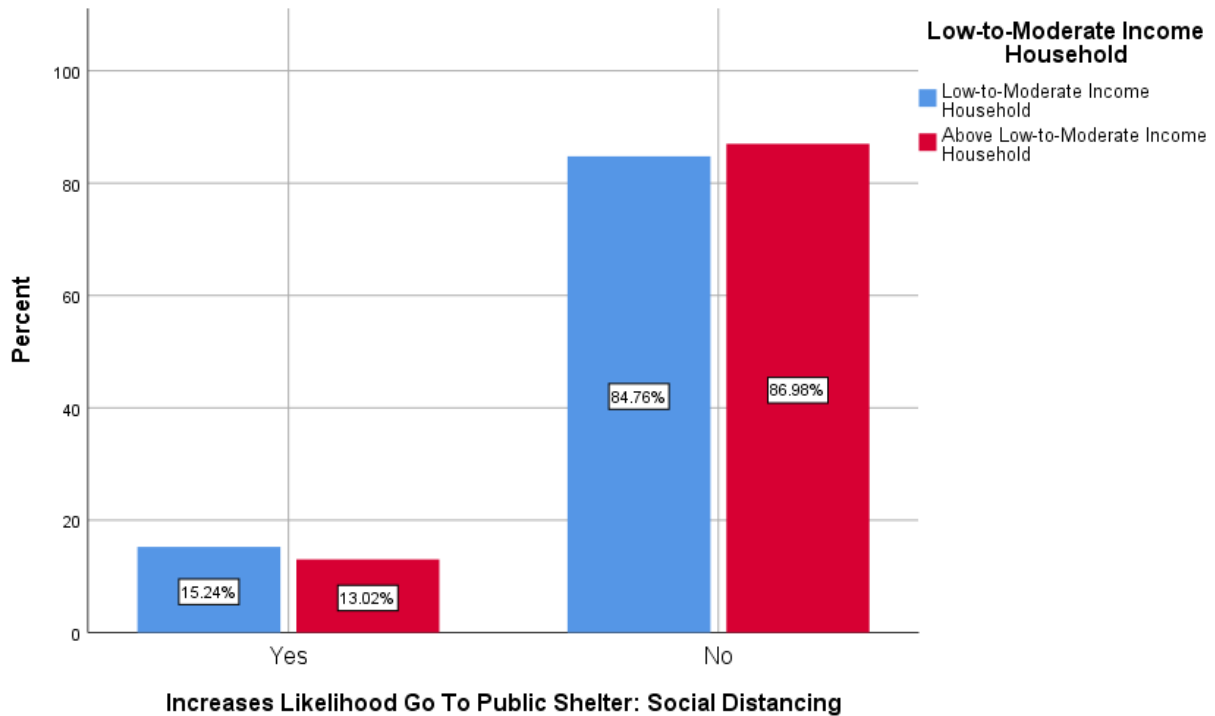
Immediate COVID propinquity, relative to low COVID propinquity households, are more likely to seek public shelter given reductions in the number of persons and assurances of social distancing within the public shelter. Under 19 percent of hyper vulnerable households and just over 12 percent of low vulnerability households are estimated to increase the likelihood of seeking public shelter given a reduction in the number of persons and assurances of social distancing within the public shelter. Specifically: low COVID propinquity (12 percent), medium COVID propinquity (15 percent), high COVID propinquity (16 percent) and immediate COVID propinquity (19 percent).



..by..Low-to-Moderate Income Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across Increases Likelihood Go To Public Shelter: Social Distancing (yes, no).

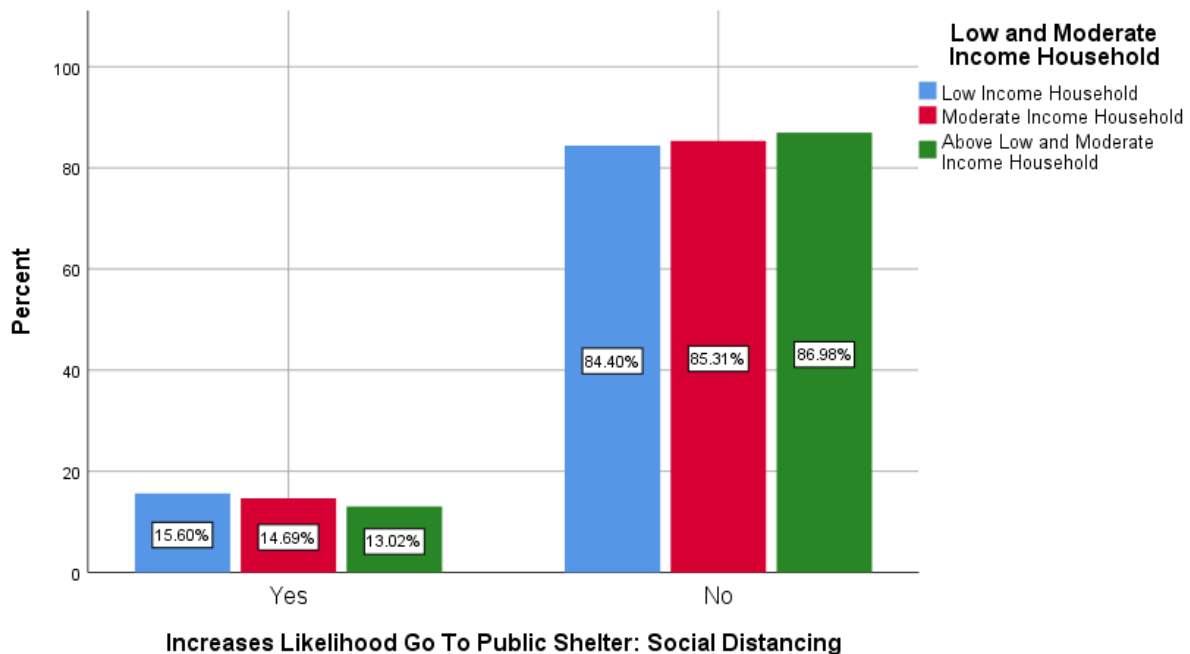
Low-to-moderate income households, relative to above low-to-moderate income households, are more likely to seek public shelter given reductions in the number of persons and assurances of social distancing within the public shelter. Over 15 percent of low-to-moderate income households and 13 percent of above low-to-moderate income households are estimated to increase the likelihood of seeking public shelter given a reduction in the number of persons and assurances of social distancing within the public shelter.



..by..Low and Moderate Income Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across Increases Likelihood Go To Public Shelter: Social Distancing (yes, no).

Low income households, relative to other income households, are more likely to seek public shelter given reductions in the number of persons and assurances of social distancing within the public shelter. About 16 percent of low income households, 15 percent moderate income households, and 13 percent of above low and moderate income households are estimated to increase the likelihood of seeking public shelter given a reduction in the number of persons and assurances of social distancing within the public shelter.

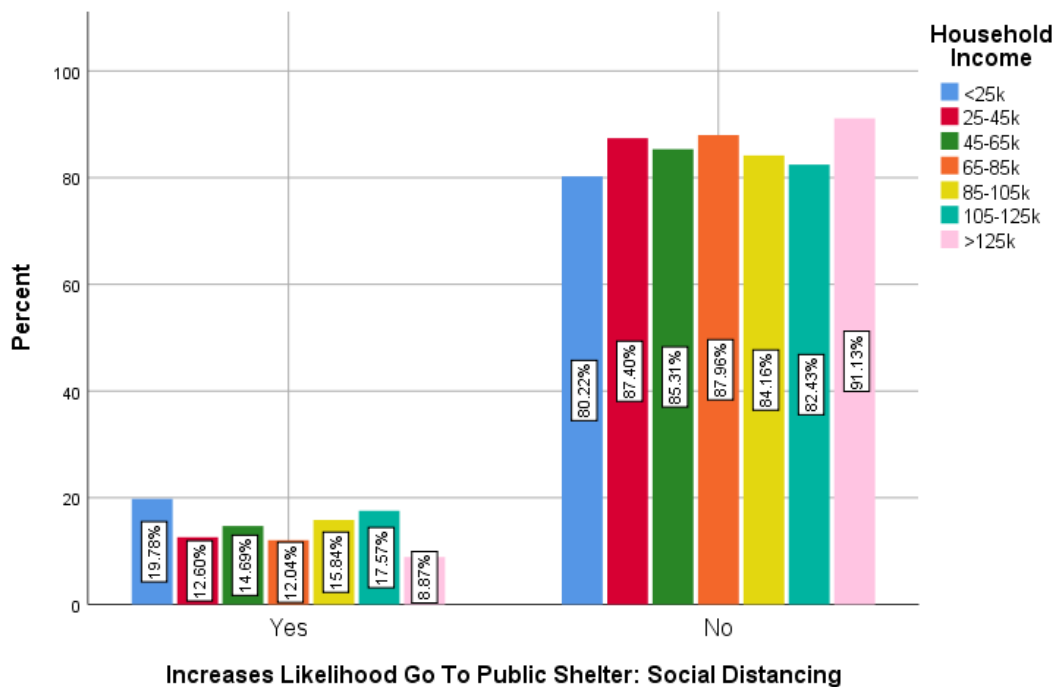




..by..Granulated Household Income

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Household Income (disaggregated into seven household income gradients) across Increases Likelihood Go To Public Shelter: Social Distancing (yes, no).

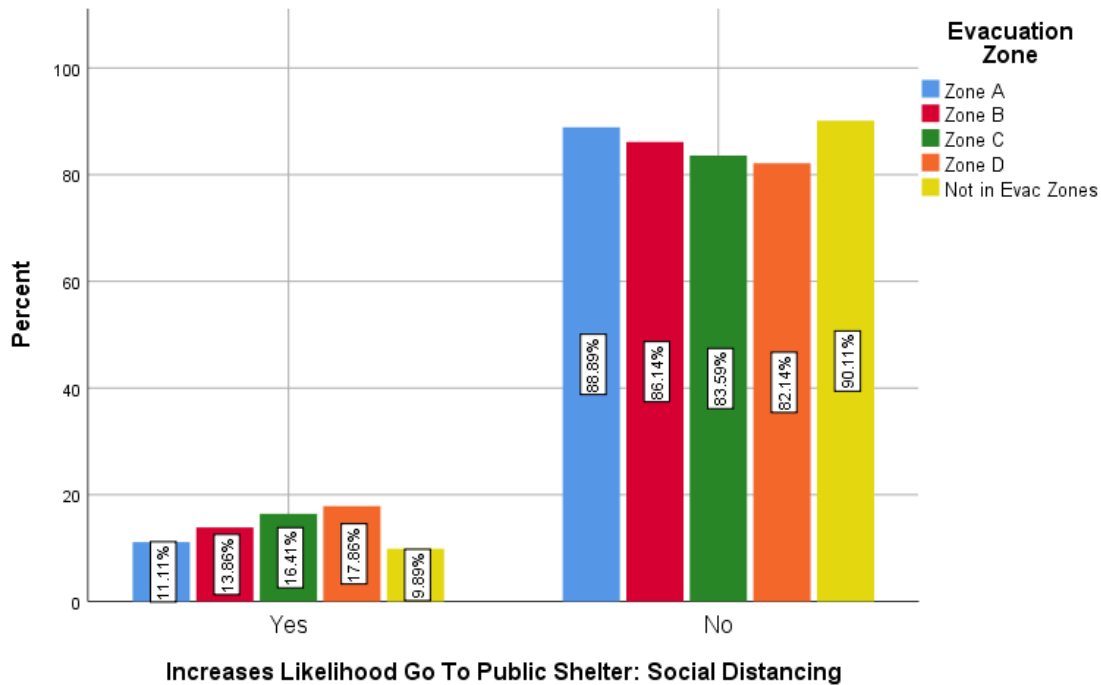
Although there is not a linear decrease across granulated income categories, <25k households are more likely, relative to other income households, to seek public shelter given reductions in the number of persons and assurances of social distancing within the public shelter.



..by..Evacuation Zone

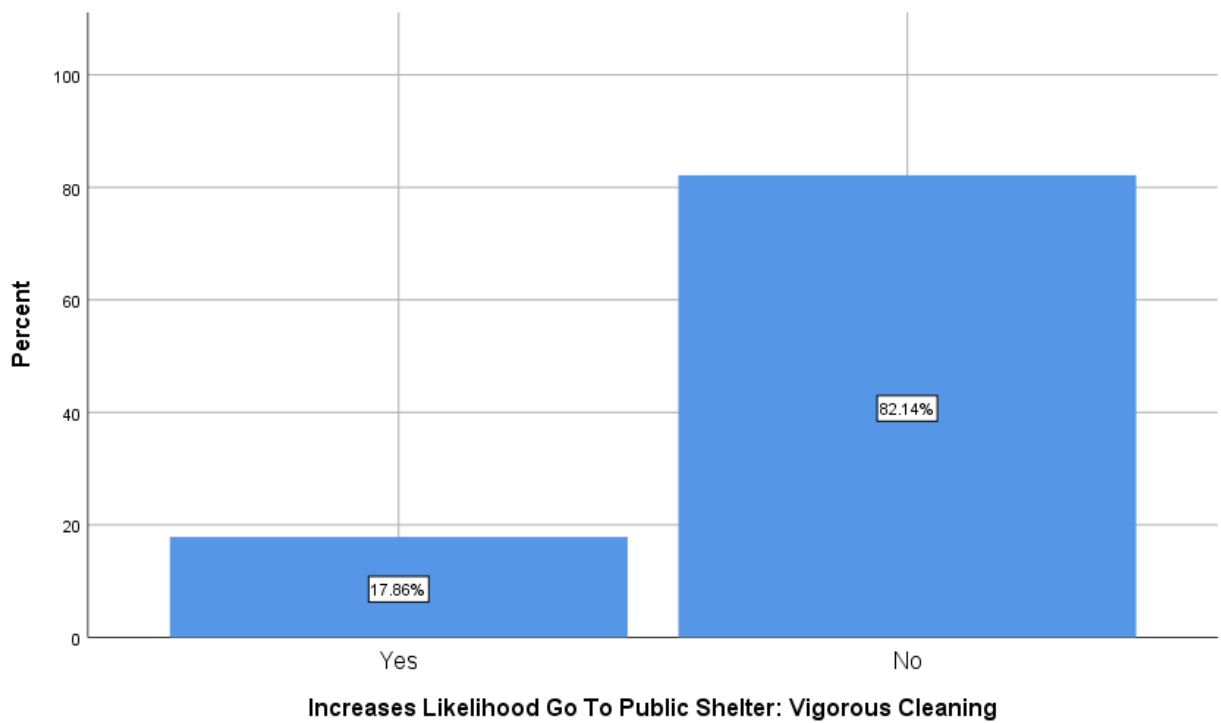
The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across Increases Likelihood Go To Public Shelter: Social Distancing (yes, no).

Evacuation Zone D households, relative to other evacuation zone households, are more likely to seek public shelter given reductions in the number of persons and assurances of social distancing within the public shelter. About 18 percent of Zone D, 16 percent of Zone C, 14 percent of Zone B, and 11 percent of Zone A are estimated to increase the likelihood of seeking public shelter given a reduction in the number of persons and assurances of social distancing within the public shelter.



## Increases Likelihood Go To Public Shelter: Vigorous Cleaning

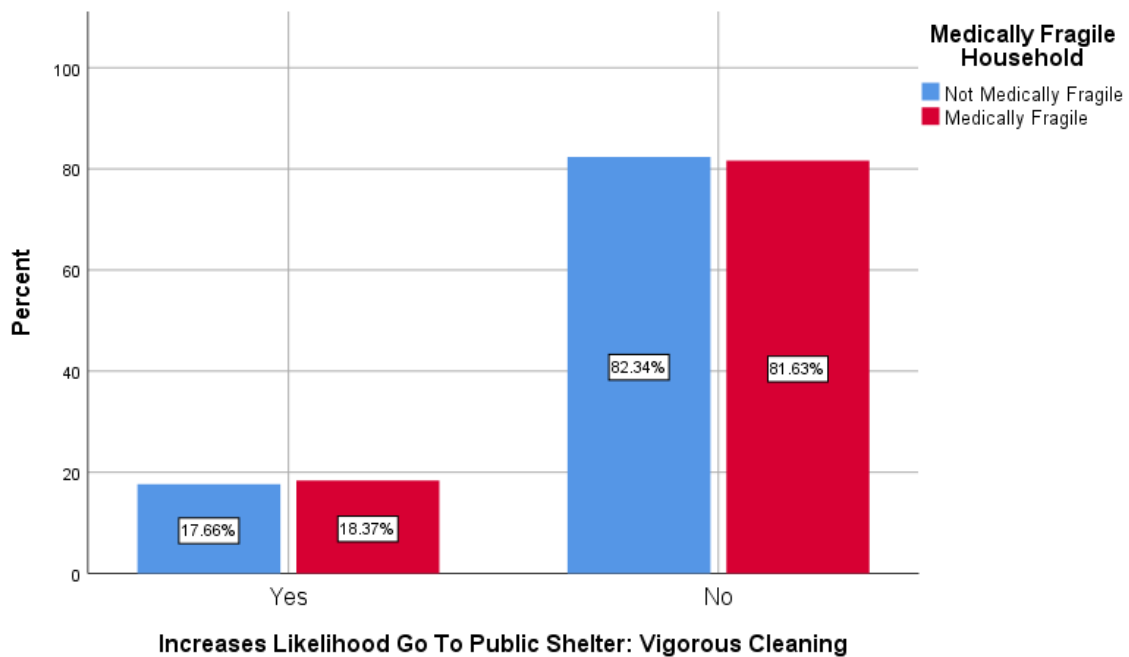
Assurance of vigorous cleaning schedules within public shelter is a change to public shelter operations. How such operational changes may impact population behavior, and, more specifically, behaviors of particular groups, is of interest to planners. Overall, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, assurance of vigorous cleaning schedules within the public shelter increases the likelihood of seeking public shelter among nearly 18 percent of households. The seven charts on the following pages will examine this reason controlling for household characteristics.



..by..Medically Fragile Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across Increases Likelihood Go To Public Shelter: Vigorous Cleaning (yes, no).

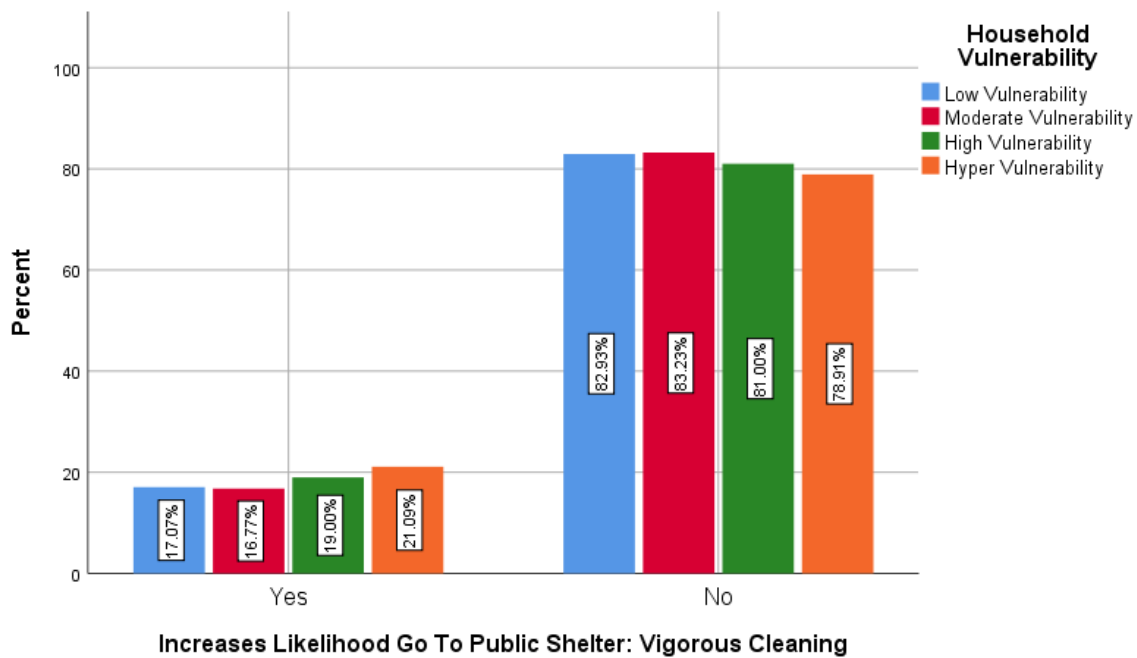
Medically fragile households, relative to not medically fragile households, are statistically no more likely to change behavior to seek public shelter when provided assurance of vigorous cleaning schedules within the public shelter.



..by..Household Vulnerability

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across Increases Likelihood Go To Public Shelter: Vigorous Cleaning (yes, no).

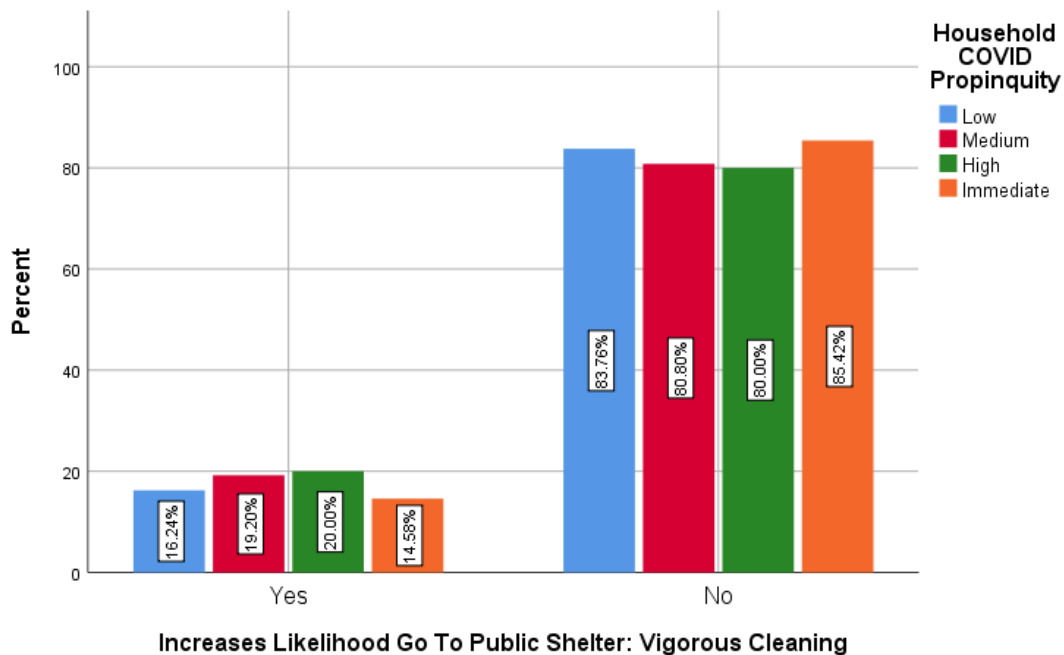
Hyper vulnerability households, relative to low vulnerability households, are more likely to change behavior to seek public shelter when provided assurance of vigorous cleaning within the public shelter. Specifically: low vulnerability (17 percent), moderate vulnerability (17 percent), high vulnerability (19 percent) and hyper vulnerability (21 percent).



..by..Household COVID Propinquity

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across Increases Likelihood Go To Public Shelter: Vigorous Cleaning (yes, no).

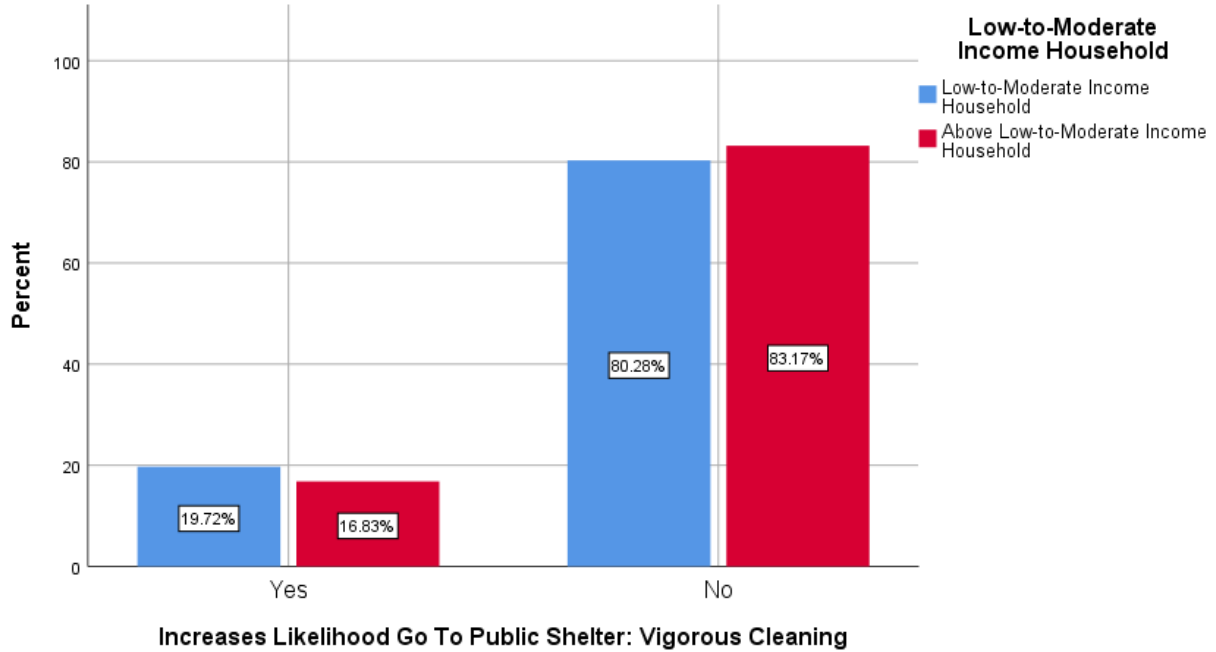
There does not appear to be a clear relationship between likely change in behavior stemming from assurance of vigorous cleaning and household COVID propinquity. Specifically, the percentage of households within each household propinquity classification that has an increased likelihood of seeking public shelter when provided these vigorous cleaning assurances are: low COVID propinquity (16 percent), medium COVID propinquity (19 percent), high COVID propinquity (20 percent) and immediate COVID propinquity (15 percent).



..by..Low-to-Moderate Income Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across Increases Likelihood Go To Public Shelter: Vigorous Cleaning (yes, no).

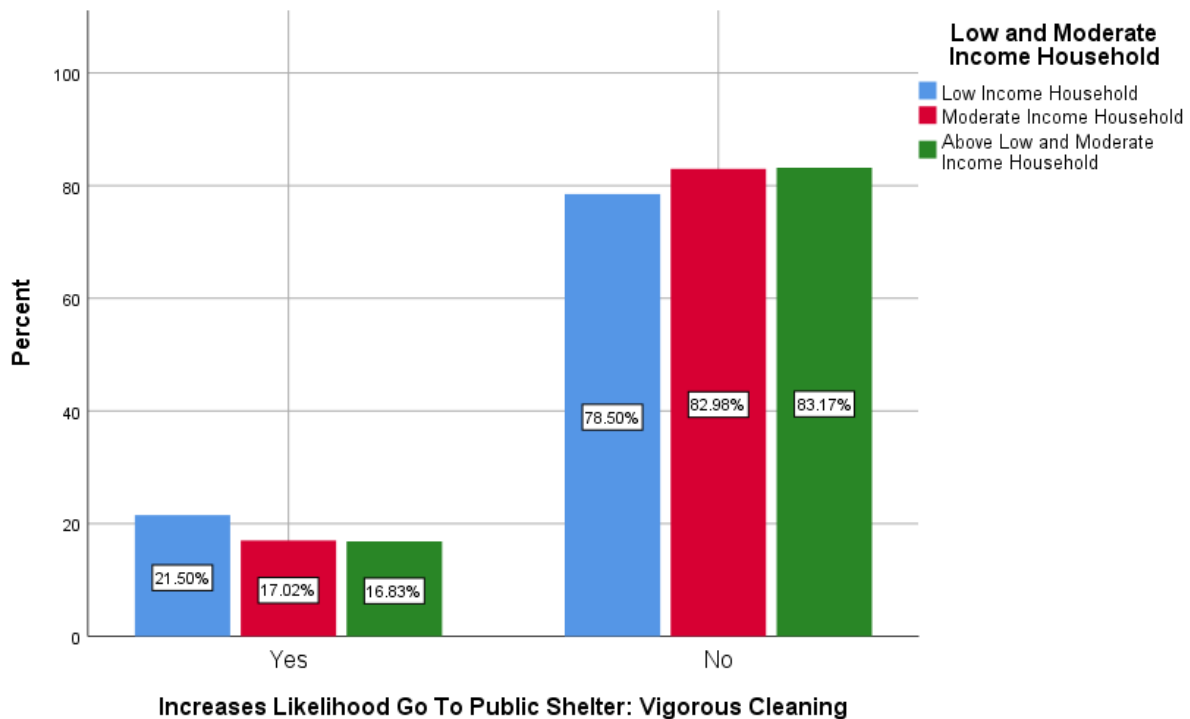
Low-to-moderate income households, relative to above low-to-moderate income households, have a higher percentage of households that report they are more likely to seek public shelter in response to assurances of vigorous cleaning within the shelters, nearly 20 percent relative to 17 percent, respectively.



..by..Low and Moderate Income Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across Increases Likelihood Go To Public Shelter: Vigorous Cleaning (yes, no).

Low income households, relative to other income households, have a higher percentage of households that report they are more likely to seek public shelter in response to assurances of vigorous cleaning within the shelters. Over 21 percent of low income households, just over 17 percent of moderate income households, and just under 17 percent of above low and moderate income households are estimated to increase the likelihood of seeking public shelter in response to assurances of vigorous cleaning within the shelters.

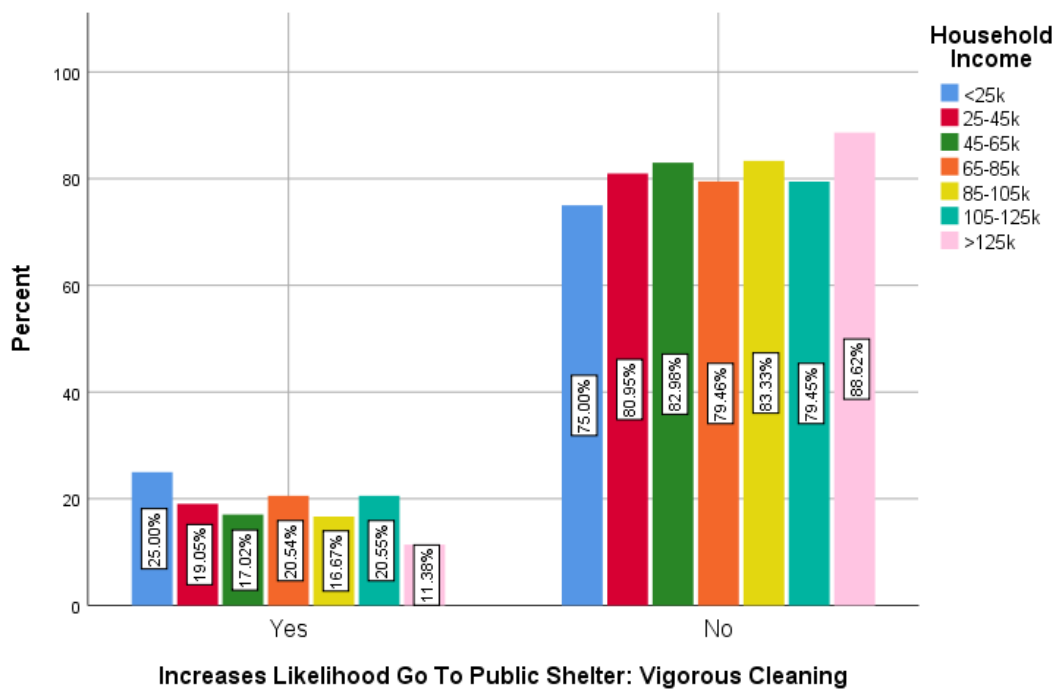




..by..Granulated Household Income

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Household Income (disaggregated into seven household income gradients) across Increases Likelihood Go To Public Shelter: Vigorous Cleaning (yes, no).

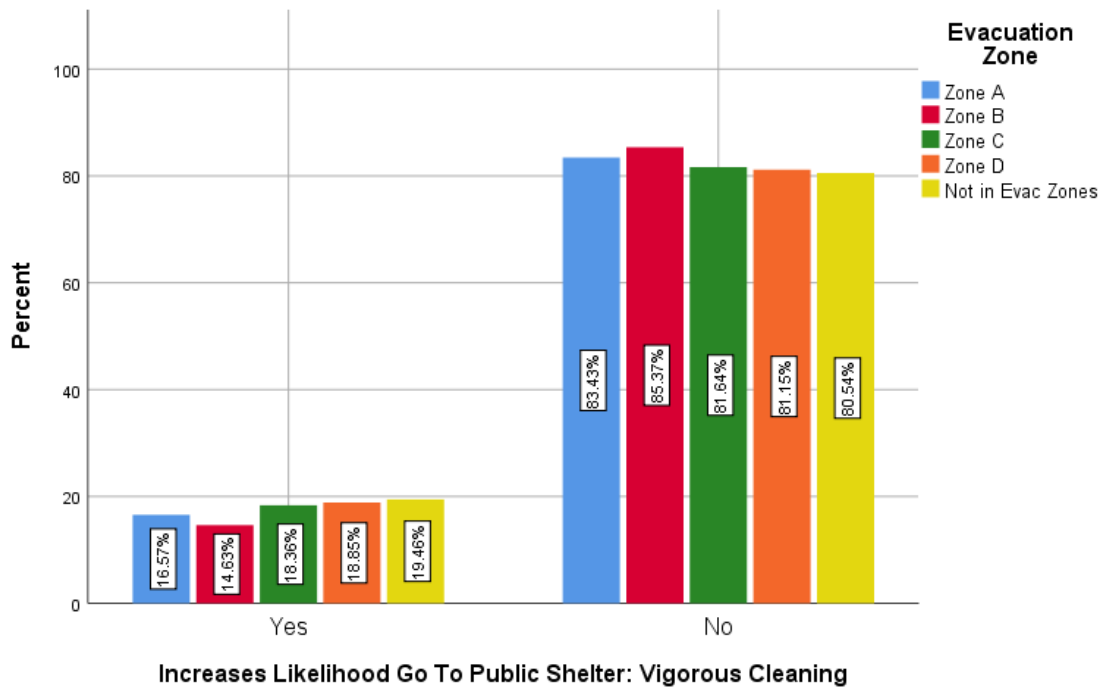
Although there is not a linear decrease across granulated income categories, <25k households are more likely, relative to other income households, to seek public shelter given reductions in the number of persons and assurances of social distancing within the public shelter.



..by..Evacuation Zone

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across Increases Likelihood Go To Public Shelter: Vigorous Cleaning (yes, no).

Evacuation Zone D households, relative to other evacuation zone households, are more likely to seek public shelter in response to assurances of vigorous cleaning within the shelters. Over 19 percent of Zone D, just under 19 percent Zone C, under 15 percent Zone B, and nearly 17 percent Zone A are estimated to increase the likelihood of seeking public shelter in response to assurances of vigorous cleaning within the shelters.



## Increases Likelihood Go To Public Shelter: Hotel Room

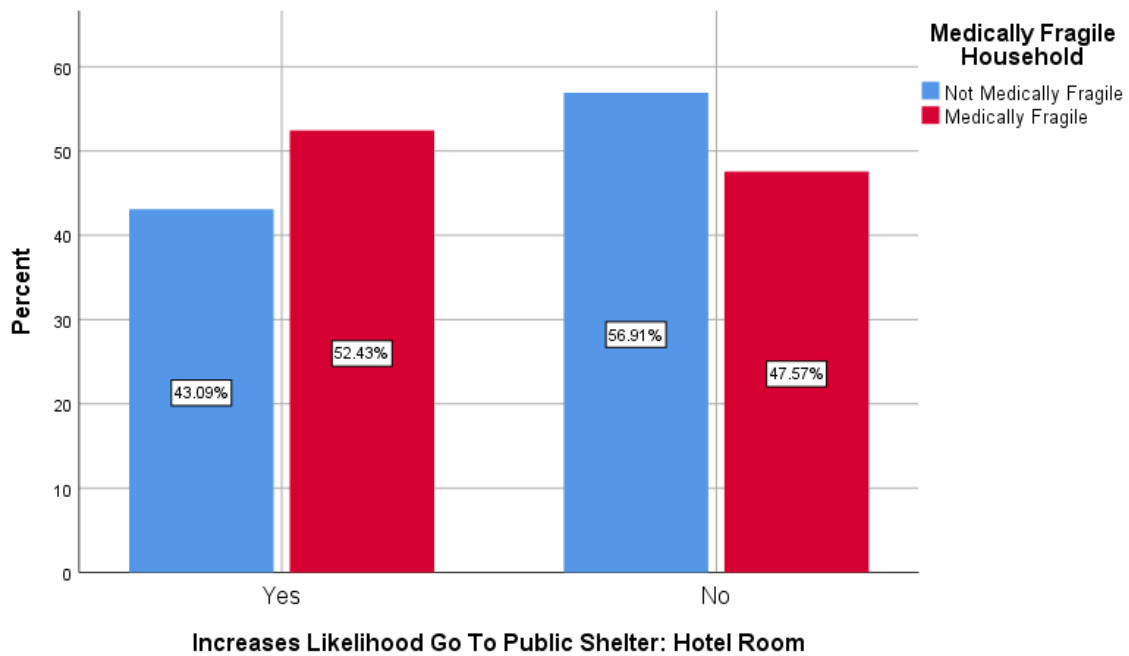
Being offered by the city a hotel room as a shelter, rather than a centralized place such as a school, is a change to public shelter operations. How such operational changes may impact population behavior, and, more specifically, behaviors of particular groups, is of interest to planners. Overall, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, being offered by the city a hotel room as a shelter, rather than a centralized place such as a school, will increase the likelihood that the household will use this as a shelter among nearly 46 percent of households. The seven charts on the following pages will examine this reason controlling for household characteristics.



..by..Medically Fragile Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across Increases Likelihood Go To Public Shelter: Hotel Room (yes, no).

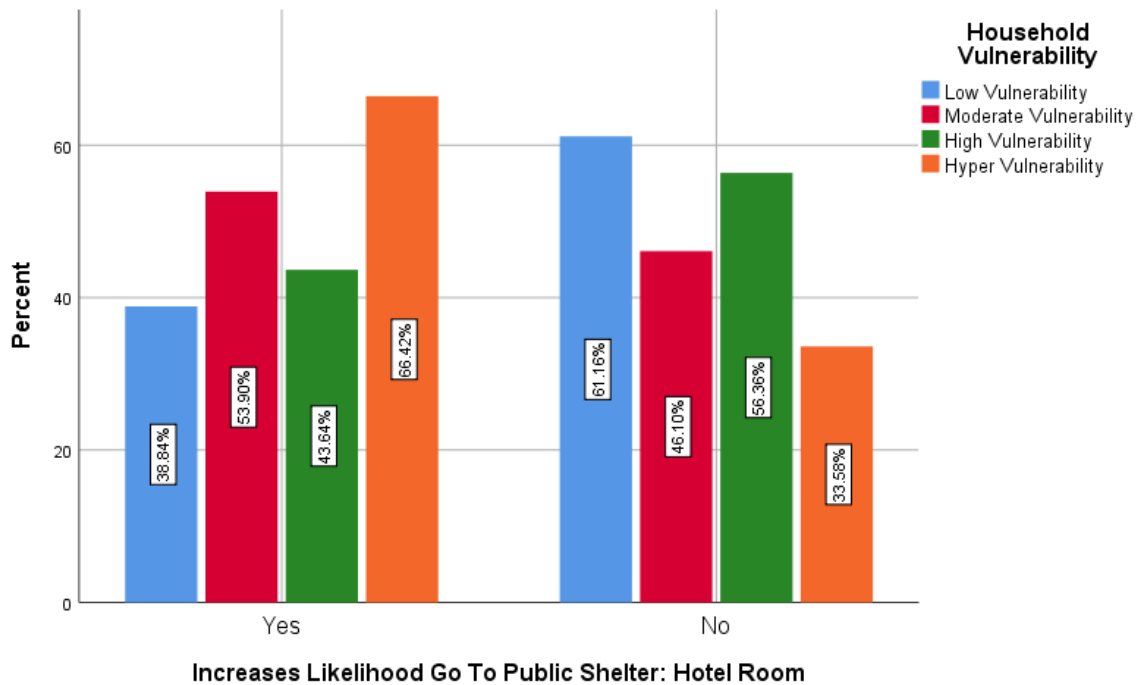
Medically fragile households, relative to not medically fragile households, have a higher percentage of households that report they are more likely to seek public shelter in response to being offered by the city a hotel room as a shelter, rather than a centralized place such as a school, over 52 percent relative to just about 43 percent, respectively.



..by..Household Vulnerability

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across Increases Likelihood Go To Public Shelter: Hotel Room (yes, no).

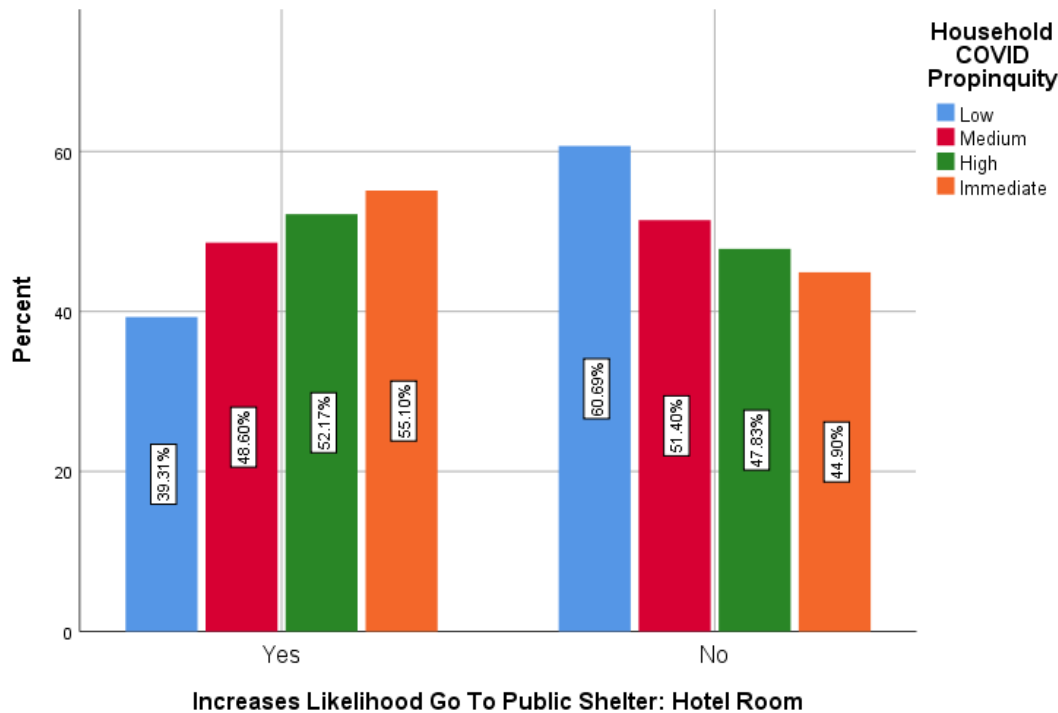
Hyper vulnerability households, relative to above low vulnerability households, have a higher percentage of households that report they are more likely to seek public shelter in response to being offered by the city a hotel room as a shelter, rather than a centralized place such as a school. Specifically, low vulnerability (39 percent), moderate vulnerability (54 percent), high vulnerability (44 percent) and hyper vulnerability (66 percent).



..by..Household COVID Propinquity

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across Increases Likelihood Go To Public Shelter: Hotel Room (yes, no).

Immediate COVID propinquity households, relative to above low COVID propinquity households, have a higher percentage of households that report they are more likely to seek public shelter in response to being offered by the city a hotel room as a shelter, rather than a centralized place such as a school. Specifically: low COVID propinquity (39 percent), medium COVID propinquity (49 percent), high COVID propinquity (52 percent) and immediate COVID propinquity (55 percent).



..by..Low-to-Moderate Income Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across Increases Likelihood Go To Public Shelter: Hotel Room (yes, no).

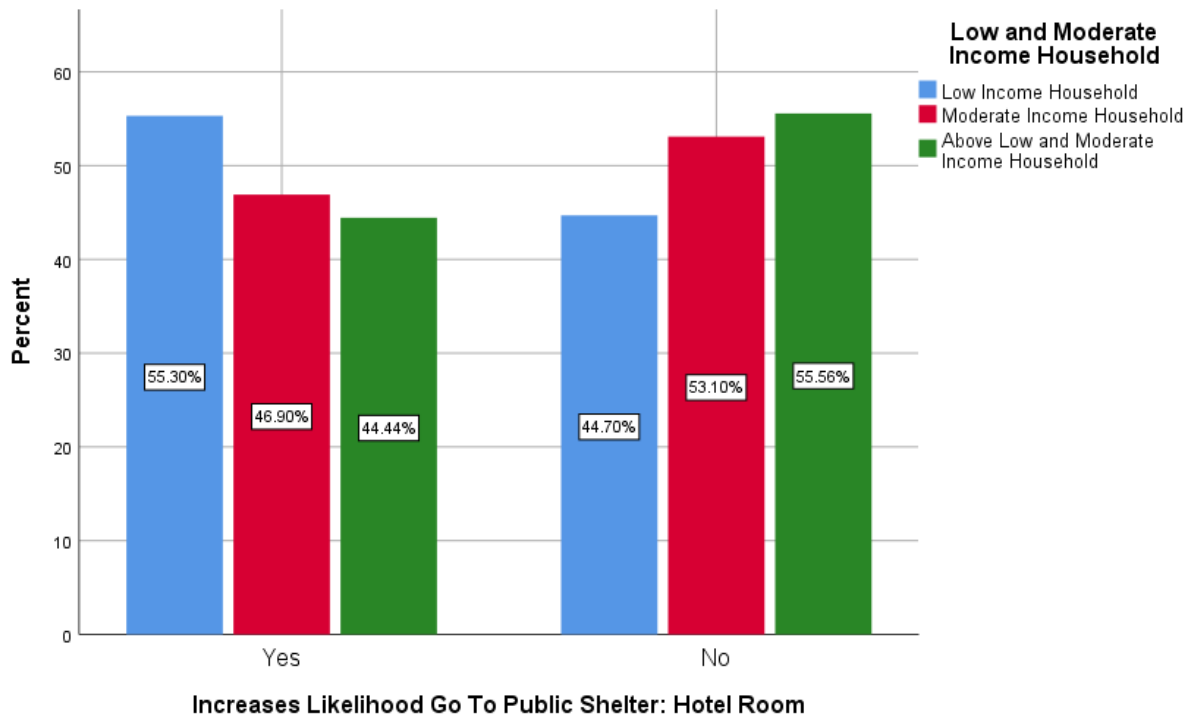
Low-to-moderate income households, relative to above low-to-moderate income households, have a higher percentage of households that report they are more likely to seek public shelter in response to being offered by the city a hotel room as a shelter, rather than a centralized place such as a school, nearly 52 percent relative to above 44 percent, respectively.



..by..Low and Moderate Income Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across Increases Likelihood Go To Public Shelter: Hotel Room (yes, no).

Low income households, relative to other income households, have a higher percentage of households that report they are more likely to seek public shelter in response to being offered by the city a hotel room as a shelter, rather than a centralized place such as a school. More than 55 percent of low income households, nearly 47 percent of moderate income households, and over 44 percent of above low and moderate income households increase likelihood of seeking public shelter when presented this option.





..by..Granulated Household Income

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Household Income (disaggregated into seven household income gradients) across Increases Likelihood Go To Public Shelter: Hotel Room (yes, no).

There appears a relationship among granulated income categories and proportion of the households that report they are more likely to seek public shelter in response to being offered by the city a hotel room as a shelter, rather than a centralized place such as a school. This ranges from more than 62.4 percent of <25k households to just under 39.9 percent of >125k households.



..by..Evacuation Zone

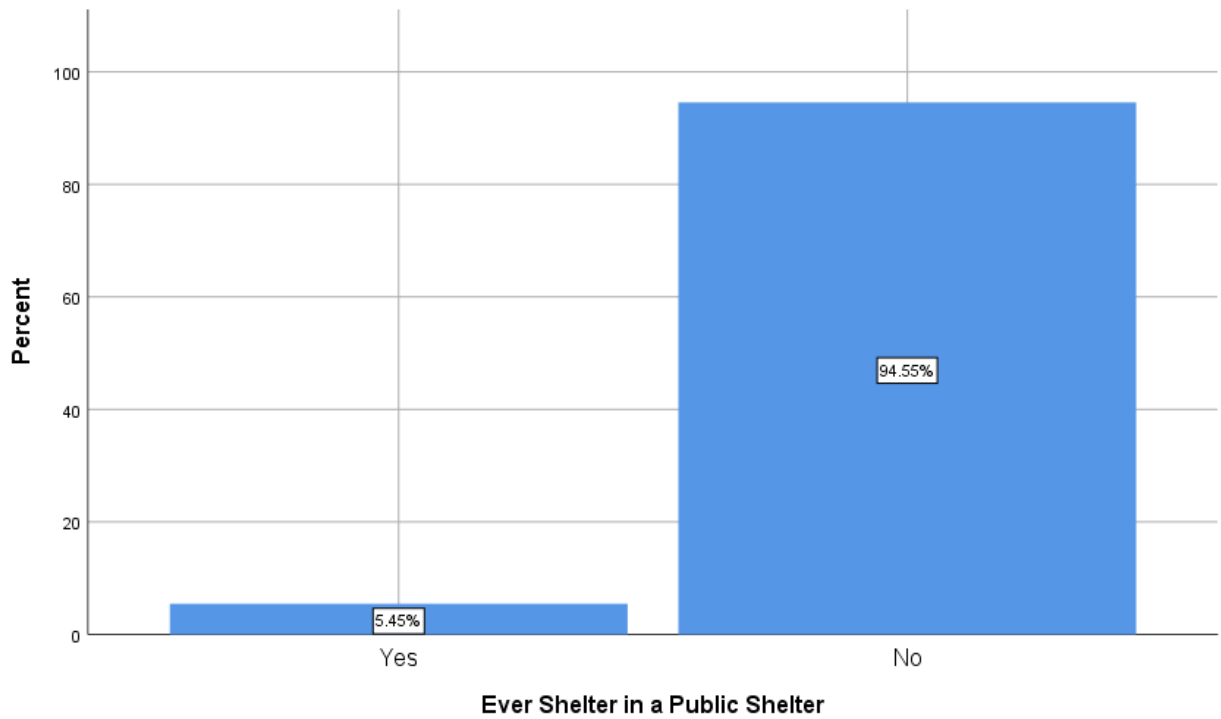
The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across Increases Likelihood Go To Public Shelter: Hotel Room (yes, no).

Statistically, there is not much difference among proportions of households within Zones A, B, and C, nor between the proportions within Zone D and Not in Evac Zones, that report they are more likely to seek public shelter in response to being offered by the city a hotel room as a shelter, rather than a centralized place such as a school. Notable is that there is a sizable difference between the average proportion within Zones A, B, and C (about 44 percent) and the average proportion within Zone D and 'Not in Evac Zone (about 49 percent). This difference suggests that those households in zone D and in Not in Evac Zones areas are more likely, relative to households in other zones, to seek public shelter in response to the offer of a hotel room as a shelter. This suggests that this may increase those in Zone D and Not in Evac Zones areas from remaining in the region and, in fact sheltering in a location that may be more proximate to shoreline.



## Household has a History of Sheltering in Public Shelter

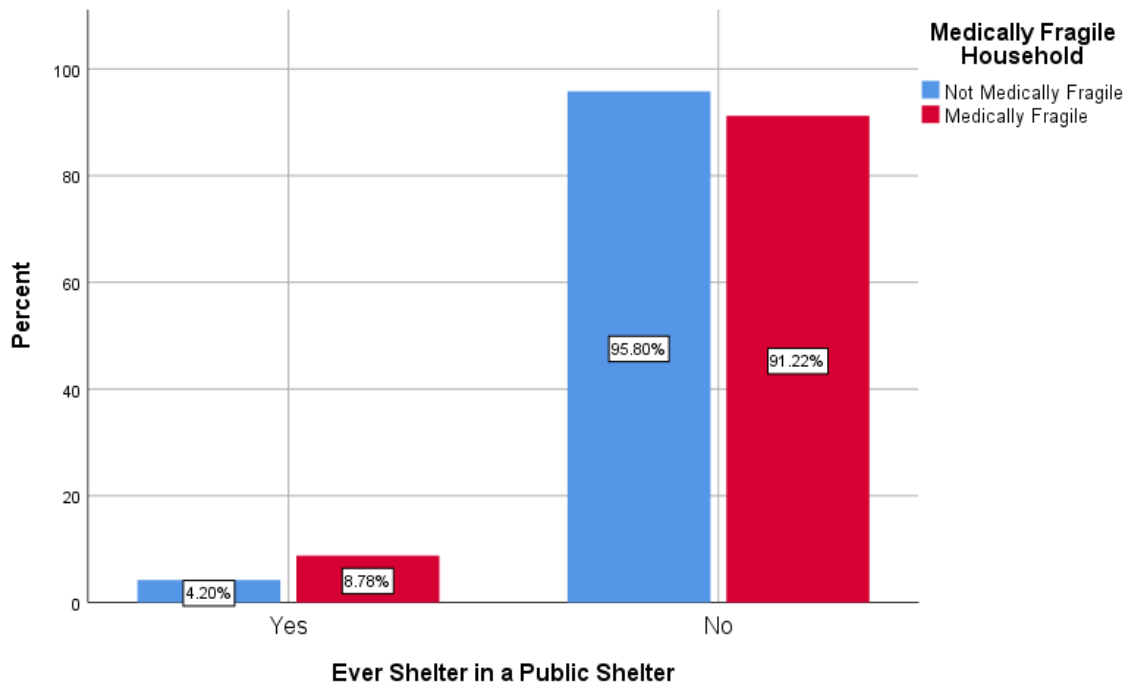
Among households planning to shelter in a home or places other than a public shelter within Hampton Roads when faced with a significant hurricane event, above 5.4 percent report having ever sheltered in the past in a public shelter due to a storm. The seven charts on the following pages will examine this reason controlling for household characteristics.



..by..Medically Fragile Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across Ever Shelter in Public Shelter (yes, no).

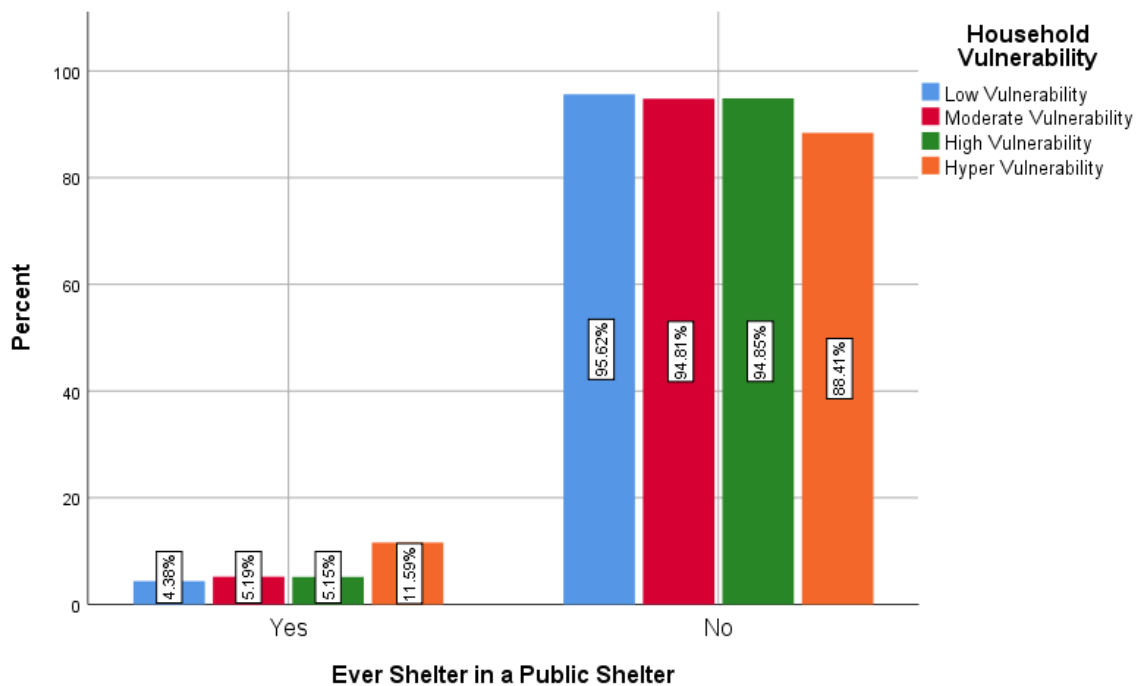
Medically fragile households, relative to not medically fragile households, have a higher proportion of households that sought public shelter in the past due to a storm, nearly 9 percent and just above 4 percent, respectively.



..by..Household Vulnerability

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across Ever Shelter in Public Shelter (yes, no).

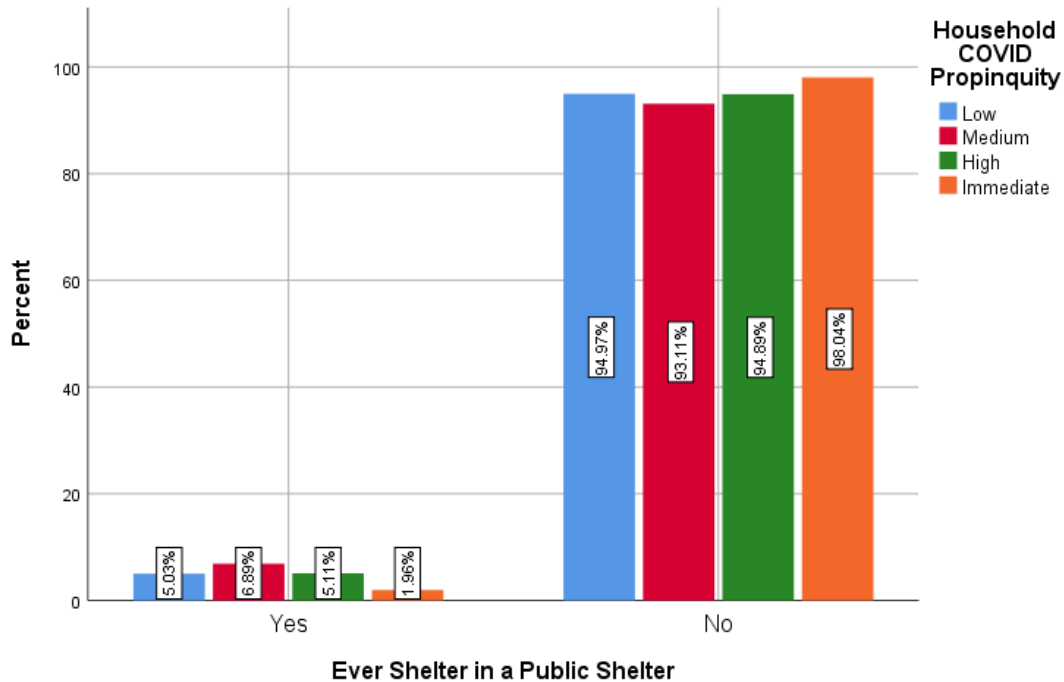
Hyper vulnerability households, relative to other vulnerability households, have a higher proportion of households that sought public shelter in the past due to a storm. Specifically: low vulnerability (4 percent), moderate vulnerability (5 percent), high vulnerability (5 percent), and hyper vulnerability (12 percent).



..by..Household COVID Propinquity

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across Ever Shelter in Public Shelter (yes, no).

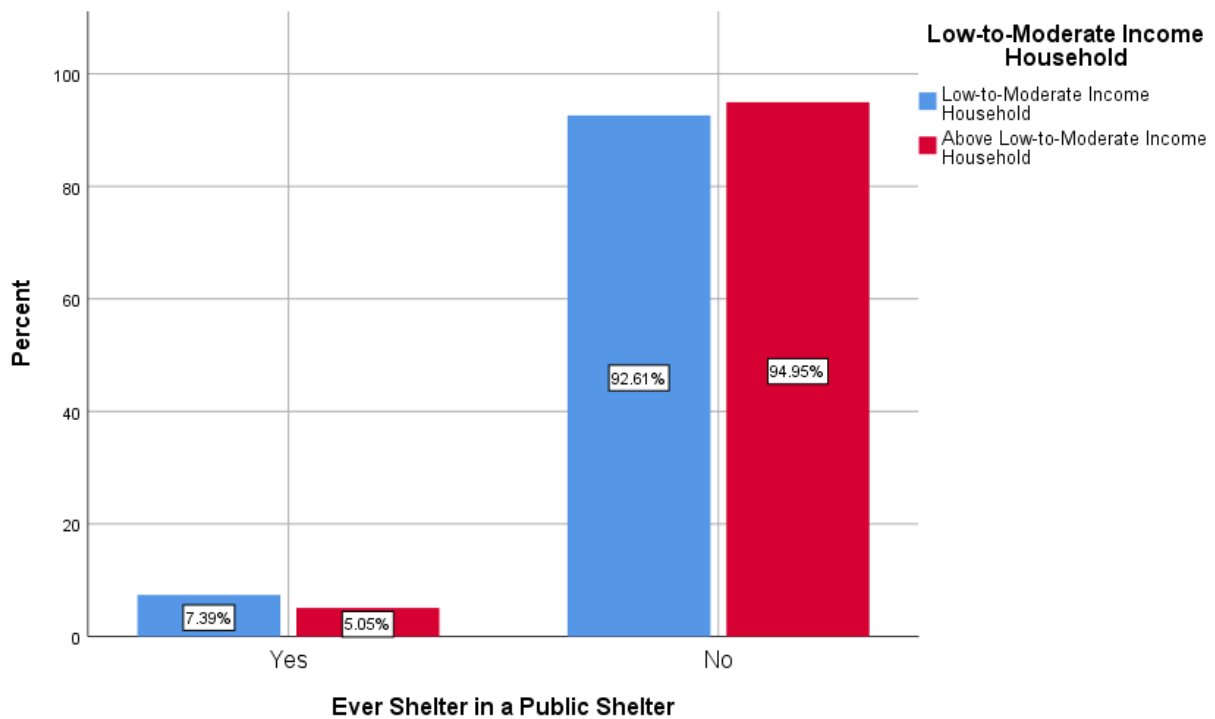
Immediate COVID propinquity households, relative to other propinquity households, have a smaller proportion of households that sought public shelter in the past due to a storm, nearly 2 percent and the range of 5-6 percent, respectively.



..by..Low-to-Moderate Income Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across Ever Shelter in Public Shelter (yes, no).

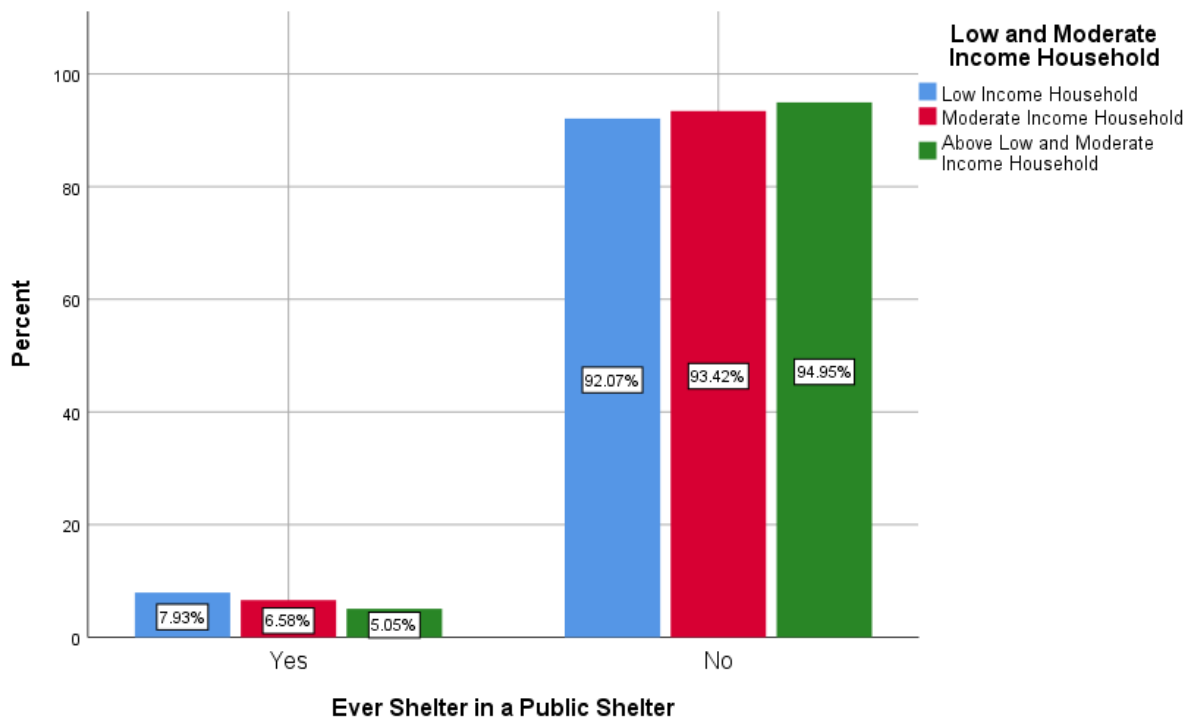
Low-to-moderate income households, relative to above low-to-moderate income households, have a higher proportion of households that sought public shelter in the past due to a storm, nearly over 7 percent and about 5 percent, respectively.



..by..Low and Moderate Income Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across Ever Shelter in Public Shelter (yes, no).

Low income households, relative to other income households, have a higher proportion of households that sought public shelter in the past due to a storm. Nearly 8 percent of low income households, 7 percent of moderate income households, and 5 percent of above low and moderate income households have sought public shelter in the past.

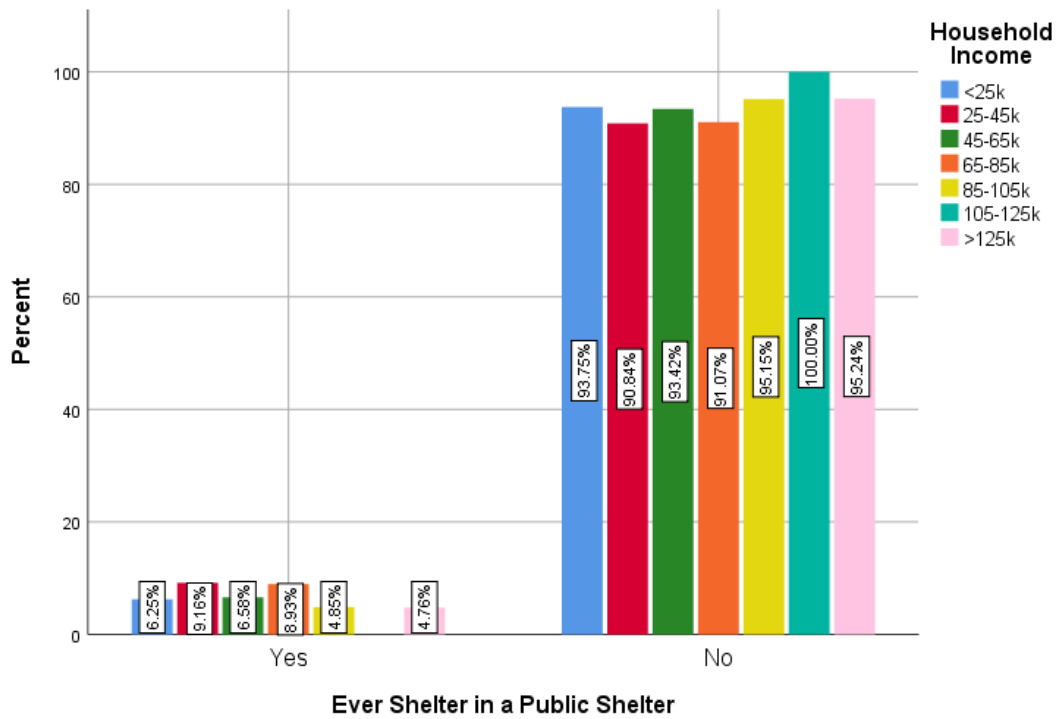




..by..Granulated Household Income

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Household Income (disaggregated into seven household income gradients) across Ever Shelter in Public Shelter (yes, no).

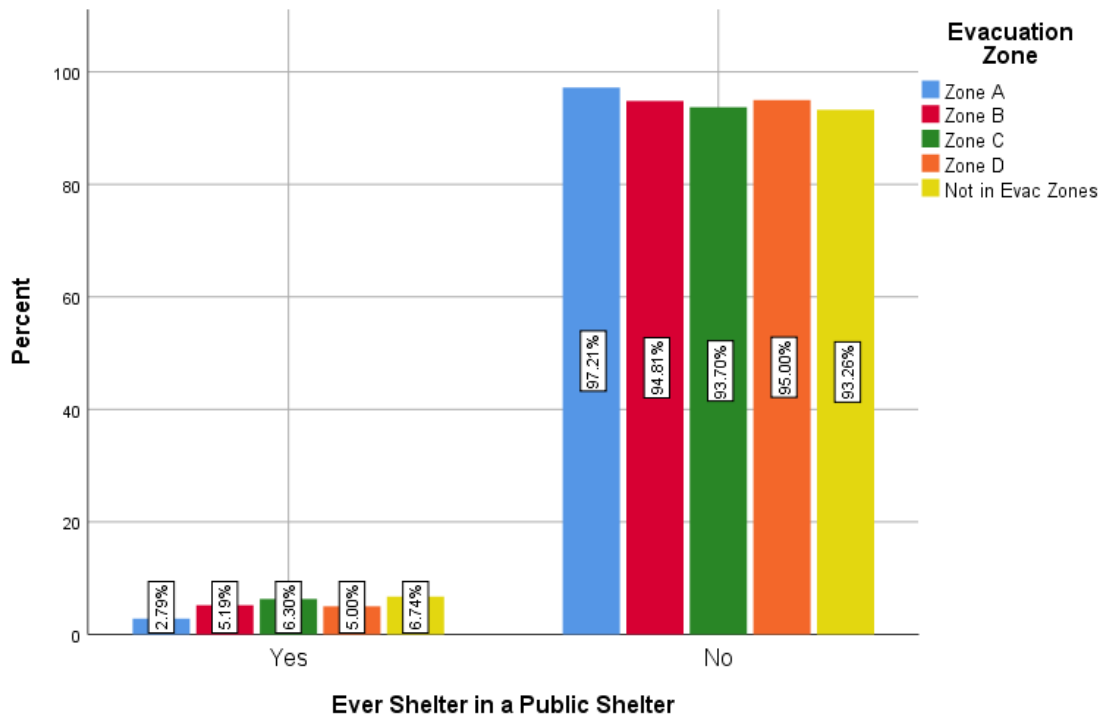
Generally, higher income households, such as those above 85k, are less likely that households less than 85k to seek public shelter in the past due to a storm.



..by..Evacuation Zone

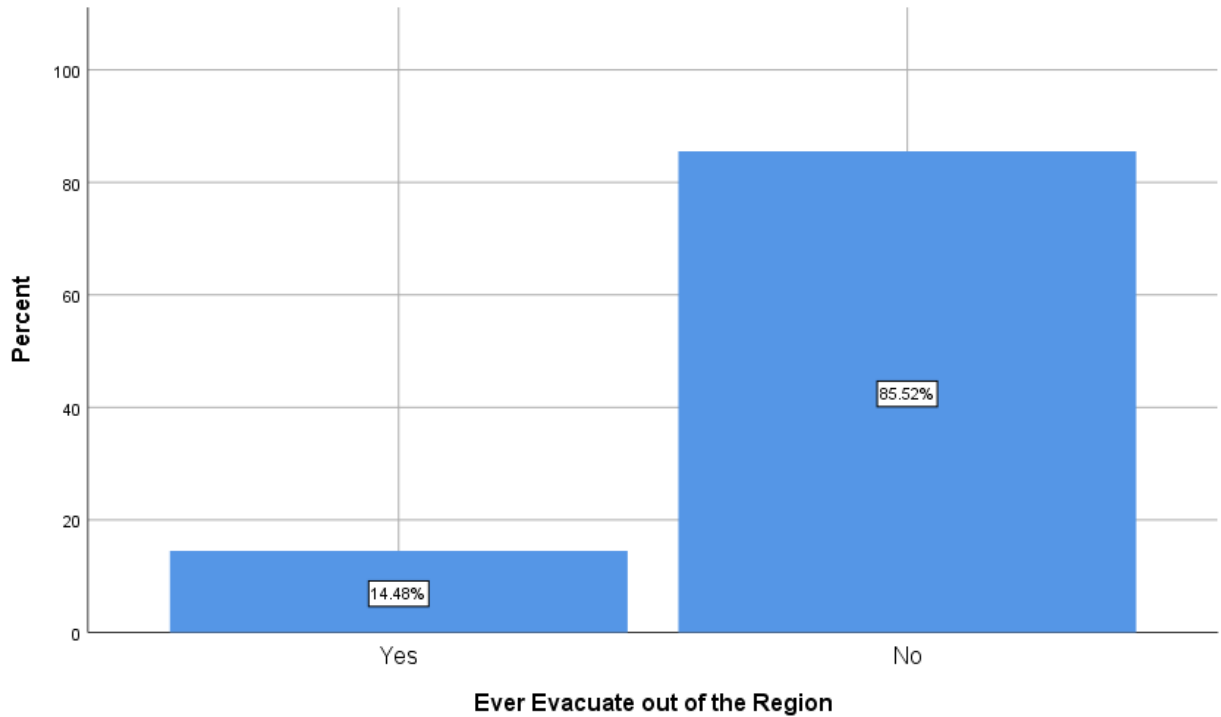
The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across Ever Shelter in Public Shelter (yes, no).

When controlling for evacuation zone, notable is that those households least proximate to shoreline (using evacuation zone as a rough indicator of proximity), are more likely to have sought public shelter in the past due to a storm. The proportion of households within Not in Evac Zones is nearly 7 percent, while households within Zone A it is just below 3 percent.



## Households has a History of Evacuation out of the Region

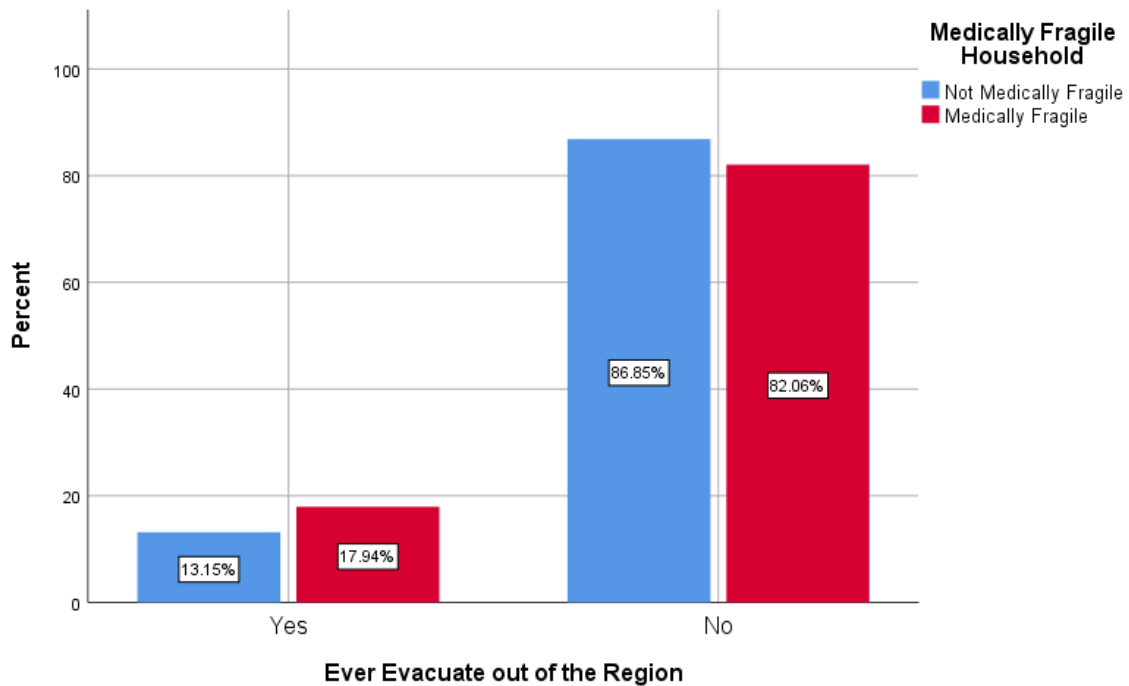
Among households planning to shelter in a home or place other than a public shelter within Hampton Roads when faced with a significant hurricane event, above 14.4 percent report having ever evacuated out of the region in the past due to a storm. The seven charts on the following pages will examine this reason controlling for household characteristics.



..by..Medically Fragile Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across Ever Evacuate out of the Region (yes, no).

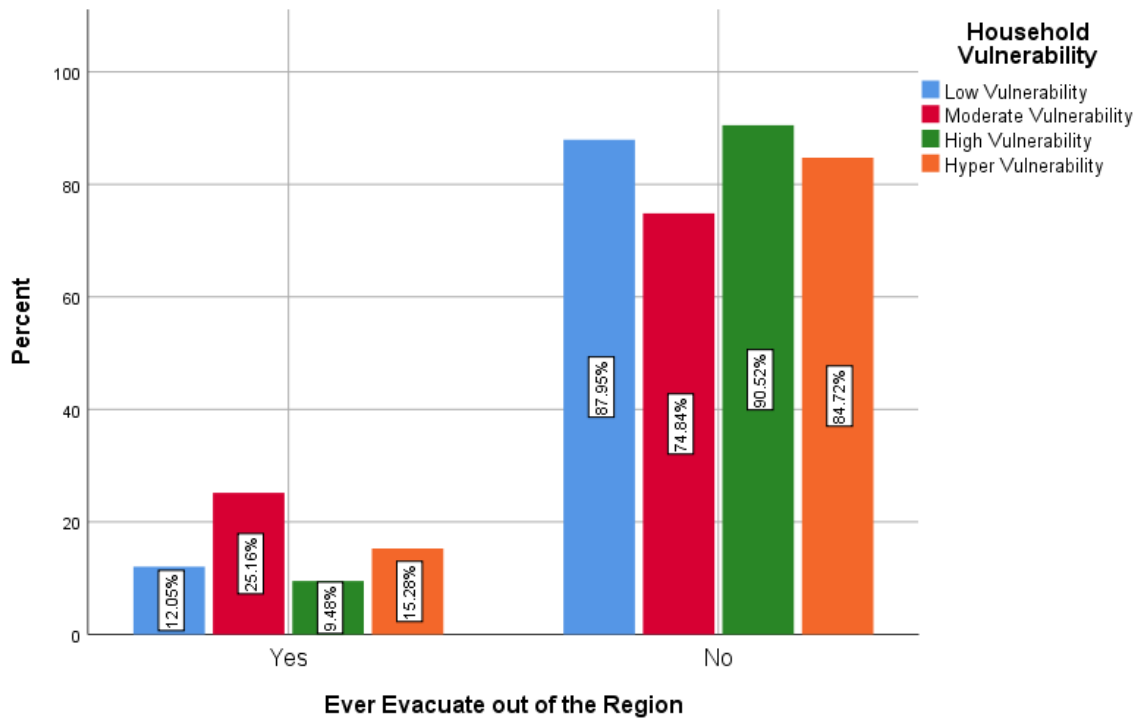
Medically fragile households, relative to not medically fragile households, have a higher proportion of households that evacuated out of the region in the past due to a storm, nearly 18 percent and just above 13 percent, respectively.



..by..Household Vulnerability

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across Ever Evacuate out of the Region (yes, no).

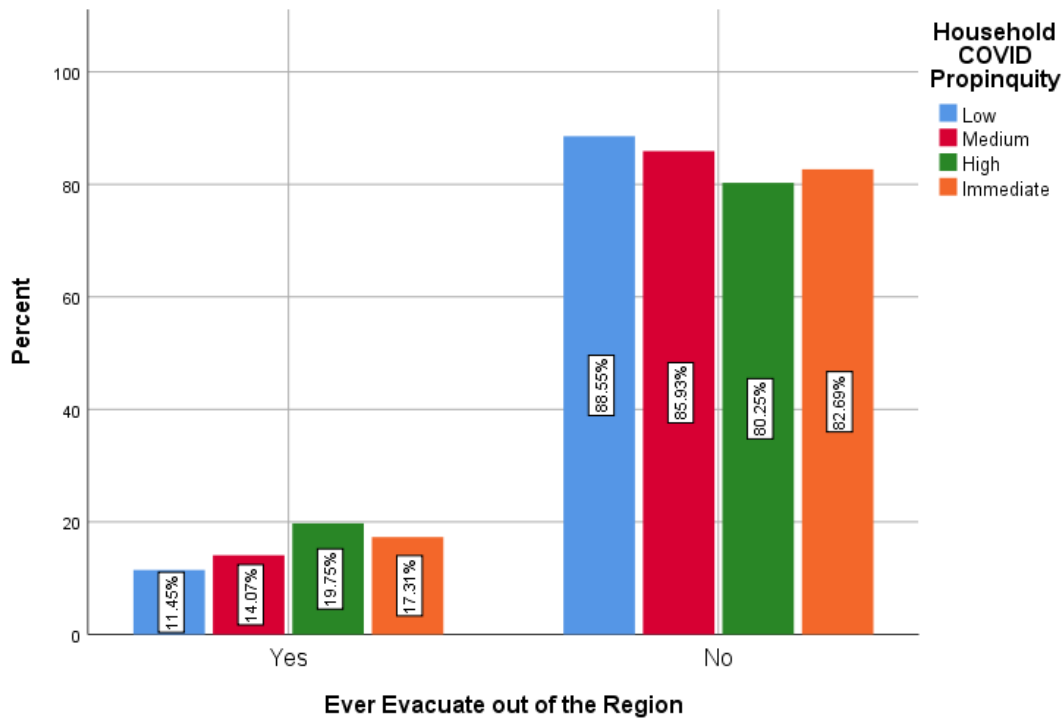
Moderate vulnerability households, relative to other vulnerability households, have a higher proportion of households that evacuated out of the region in the past due to a storm. Specifically: low vulnerability (12 percent), moderate vulnerability (25 percent), high vulnerability (9 percent), and hyper vulnerability (15 percent).



..by..Household COVID Propinquity

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across Ever Evacuate out of the Region (yes, no).

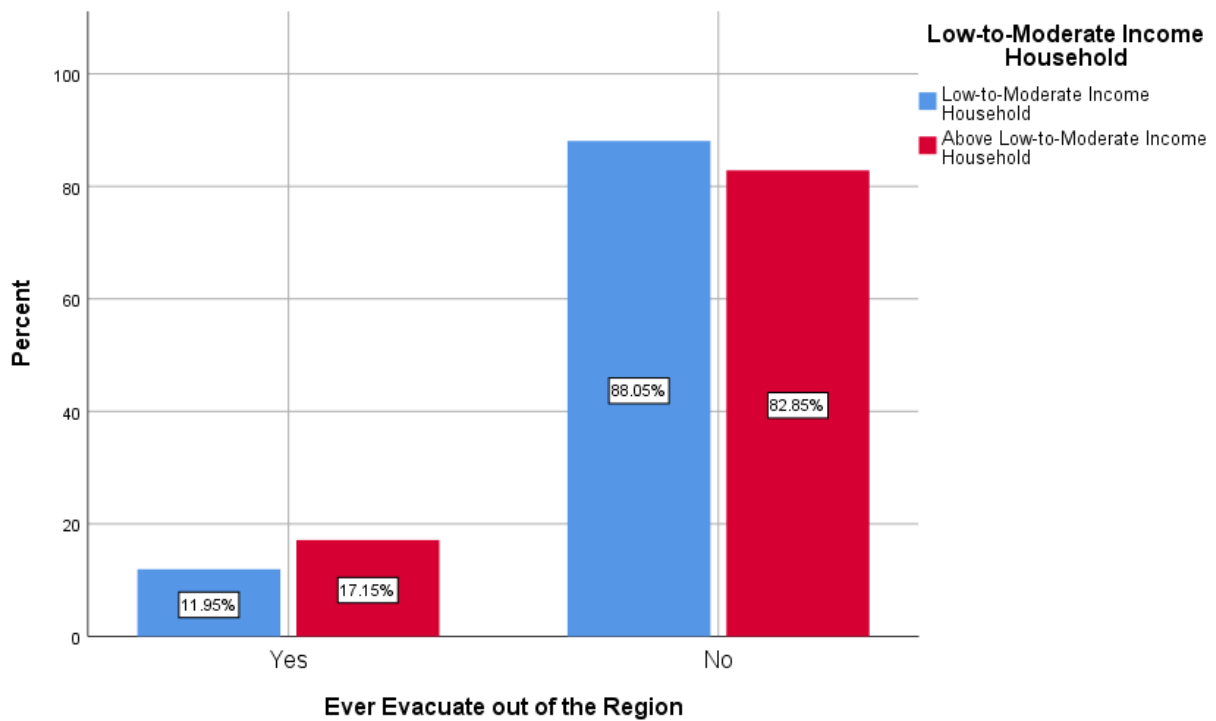
High and immediate vulnerability households, relative to medium and low vulnerability households, have a higher proportion of households that evacuated out of the region in the past due to a storm. Specifically: low COVID propinquity (11 percent), medium COVID propinquity (14 percent), high COVID propinquity (20 percent) and immediate COVID propinquity (17 percent).



..by..Low-to-Moderate Income Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across Ever Evacuate out of the Region (yes, no).

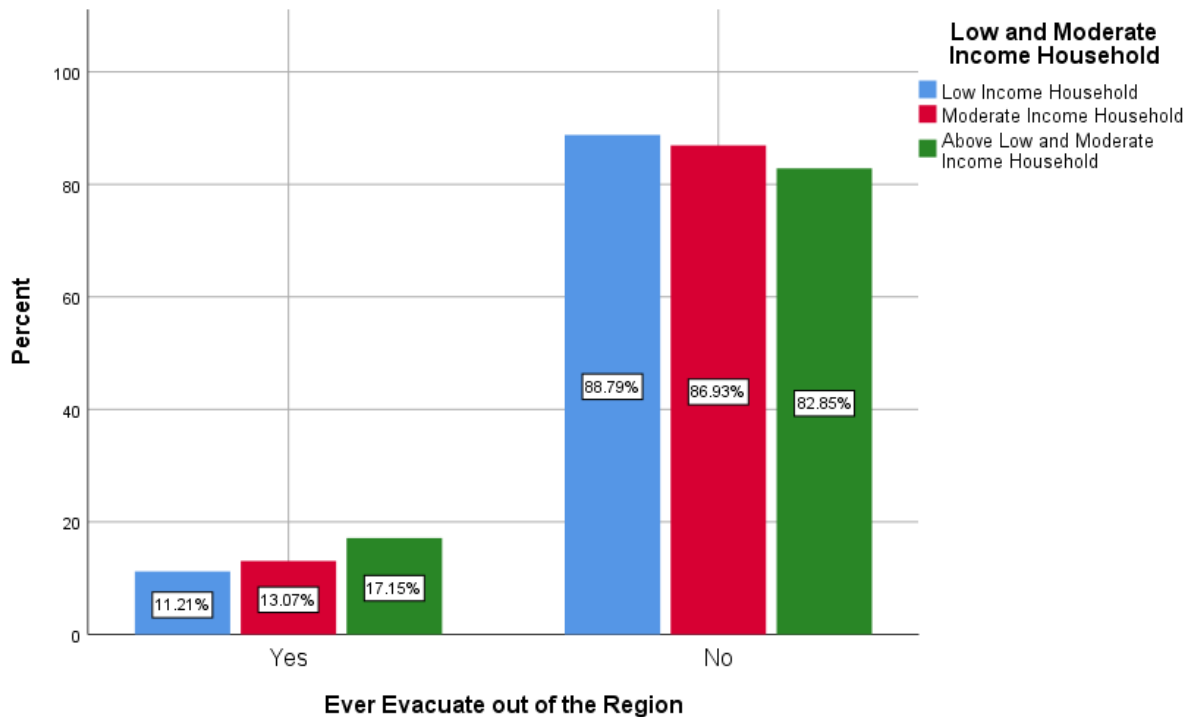
Above low-to-moderate income households, relative to low-to-moderate income households, have a higher proportion of households that evacuated out of the region in the past due to a storm, over 17 percent and above 13 percent, respectively.



..by..Low and Moderate Income Household

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across Ever Evacuate out of the Region (yes, no).

Above low and moderate income households, relative to other income households, have a higher proportion of households that evacuated out of the region in the past due to a storm. Over 17 percent of above low and moderate income households, just above 13 percent moderate income households, and over 11 percent of low income households have evacuated out of the region in the past.

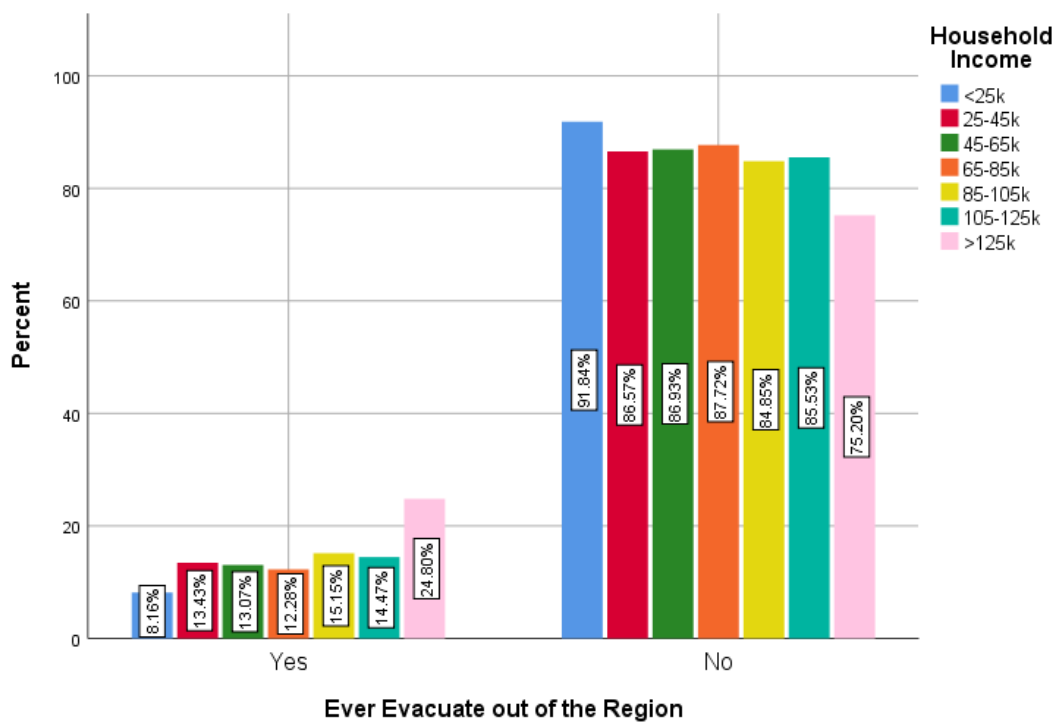




..by..Granulated Household Income

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions within Household Income (disaggregated into seven household income gradients) across Ever Evacuate out of the Region (yes, no).

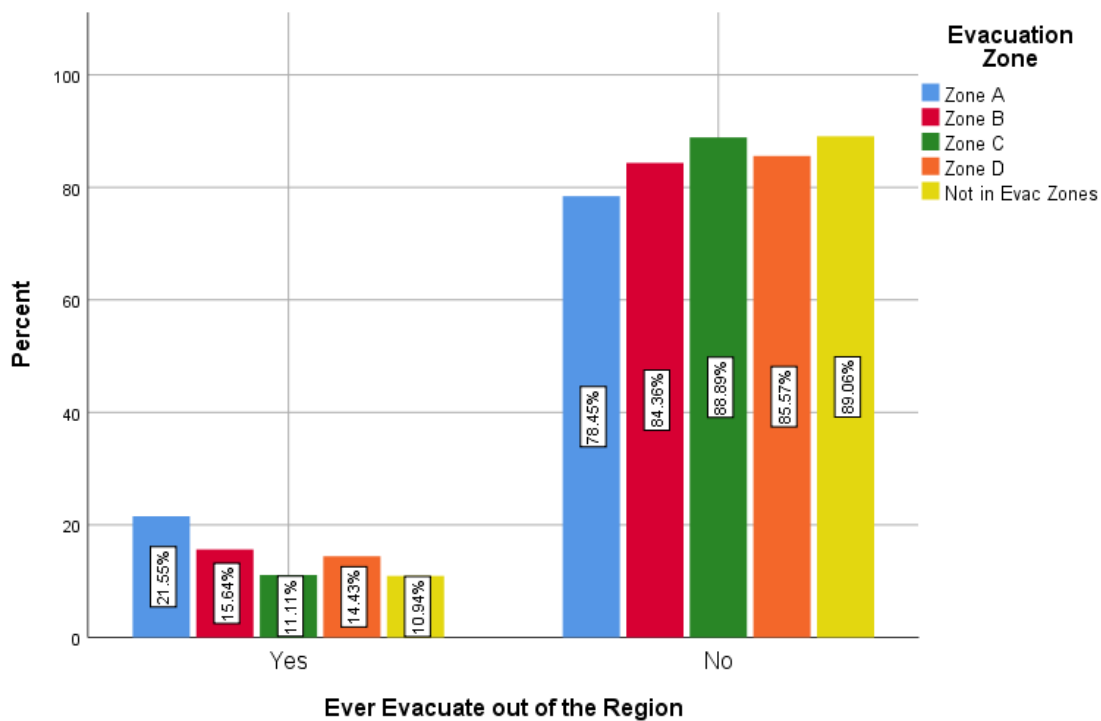
Generally, households with higher incomes, relative to households with lesser incomes, have a higher proportion of households that evacuated out of the region in the past due to a storm. The differences range from a low of just above 8 percent for households <25k to just below 25 percent for households above 125k.



..by..Evacuation Zone

The chart below illustrates, among those planning to shelter in a home or places other than a public shelter within Hampton Roads, the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across Ever Evacuate out of the Region (yes, no).

Generally, households living in evacuation zones more proximate the shoreline, relative to more distant evacuation zones and areas not in evacuation zones, have a larger proportion of their households reporting that they evacuated out of the region in the past due to a storm. Approximately 21 percent of households living in Zone A, about 16 percent of households living in Zone B, about 11 percent of households living in Zone C, about 14 percent of households living in Zone D, and 11 percent of households living in Not in Evac Zones area.

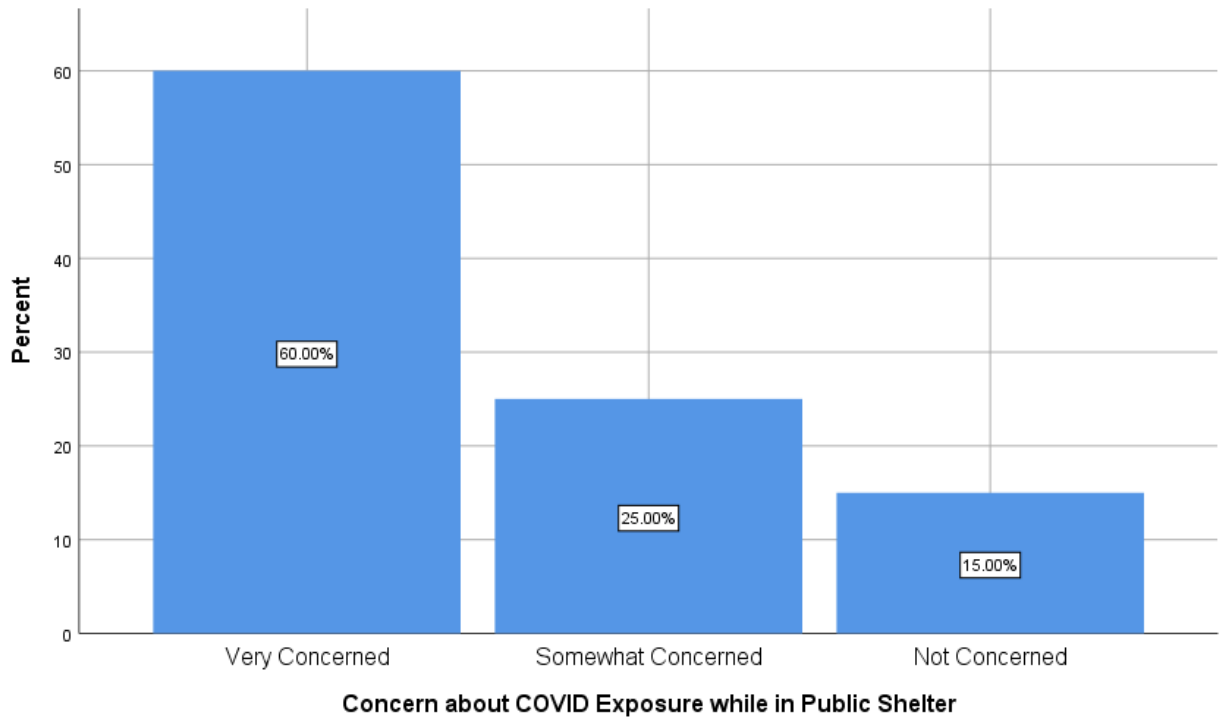


## Part 8: Branch 2 -- Shelter within Hampton Roads at a Public Shelter

This Part 8 reports responses to Branch 2 questions. This line of inquiry is tailored specifically for the households that anticipate sheltering within Hampton Roads at a public shelter. Due to sample size limitations impacting the confidence in inferences made from these data, Branch 2 variables are not reported controlling for the typical seven control variables (for example, as reported in the Branch 1 and Branch 3 analyses).

## Concern about COVID Exposure while in Public Shelter

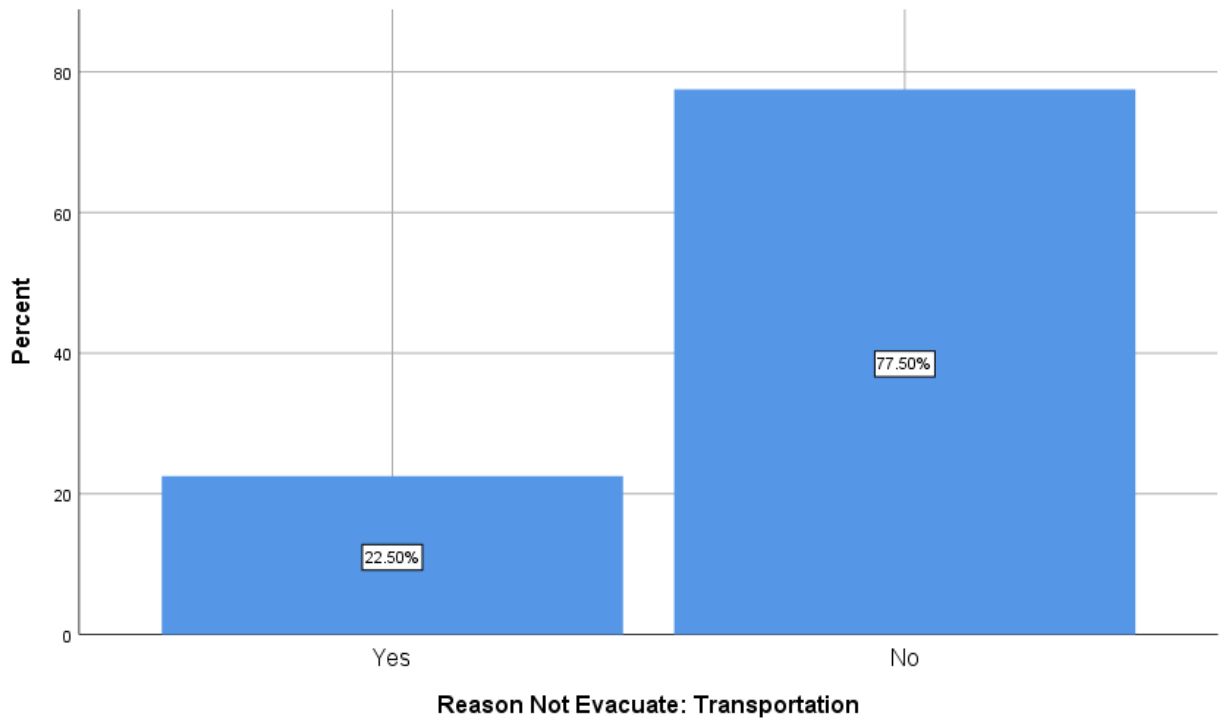
The chart below illustrates the level of concern about COVID exposure while in public shelter by households that anticipate seeking local public shelter should a significant storm approach Hampton Roads. Only 15 percent of households stating they anticipate sheltering at a local public shelter indicate their household is not concerned about COVID while in the shelter. In contrast, about 60 percent indicate being very concerned about COVID while seeking public shelter.



*Note:* For this variable, further analyses using the typical several control variables are not performed due to sample size and limited confidence in any inferences that may be made about differences found between and among variable attributes.

## Reason Not Evacuate: Transportation

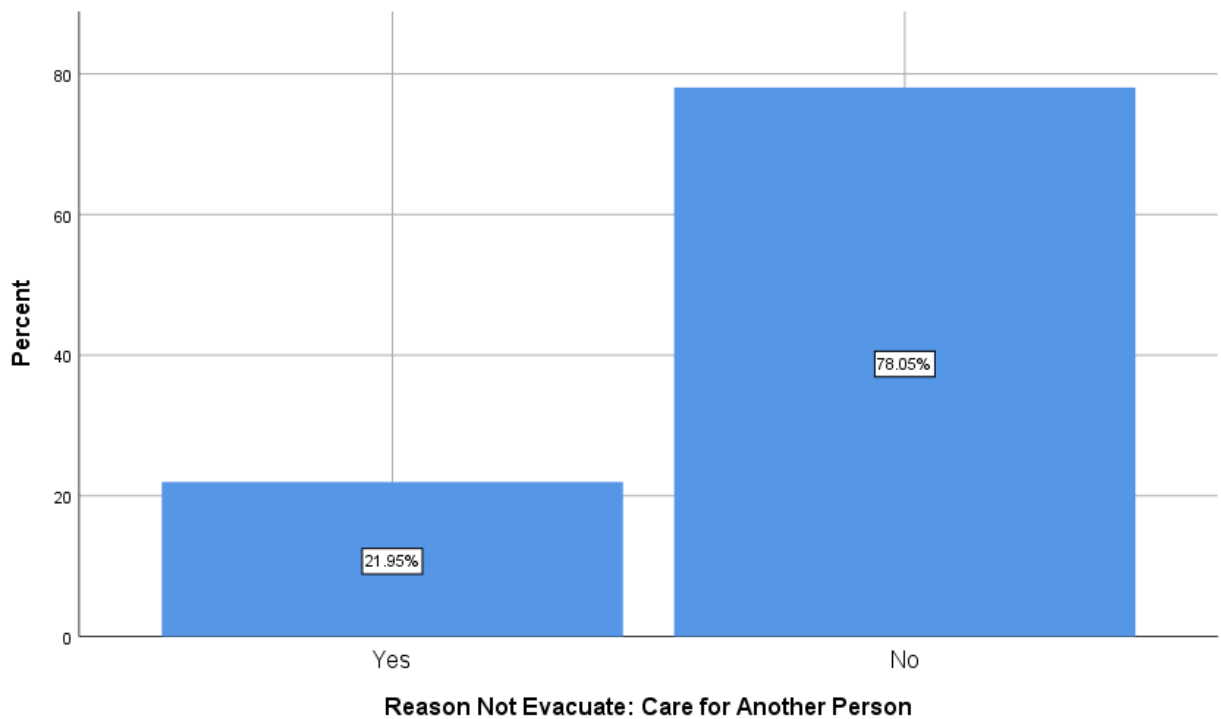
The below chart illustrates, among those households that anticipate seeking local public shelter should a significant storm approach Hampton Roads, just below 23 percent report concerns about not having reliable transportation as a reason for not evacuating. That is, 22.5 percent of households cite transportation as a reason for not evacuating.



*Note:* For this variable, further analyses using the typical several control variables are not performed due to sample size and limited confidence in any inferences that may be made about differences found between and among variable attributes.

## Reason Not Evacuate: Care for Another Person

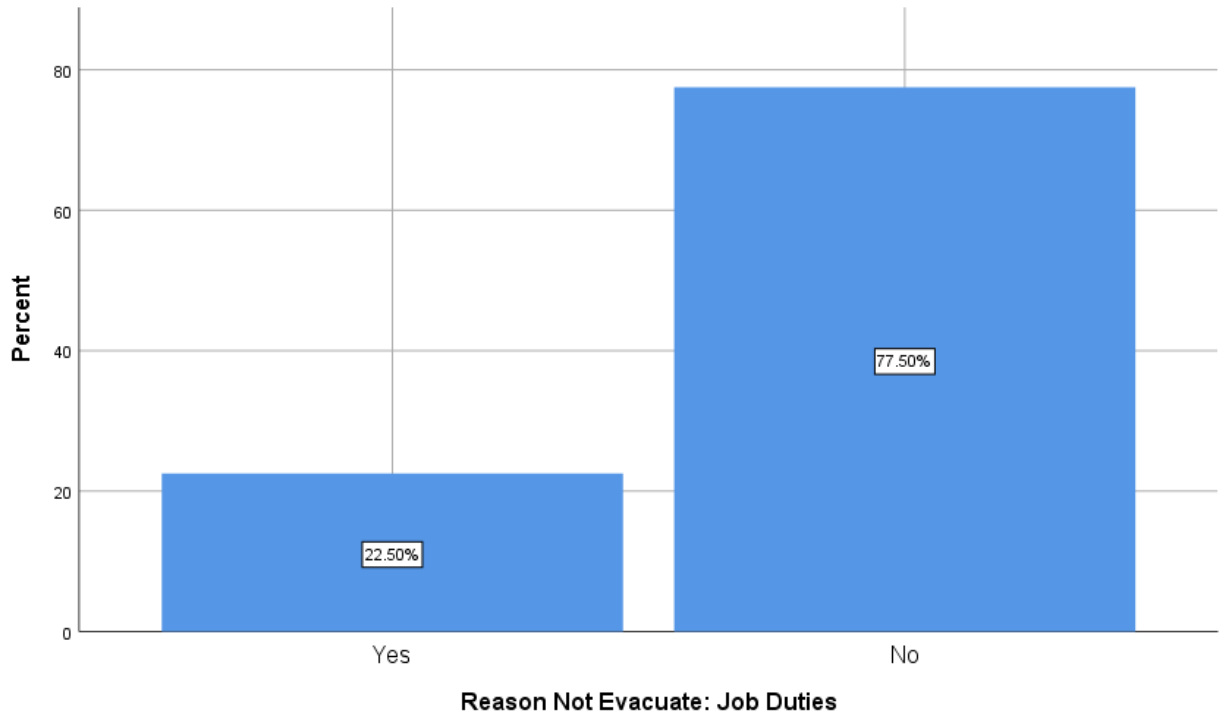
The below chart illustrates, among those households that anticipate seeking local public shelter should a significant storm approach Hampton Roads, nearly 22 percent report one of the reasons for not evacuating being to remain in the region to care for another person who is either unable or unwilling to depart the region. That is, 22.9 percent of households cite care for another person as a reason for not evacuating.



*Note:* For this variable, further analyses using the typical several control variables are not performed due to sample size and limited confidence in any inferences that may be made about differences found between and among variable attributes.

## Reason Not Evacuate: Job Duties

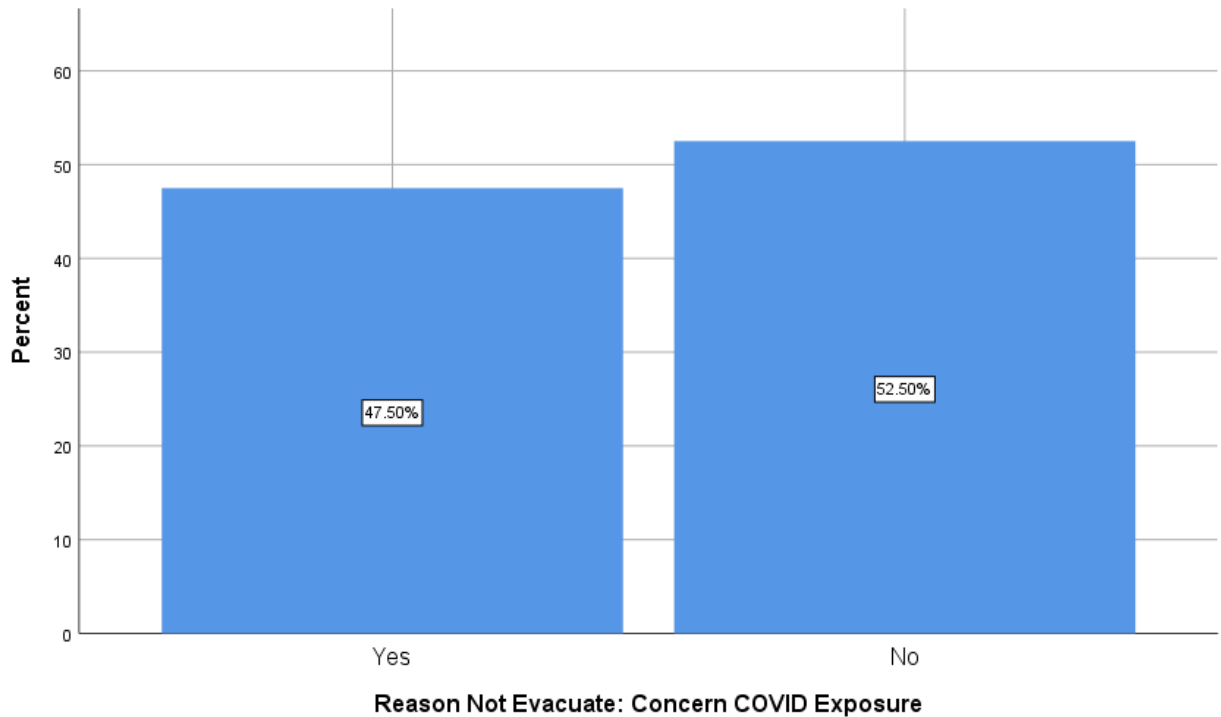
The below chart illustrates, among those households that anticipate seeking local public shelter should a significant storm approach Hampton Roads, just under 23 percent report one of the reasons for not evacuating being a household member's job duties, such as essential personnel, to remain in the region. That is, 22.5 percent of households cite essential job duties as a reason for not evacuating.



*Note:* For this variable, further analyses using the typical several control variables are not performed due to sample size and limited confidence in any inferences that may be made about differences found between and among variable attributes.

### Reason Not Evacuate: Concern COVID Exposure

The below chart illustrates, among those households that anticipate seeking local public shelter should a significant storm approach Hampton Roads, concern about COVID exposure was cited as a reason by almost 48 percent of households as a reason for not evacuating. That is, 47.5 percent of households cite concern over COVID exposure as a reason for not evacuating.

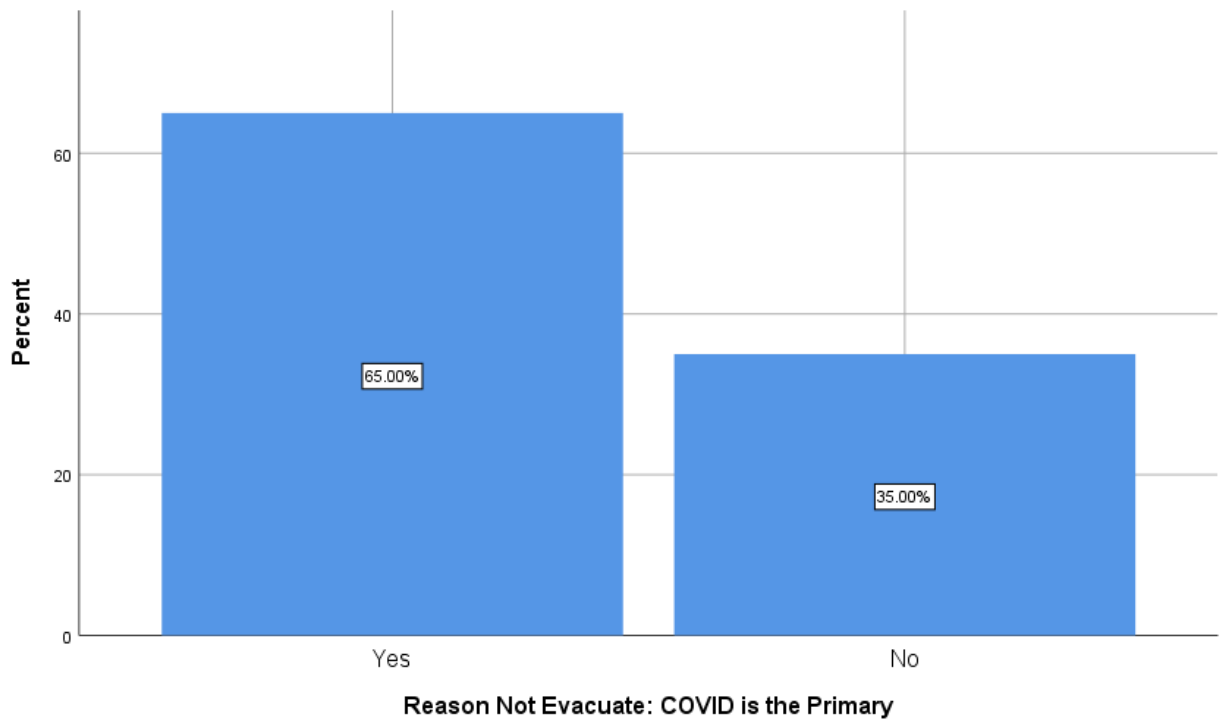


*Note:* For this variable, further analyses using the typical several control variables are not performed due to sample size and limited confidence in any inferences that may be made about differences found between and among variable attributes.



## Reason Not Evacuate: COVID is the Primary

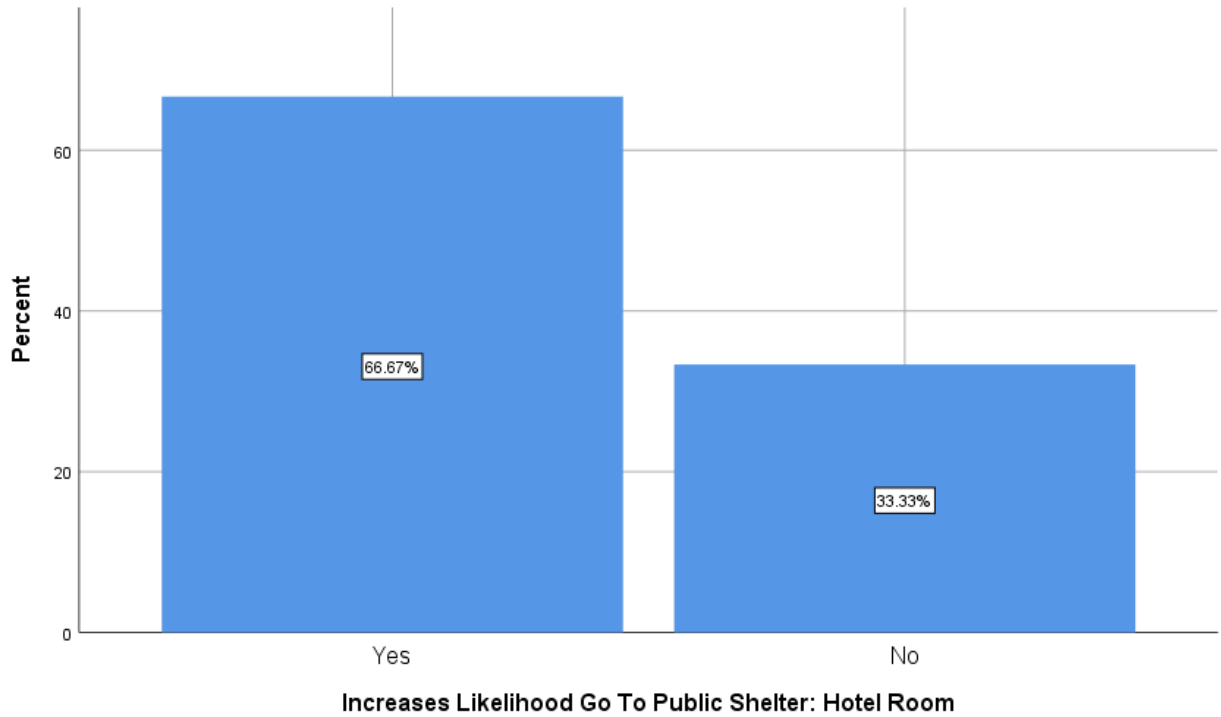
The below chart illustrates, among those households that anticipate seeking local public shelter should a significant storm approach Hampton Roads and that previously stated COVID is one of several reasons for not evacuating, the proportion of households citing concern over COVID exposure as the primary reason for not evacuating. That is, 65 percent of households cite concern over COVID exposure as the primary reason for not evacuating.



*Note:* For this variable, further analyses using the typical several control variables are not performed due to sample size and limited confidence in any inferences that may be made about differences found between and among variable attributes.

## Increases Likelihood Go To Public Shelter: Hotel Room

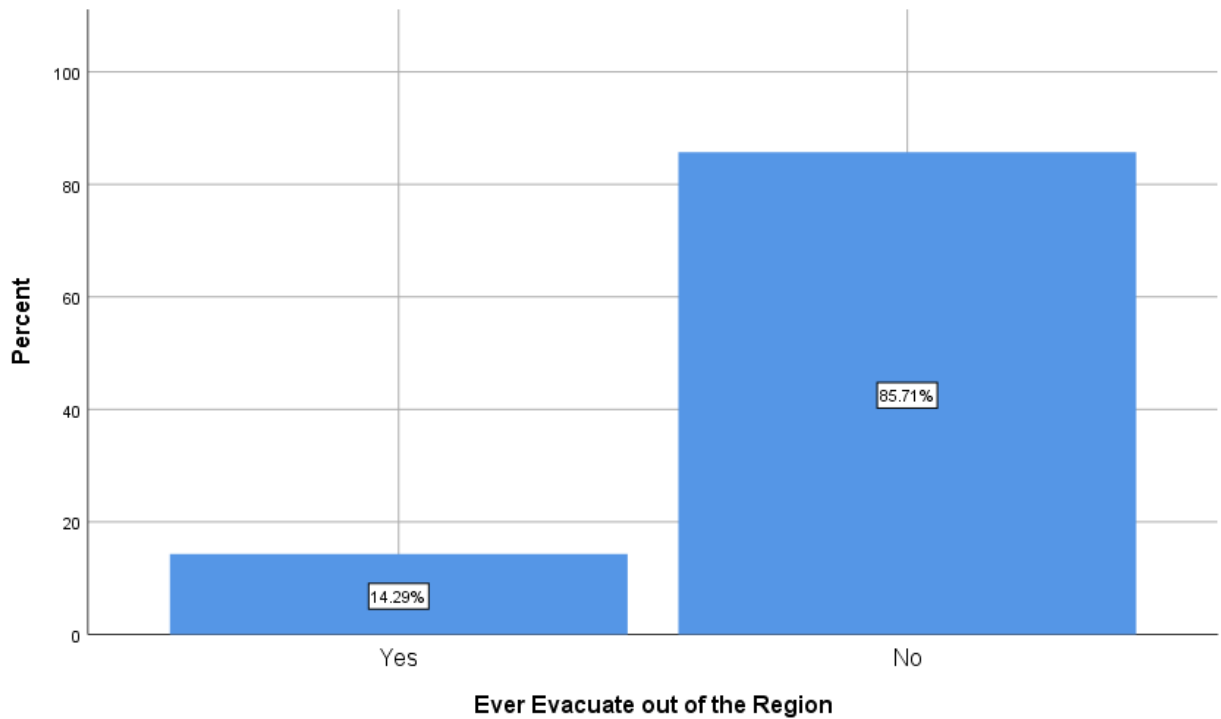
Many households that anticipate staying in the region and going to a public shelter are also more likely to use non-congregate public shelters, if offered. Almost 67 percent of households that plan to go to a public shelter report that being offered a hotel room as a shelter, rather than a centralized place such as a school, will increase the likelihood that the household will seek public shelter.



*Note:* For this variable, further analyses using the typical several control variables are not performed due to sample size and limited confidence in any inferences that may be made about differences found between and among variable attributes.

## Household has History of Evacuation Out of Region Due to Storm Threat

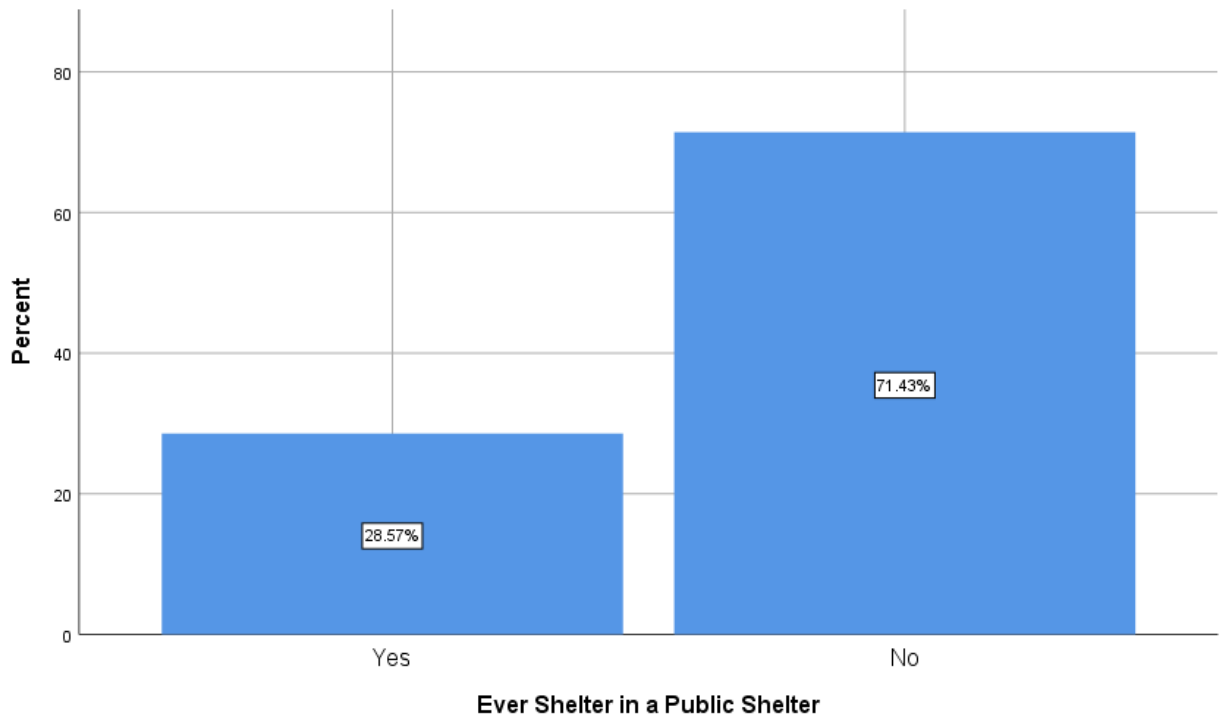
Among those households that anticipate seeking local public shelter should a significant storm approach Hampton Roads, above 14 percent report having ever evacuated out of the region in the past due to a storm.



*Note:* For this variable, further analyses using the typical several control variables are not performed due to sample size and limited confidence in any inferences that may be made about differences found between and among variable attributes.

## Household has History of Sheltering in Public Shelter Due to Storm Threat

Among those households that anticipate seeking local public shelter should a significant storm approach Hampton Roads, nearly 29 percent report having ever sheltered in the past in a public shelter due to a storm.



*Note:* For this variable, further analyses using the typical several control variables are not performed due to sample size and limited confidence in any inferences that may be made about differences found between and among variable attributes.

## Part 9: Branch 3 -- Evacuation out of the Hampton Roads Region

This Part 9 reports responses to Branch 3 questions. This line of inquiry is tailored specifically for the households that anticipate sheltering within Hampton Roads, although not within a public shelter.

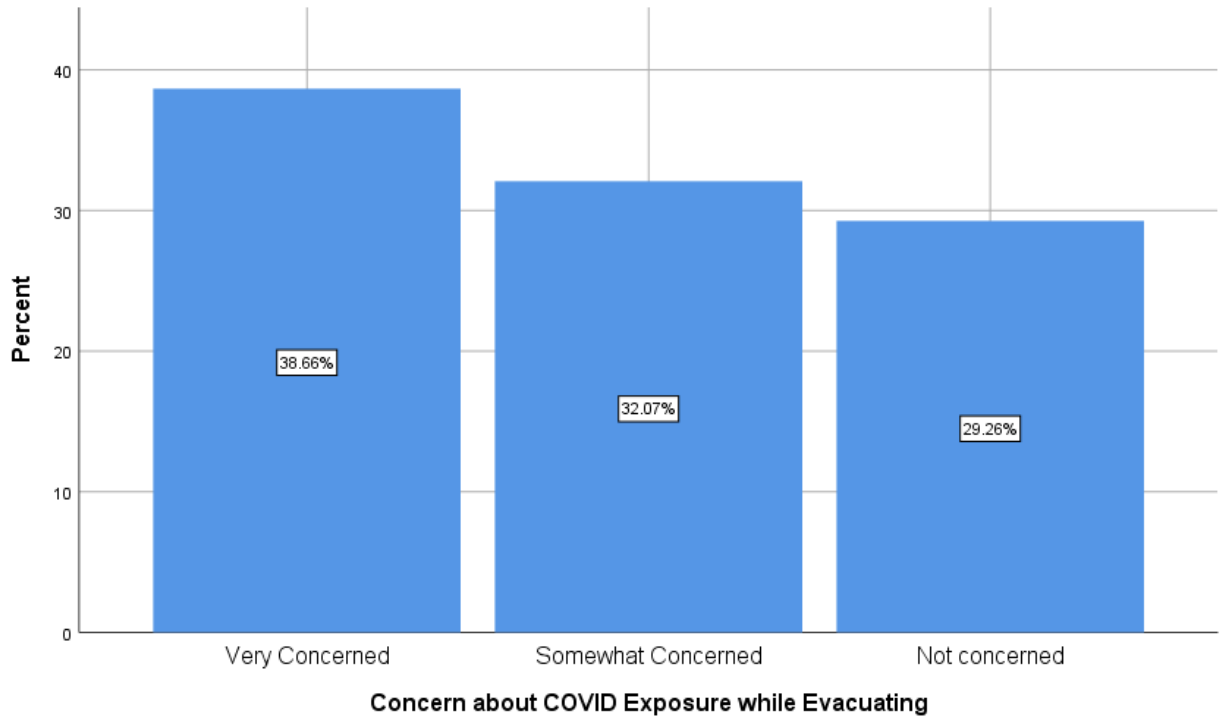
Each Branch Variable is further explored by controlling for seven key variables of interest:

1. Medically Fragile Household
2. Household Vulnerability
3. Household COVID Proximity
4. Low-to-Modest Income Household
5. Low and Modest Income Household
6. Granulated Household Income
7. Evacuation Zone

About 48 percent of households indicate they anticipate evacuating out of the region. These households were asked a series of questions regarding concerns about COVID exposure, reasons for not going to a public shelter, and whether their likelihood of going to a public shelter would increase given specific changes in shelter operations such as implementation of social distancing, vigorous cleaning schedules, and non-congregate options such as hotel rooms. They were also asked about their previous evacuation and sheltering experience.

## Concern about COVID Exposure while Evacuating

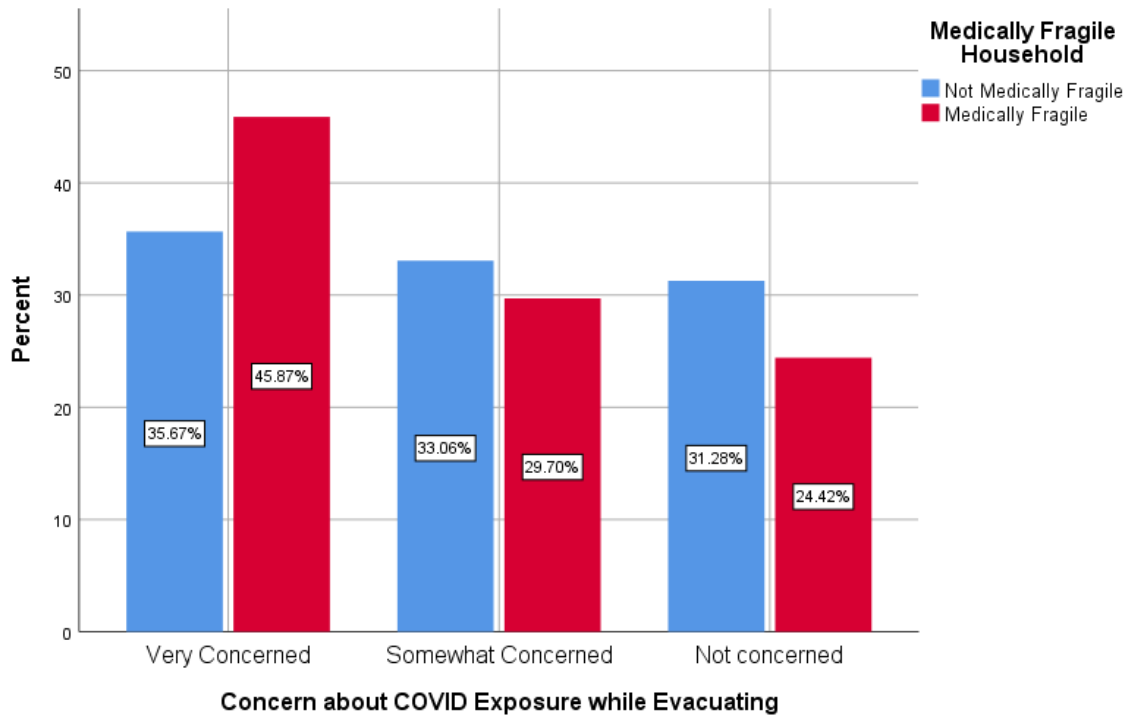
The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the level of concern about COVID exposure while evacuating. About 26.3 percent of households stating they anticipate evacuating indicate their household is not concerned about COVID while evacuating. In contrast, about 38.7 percent indicate being very concerned about COVID while evacuating.



..by..Medically Fragile Household

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across the categories within Concern about COVID Exposure while Evacuating (very, somewhat, and not concerned).

Medically fragile households, relative to not medically fragile households, are more likely to report being very concerned over COVID exposure while evacuating the region, nearly 46 percent and nearly 36 percent, respectively.

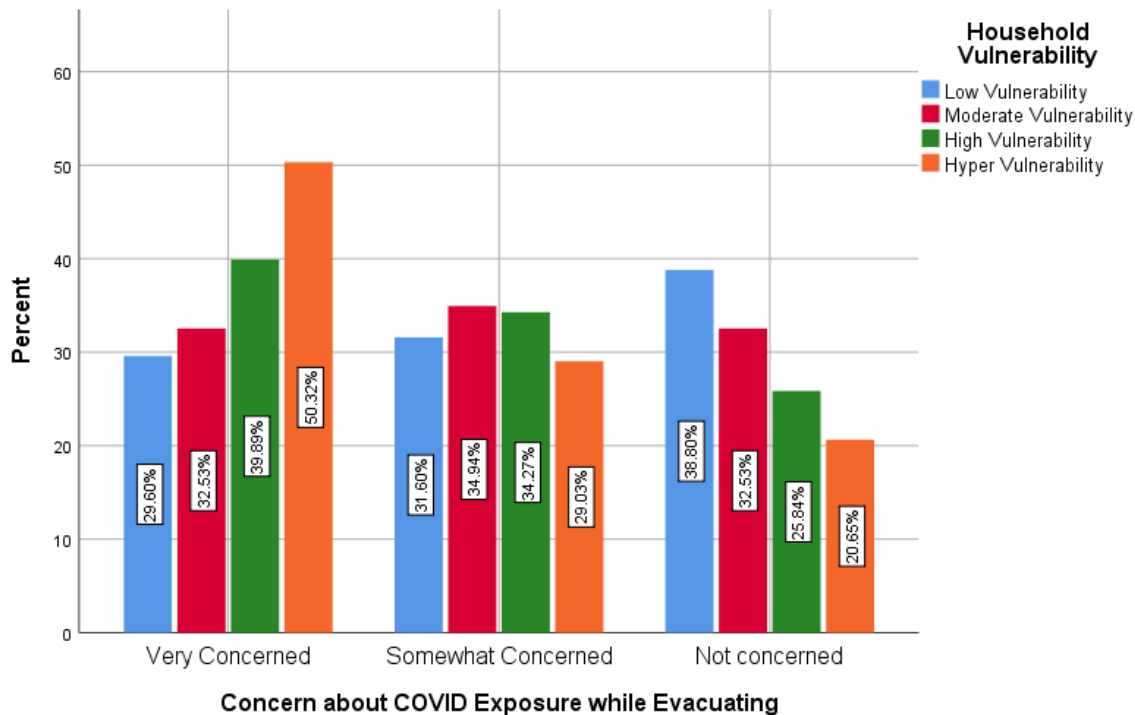


..by..Household Vulnerability

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across the categories within Concern about COVID Exposure while Evacuating (very, somewhat, and not concerned).

The higher the vulnerability the more likely the household reports being very concerned about COVID exposure. Hyper vulnerable households have the proportion of households reporting being very concerned about COVID exposure while evacuating, over 50 percent. In addition, about 30 percent of low vulnerability households, just under 33 percent of moderate vulnerability households, and about 40 percent of high vulnerability households are very concerned about exposure to COVID while evacuating.

In contrast, about 39 percent of low vulnerability households, 33 percent of moderate vulnerability households, 26 percent of high vulnerability households, and 21 percent of hyper vulnerability households are *not* concerned about COVID exposure while evacuating.

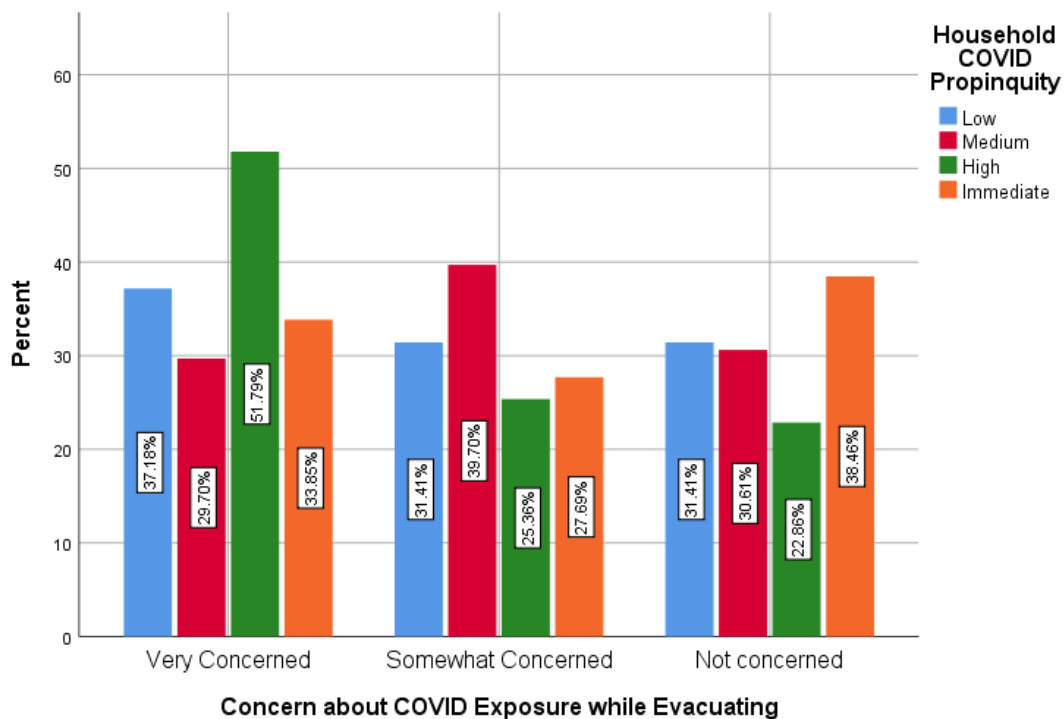




..by..Household COVID Propinquity

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across the categories within Concern about COVID Exposure while Evacuating (very, somewhat, and not concerned).

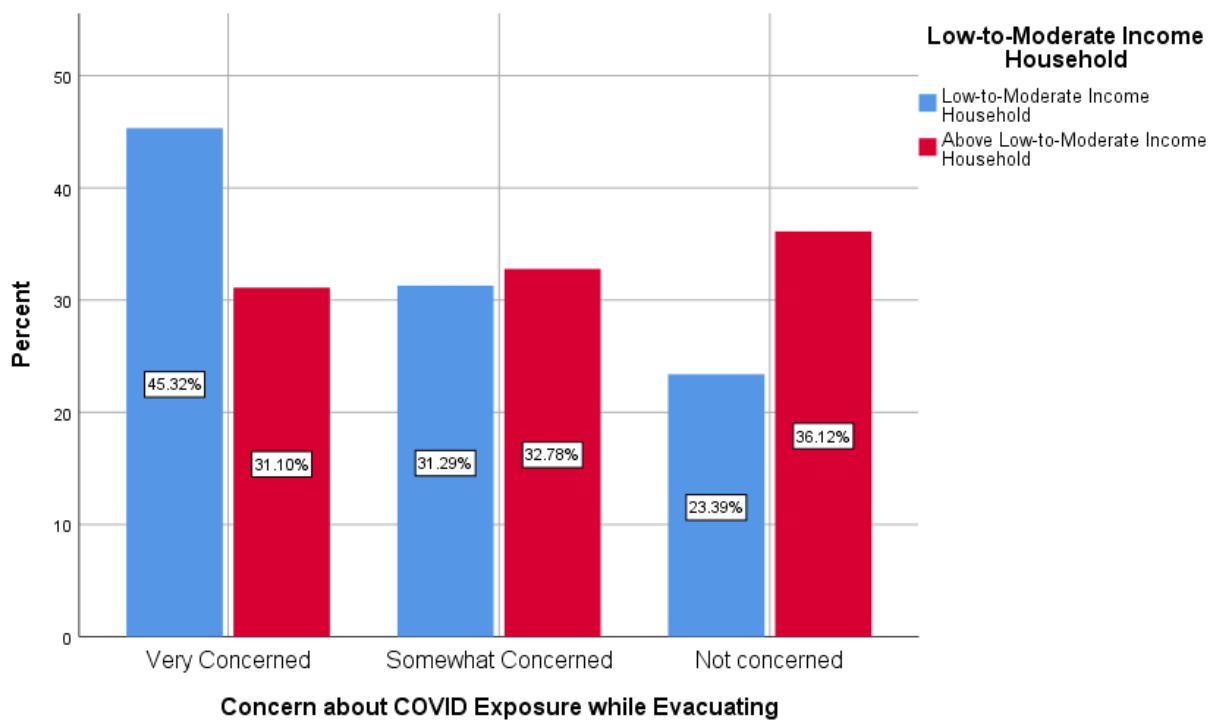
There does not appear to be a pattern between concern about COVID exposure and COVID propinquity. About 37 percent of low propinquity, just under 30 percent of medium propinquity, about 52 percent of high propinquity households and about 34 percent of immediate propinquity households were very concerned about COVID exposure while evacuating. Those that were not concerned about COVID exposure while evacuating included about 31 percent of low propinquity and medium propinquity households, 23 percent of high propinquity households and 38 percent of immediate propinquity households. Those that were somewhat concerned about virus exposure while evacuating included about 31 percent of low propinquity households, 39 percent of medium propinquity households, 25 percent of high propinquity households, and 28 percent of immediate propinquity households.



..by..Low-to-Moderate Income Household

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across the categories within Concern about COVID Exposure while Evacuating (very, somewhat, and not concerned).

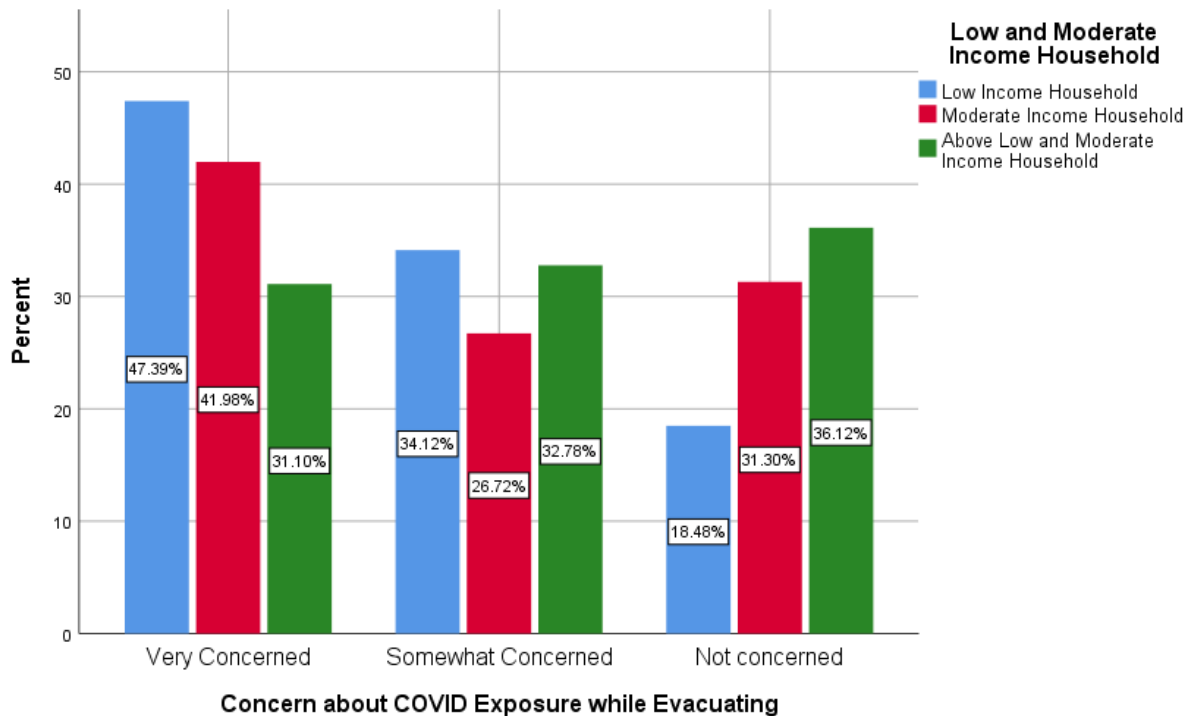
More LMI households were very concerned about COVID exposure while evacuating (45 percent of LMI households reported being very concerned), than above LMI households (31 percent of above LMI households). Among LMI households, about 45 percent were very concerned, 31 percent were somewhat concerned, and about 23 percent were not concerned about COVID exposure while evacuating. For households in the above LMI category, about 31 percent were very concerned, over 32 percent were somewhat concerned, and over 36 percent were not concerned about COVID exposure while evacuating.



..by..Low and Moderate Income Household

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across the categories within Concern about COVID Exposure while Evacuating (very, somewhat, and not concerned).

Being very concerned about COVID while evacuating is markedly higher among low income households relative to other income households. Over 31 percent of above moderate-income households, about 42 percent of moderate-income households, and about 47 percent of low-income households expressed being very concerned about COVID exposure while evacuating.

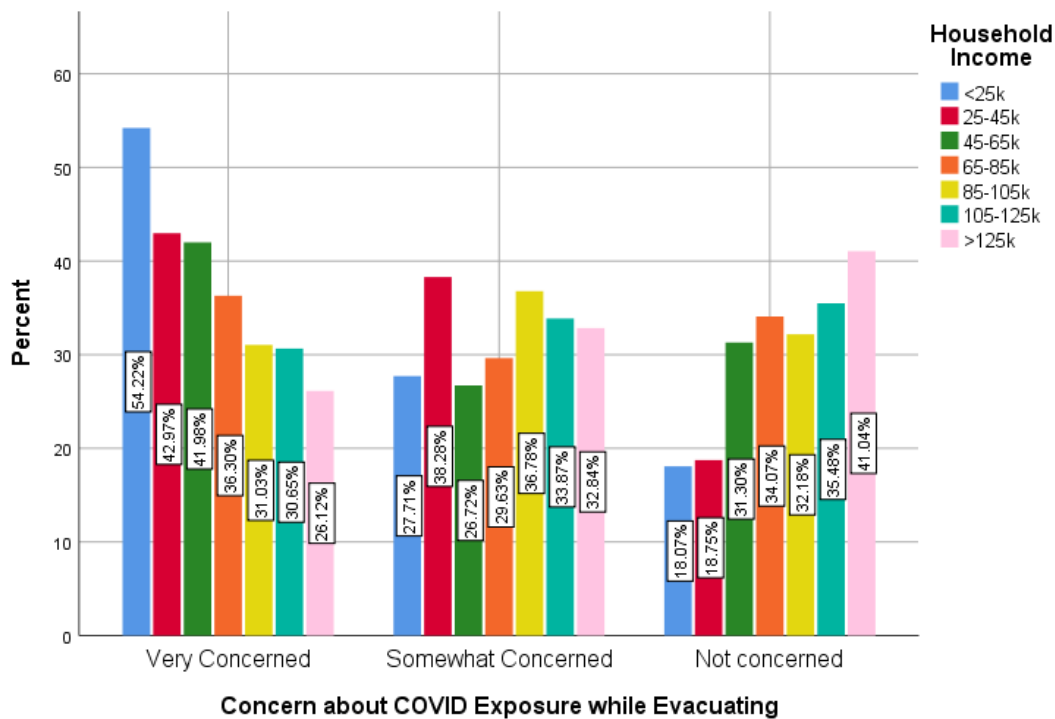


..by..Granulated Household Income

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Household Income (disaggregated into seven household income gradients) across the categories within Concern about COVID Exposure while Evacuating (very, somewhat, and not concerned).

Clearly, there is a relationship between household income and reporting being very concerned about COVID exposure while evacuating. About 52.2 percent of households with <25k income are very concerned. This proportion within each income gradient decreases as households income increases, with only 28.1 percent of households with incomes >125k report being very concerned.

Although this warrants further exploration, this may suggest that the exit and return logistics of households may be different for higher income households relative to lower income households in terms of frequency of social interaction. That is, low income households may perceive, and in fact may be the case, that they will frequently cross paths with others in the course of evacuating out of the region, obtaining shelter outside the region, and returning to the region. These variations in levels of exposure may be a function of household income.

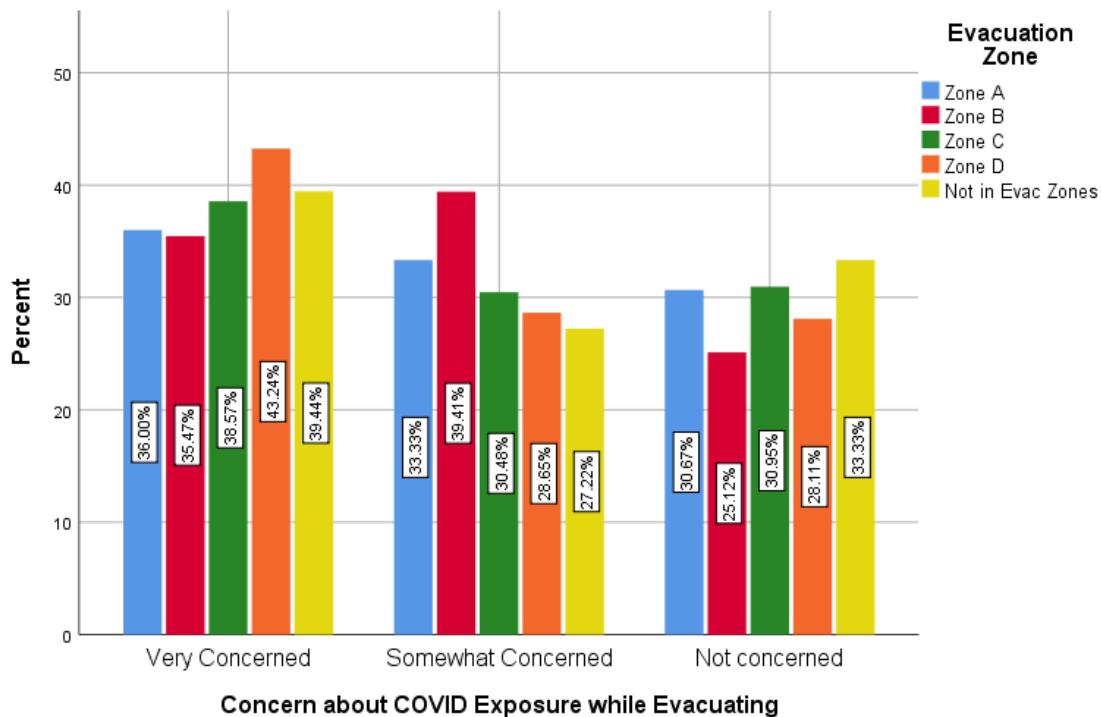


..by..Evacuation Zone

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across the categories within Concern about COVID Exposure while Evacuating (very, somewhat, and not concerned).

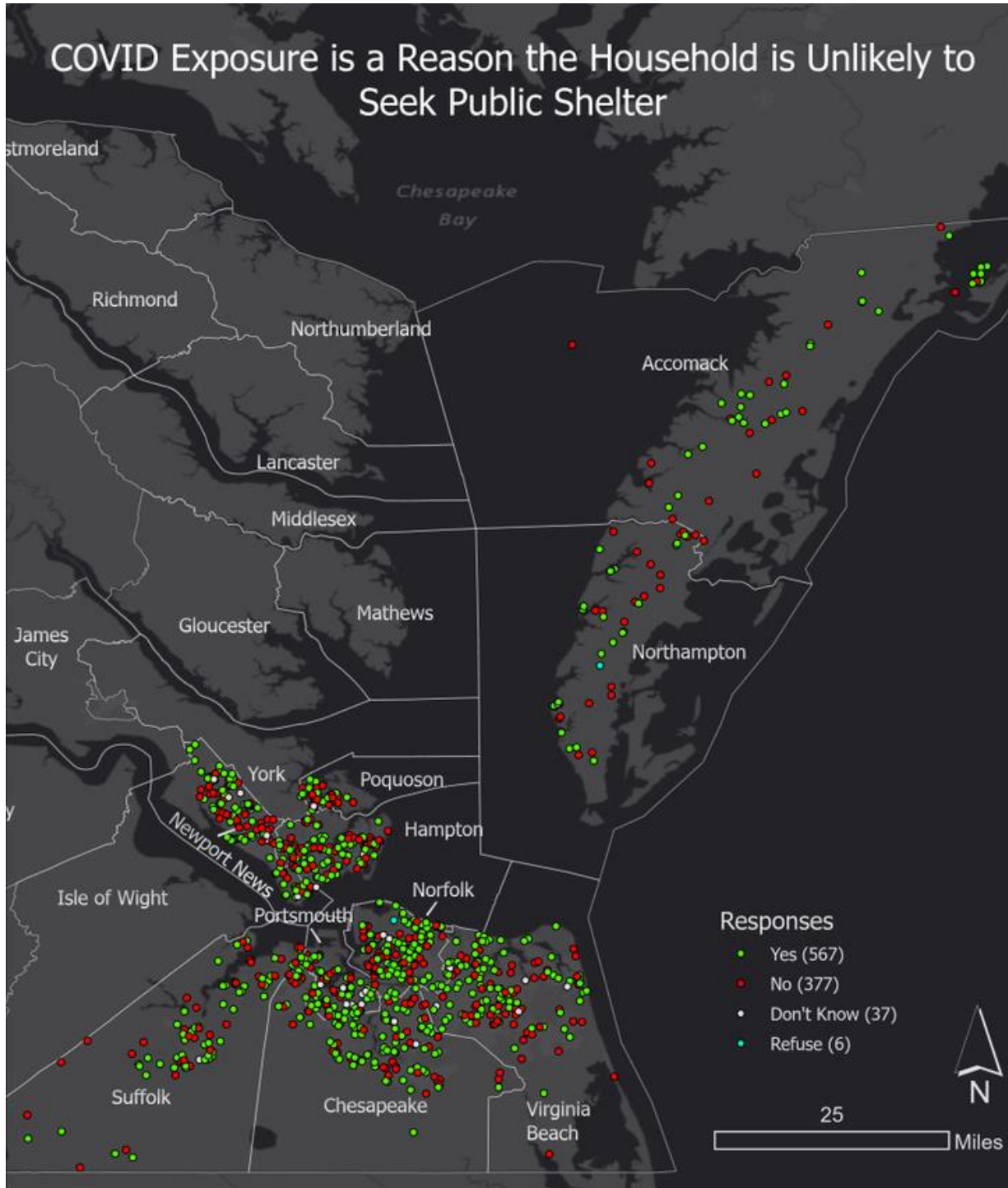
There is a general relationship between evacuation zone and being very concern about COVID exposure. Approximately 36 percent of households living in Zone A, about 35 percent of households living in Zone B, about 39 percent of households living in Zone C, and about 43 percent of households living in Zone D report being very concerned about COVID exposure while evacuating.

Approximately 33 percent of households living in Zone A, about 39 percent of households living in Zone B, about 30 percent of households living in Zone C, and about 29 percent of households living in Zone D report being somewhat concerned about COVID exposure while evacuating. Approximately 31 percent of households living in Zone A, about 25 percent of households living in Zone B, about 31 percent of households living in Zone C, and about 28 percent of households living in Zone D report not being concerned about COVID exposure while evacuating.



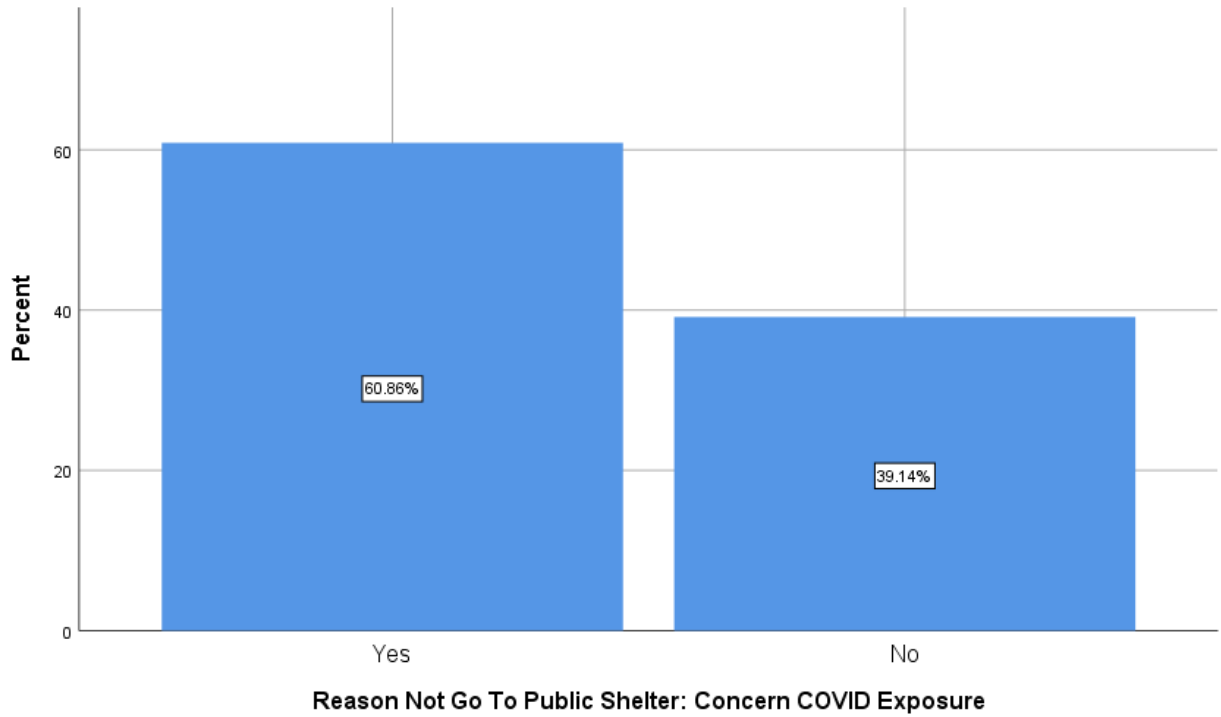
## Reason Not Go To Public Shelter: Concern COVID Exposure (Map)

The below map illustrates the general location of sampled households that report COVID exposure as being one of the reasons for not seeking local public shelter (precise location of geocoded dots is masked to assure anonymity).



## Reason Not Go To Public Shelter: Concern COVID Exposure

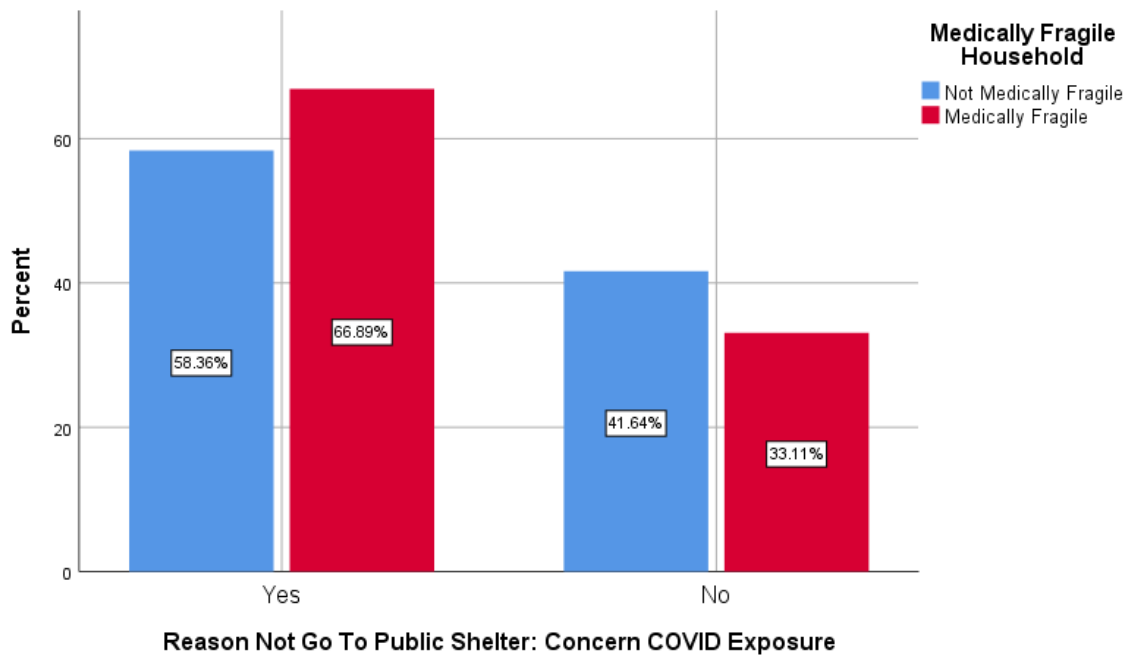
The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, about 61 percent of households report concerns related to COVID exposure as being one of the reasons the household is unlikely to seek public shelter. The seven charts on the following pages will examine this reason controlling for household characteristics.



..by..Medically Fragile Household

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across Reason Not Go To Public Shelter: Concern COVID Exposure (yes, no).

Medically fragile households, relative to not medically fragile households, are more likely to report concern about COVID exposure as a reason for the household not being likely to seek public shelter, nearly 67 percent and just over 58 percent, respectively.

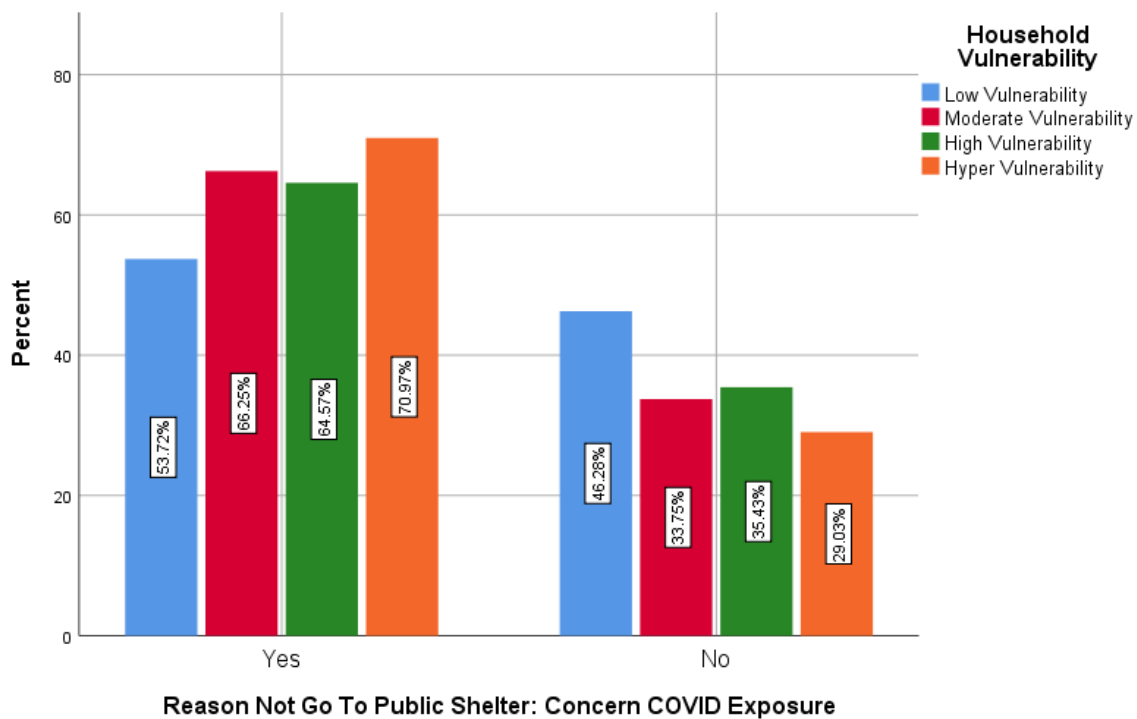




..by..Household Vulnerability

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across Reason Not Go To Public Shelter: Concern COVID Exposure (yes, no).

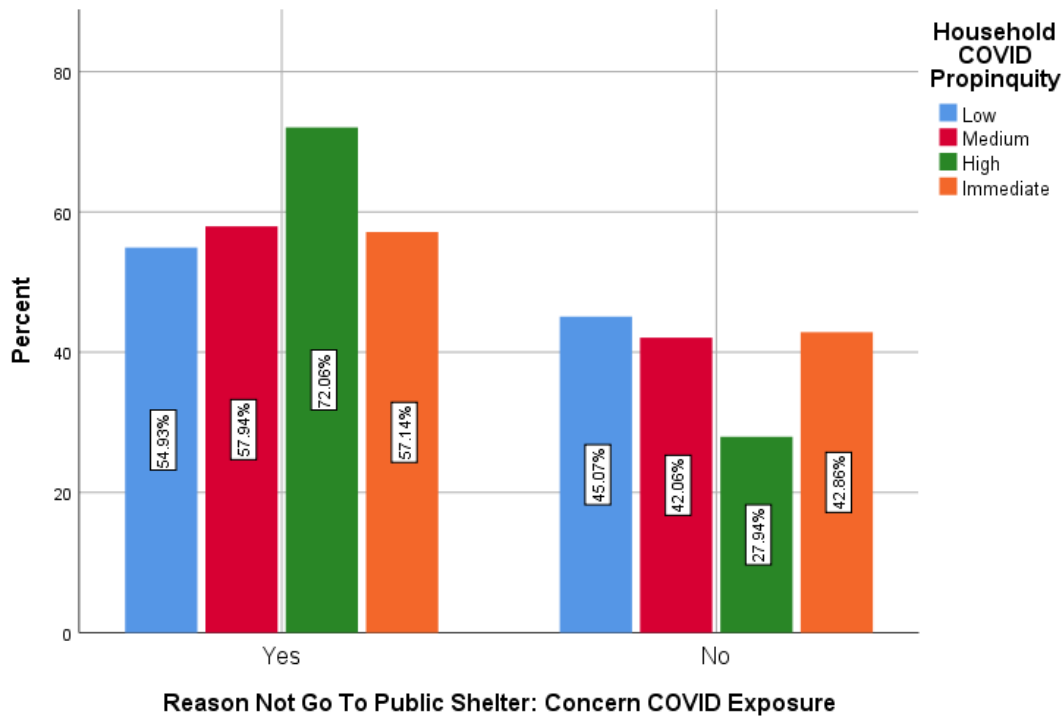
Hyper vulnerability households are more likely than low vulnerability households to cite concern about COVID exposure as one of the reasons for the household not seeking public shelter. As household vulnerability increased more households were slightly more likely to choose not to go to a public shelter due to concerns about exposure to the virus. Almost 54 percent of low vulnerability households, over 66 percent of moderate vulnerability households, almost 65 percent of high vulnerability households, and nearly 71 of hyper vulnerability households identified COVID as one of the reasons for not going to a public shelter.



..by..Household COVID Propinquity

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across Reason Not Go To Public Shelter: Concern COVID Exposure (yes, no).

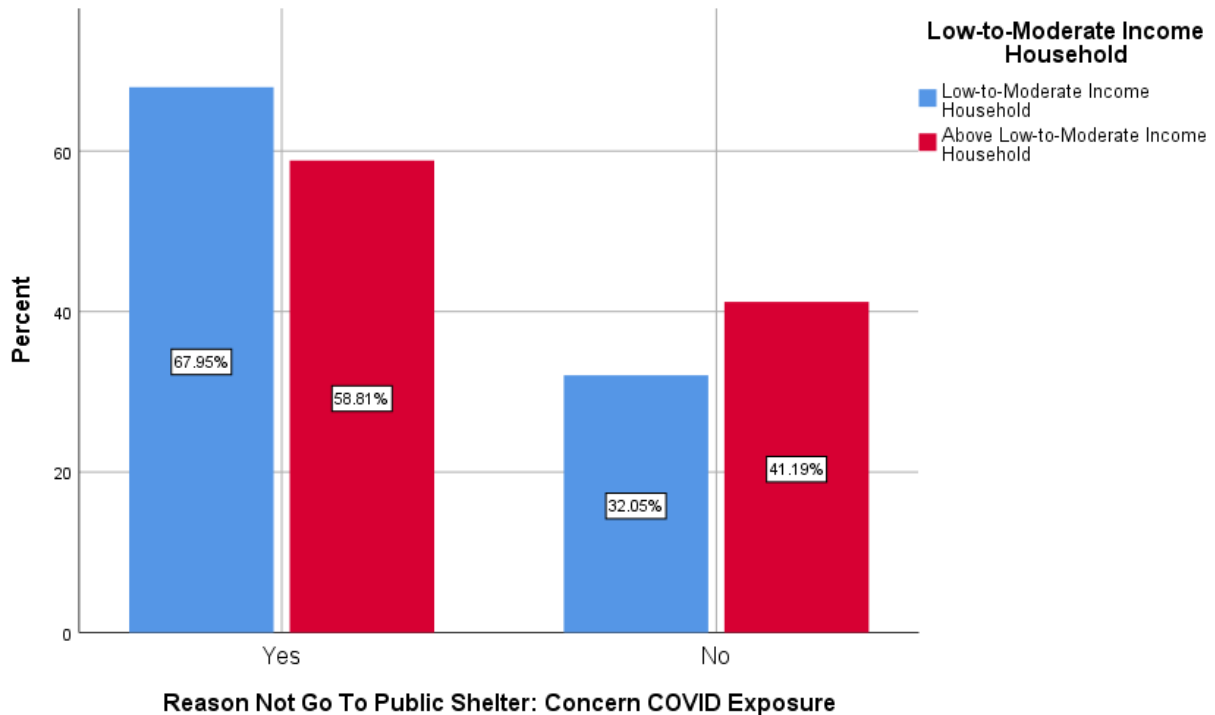
There does not appear to be a clear relationship between stating concern about COVID exposure being a reason for not seeking public shelter and household COVID propinquity. Specifically, the percentage of households within each household propinquity classification that cite concern over COVID exposure as a reason for not seeking public shelter are: low COVID propinquity (55 percent), medium COVID propinquity (58 percent), high COVID propinquity (72 percent) and immediate COVID propinquity (57 percent).



..by..Low-to-Moderate Income Household

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across Reason Not Go To Public Shelter: Concern COVID Exposure (yes, no).

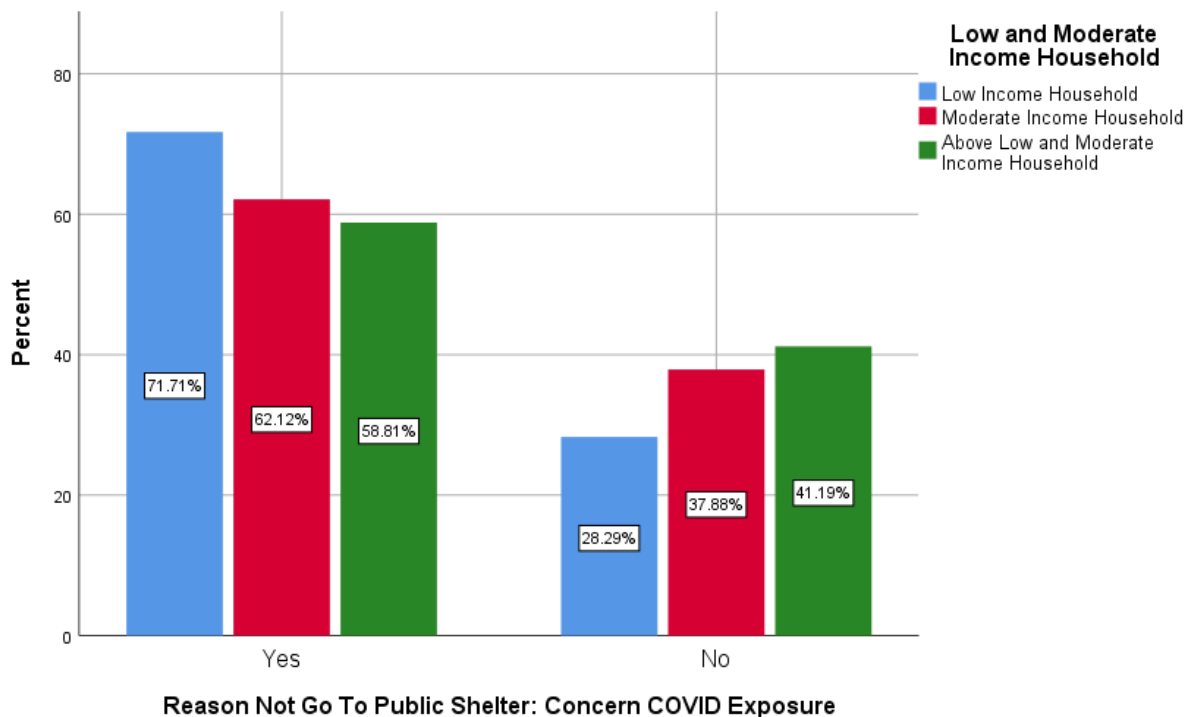
Low-to-moderate income households, relative to above low-to-moderate income households, are more likely to report concern about COVID exposure as a reason for the household not being likely to seek public shelter, nearly 68 percent and nearly 59 percent, respectively.



..by..Low and Moderate Income Household

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across Reason Not Go To Public Shelter: Concern COVID Exposure (yes, no).

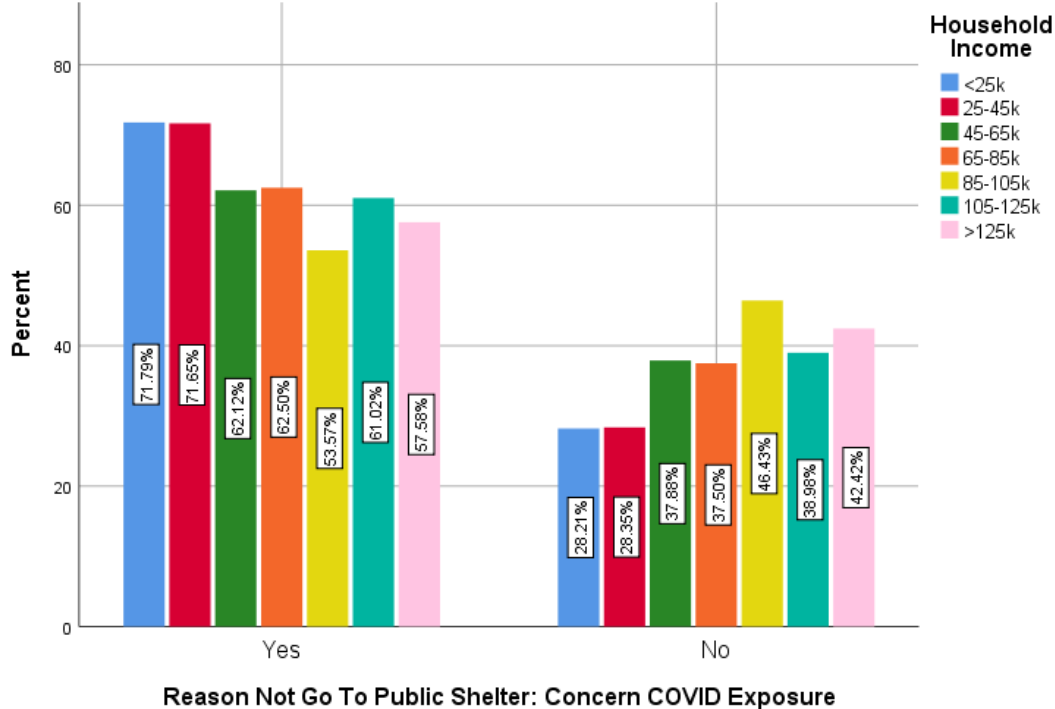
There is a clear relationship between stating concern about COVID exposure being a reason for not seeking public shelter and household income. About 72 percent of low income households, about 62 percent of moderate income households, and about 59 percent of above low and moderate income households indicate that concern about COVID exposure is one of the reasons for not going to a public shelter.



..by..Granulated Household Income

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Household Income (disaggregated into seven household income gradients) across Reason Not Go To Public Shelter: Concern COVID Exposure (yes, no).

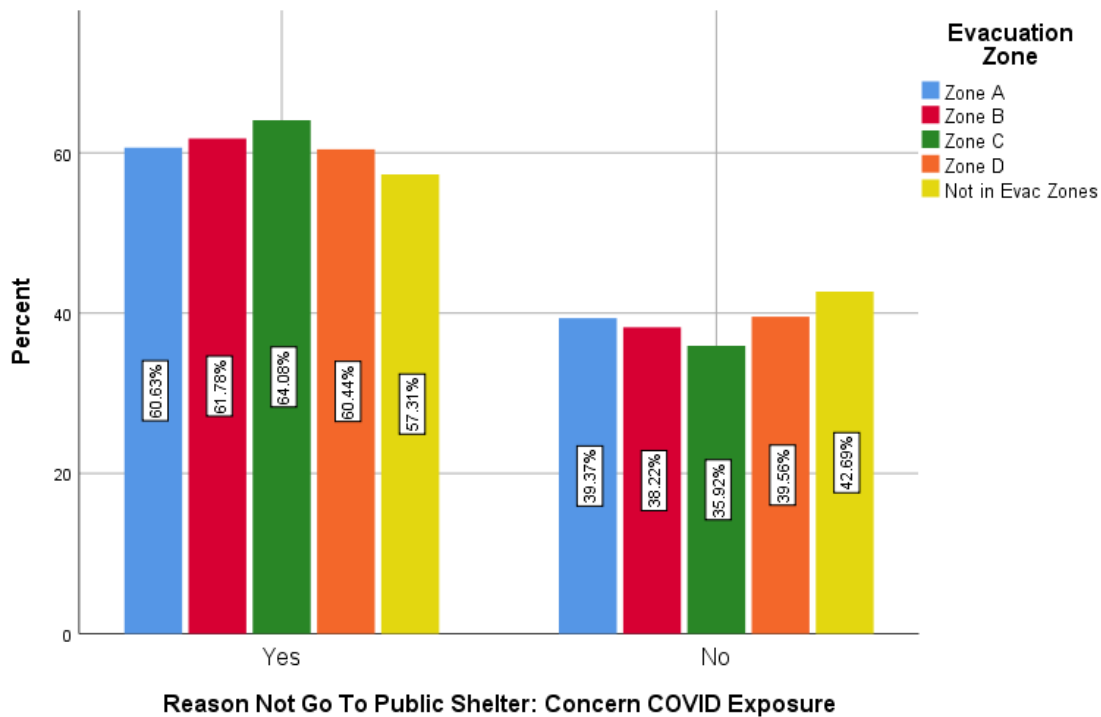
There is a general relationship between concern with COVID exposure and income, with lower income households more likely to report this as a concern conditioning sheltering behavior relative to higher income households. Roughly 72 percent of less than 45k households cite concern over COVID exposure being one of the reasons for not seeking public shelter, while for higher income households, such as those with incomes above 105k, this percentage is more than 10 percentage points less.



..by..Evacuation Zone

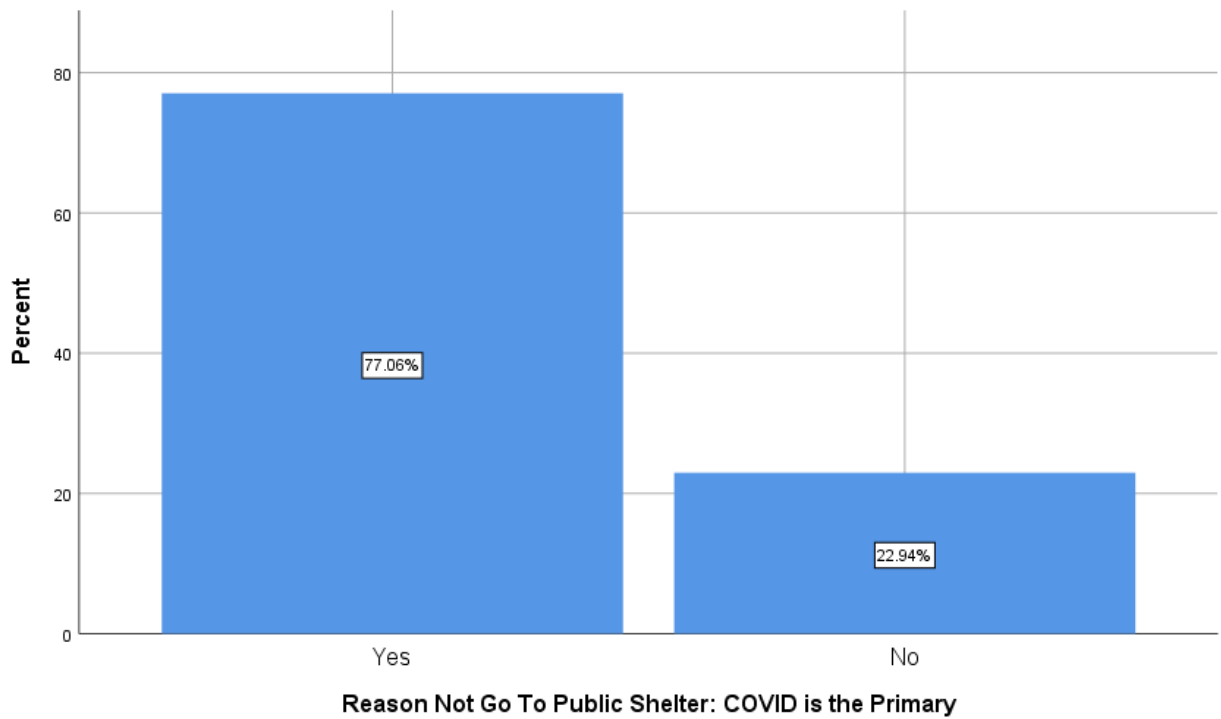
The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across Reason Not Go To Public Shelter: Concern COVID Exposure (yes, no).

Those households residing in evacuating Zone C are more likely to cite concern with COVID exposure (64.1 percent) as being a reason for not seeking local public shelter relative to households in other areas. However, there does not appear to be a clear relationship between concern over COVID exposure and location of households.



## Reason Not Go To Public Shelter: COVID is the Primary

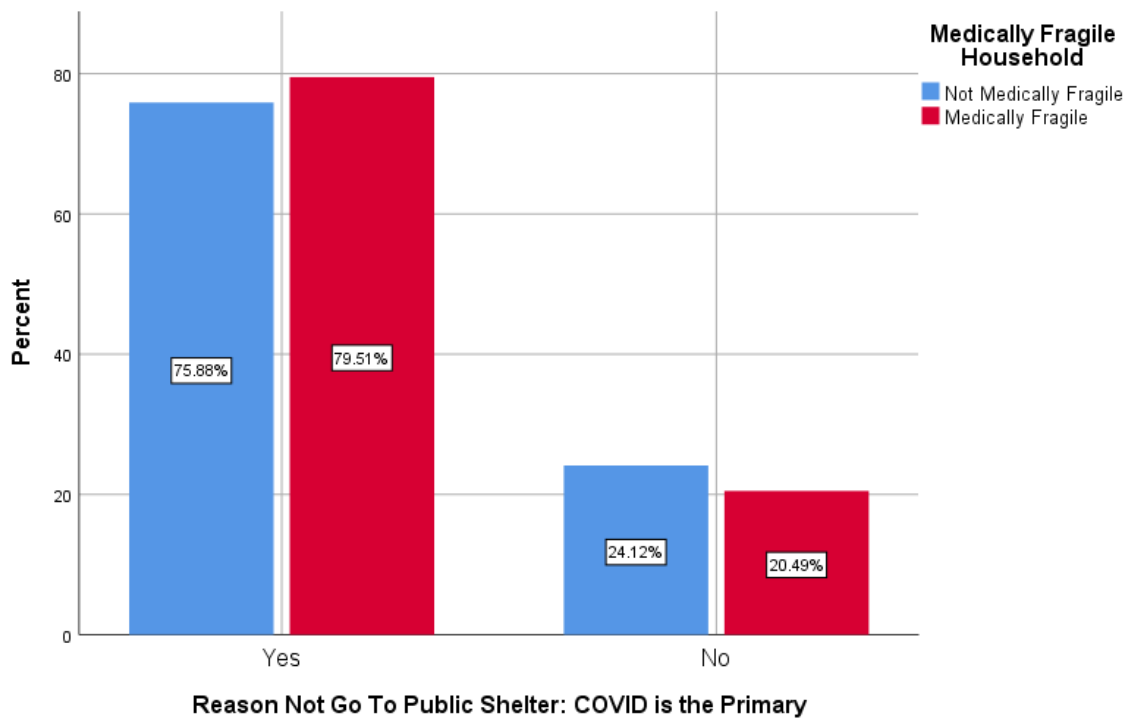
The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region and citing COVID as one of the reasons for not seeking public shelter, just over 77 percent of households cite concern about exposure to COVID as the *primary* reason the households are unlikely to seek local public shelter should a significant hurricane approach the region. The seven charts on the following pages will examine this reason controlling for household characteristics.



..by..Medically Fragile Household

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region and citing COVID as one of the reasons for not seeking public shelter, the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across Reason Not Go To Public Shelter: COVID is Primary (yes, no).

Medically fragile households, relative to not medically fragile households, are more likely to report COVID as the *primary* reason for not seeking local public shelter, about 80 percent and 76 percent, respectively.

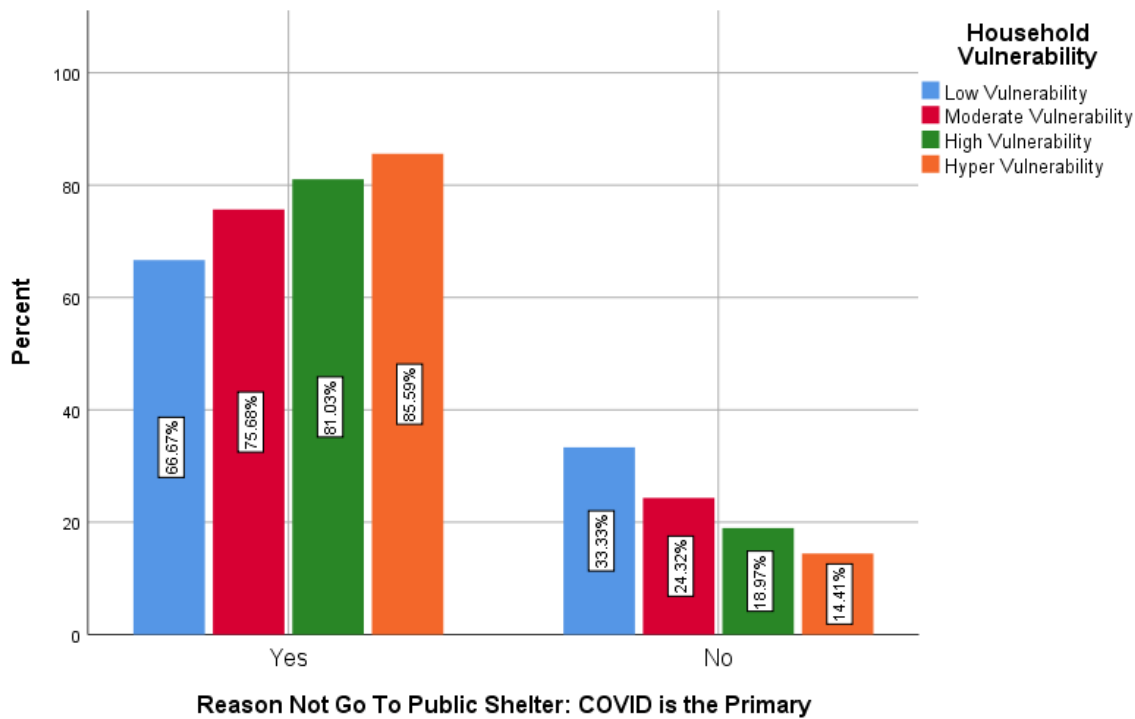




..by..Household Vulnerability

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region and citing COVID as one of the reasons for not seeking public shelter, the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across Reason Not Go To Public Shelter: COVID is Primary (yes, no).

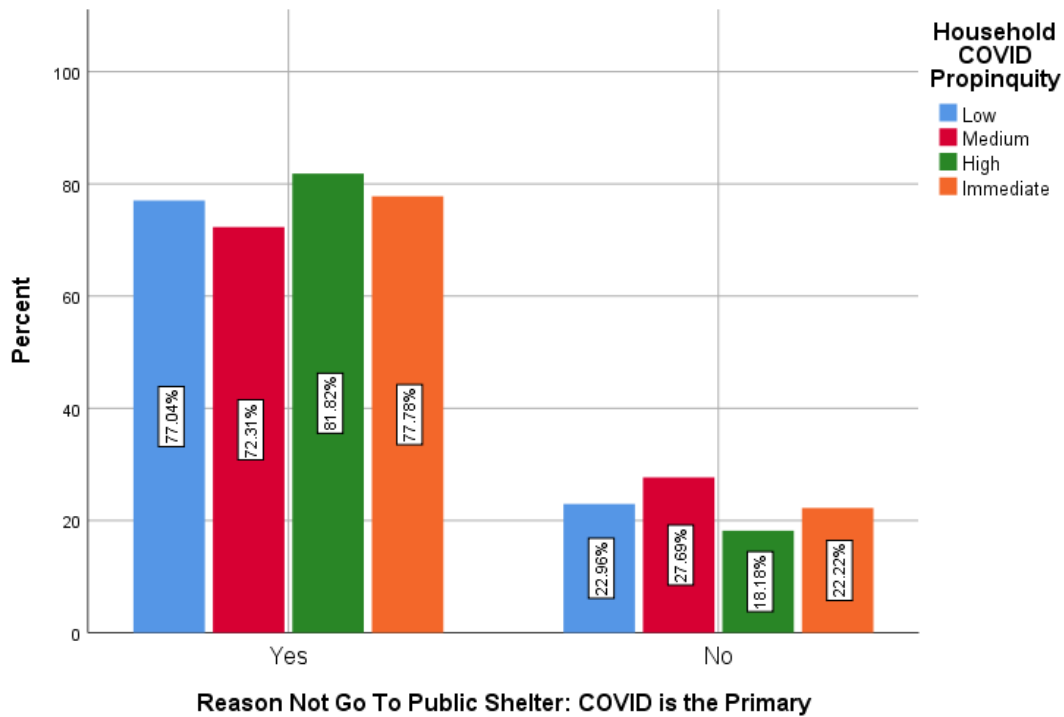
Household vulnerability is clearly related to citing COVID as the primary reason for not seeking public shelter. Hyper vulnerability households, relative to lower vulnerability households, are more likely to report COVID as the *primary* reason for not seeking local public shelter. Specifically: low vulnerability (67 percent), moderate vulnerability (76 percent), high vulnerability (81 percent) and hyper vulnerability (86 percent).



..by..Household COVID Propinquity

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region and citing COVID as one of the reasons for not seeking public shelter, the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across Reason Not Go To Public Shelter: COVID is Primary (yes, no).

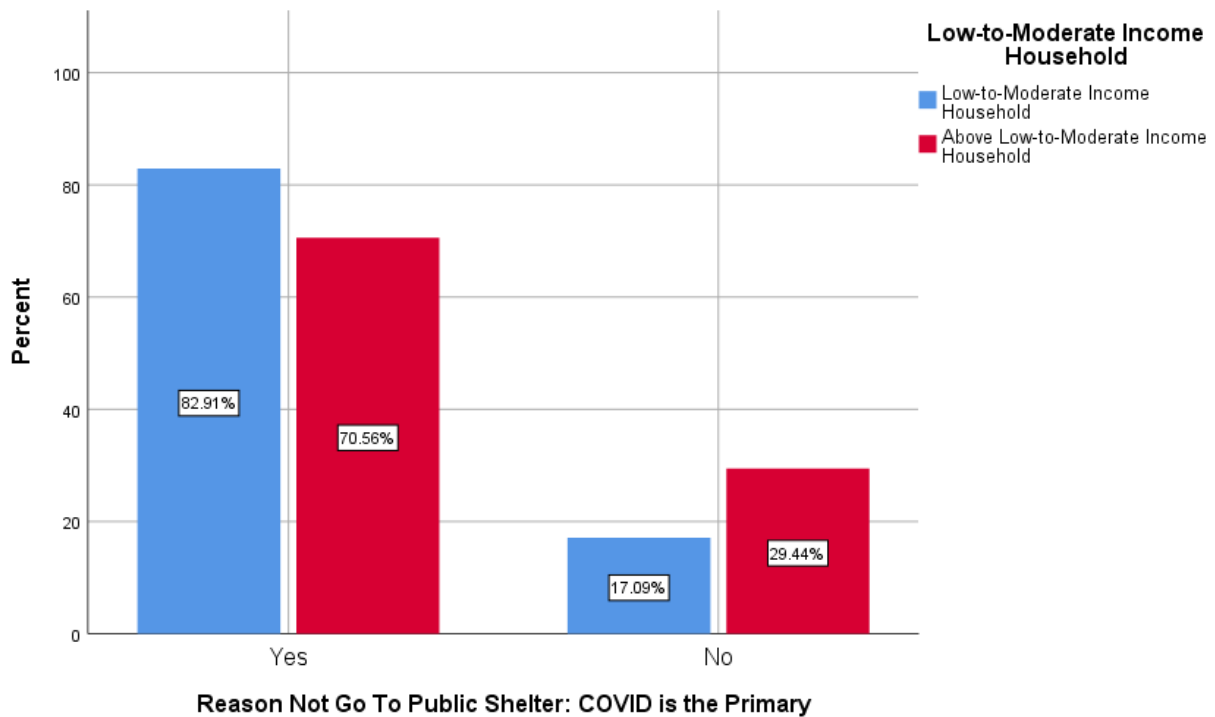
There does not appear to be a clear relationship between stating concern about COVID exposure being the primary reason for not seeking public shelter and household COVID propinquity. Specifically, the percentage of households within each household propinquity classification that cite COVID the primary reason are: low COVID propinquity (77 percent), medium COVID propinquity (72 percent), high COVID propinquity (83 percent) and immediate COVID propinquity (78 percent).



..by..Low-to-Moderate Income Household

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region and citing COVID as one of the reasons for not seeking public shelter, the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across Reason Not Go To Public Shelter: COVID is Primary (yes, no).

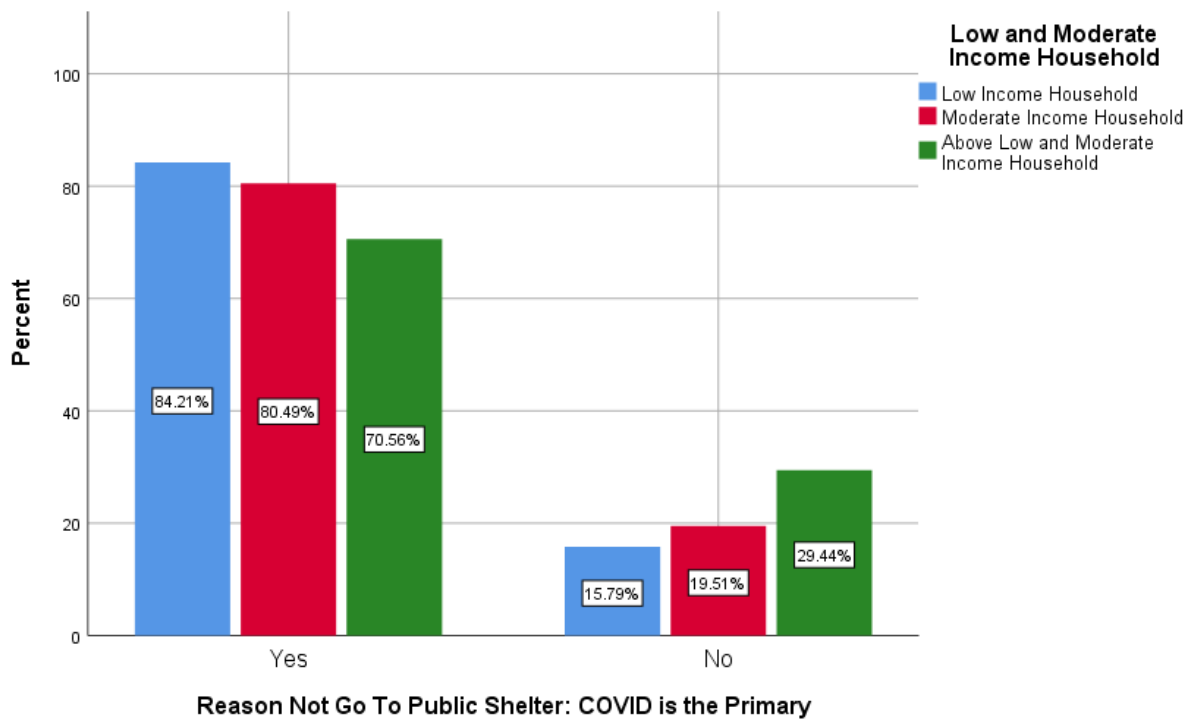
Low-to-moderate income households, relative to above low-to-moderate income households, are more likely to report COVID as the *primary* reason for not seeking local public shelter, nearly 83 percent and 71 percent, respectively.



..by..Low and Moderate Income Household

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region and citing COVID as one of the reasons for not seeking public shelter, the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across Reason Not Go To Public Shelter: COVID is Primary (yes, no).

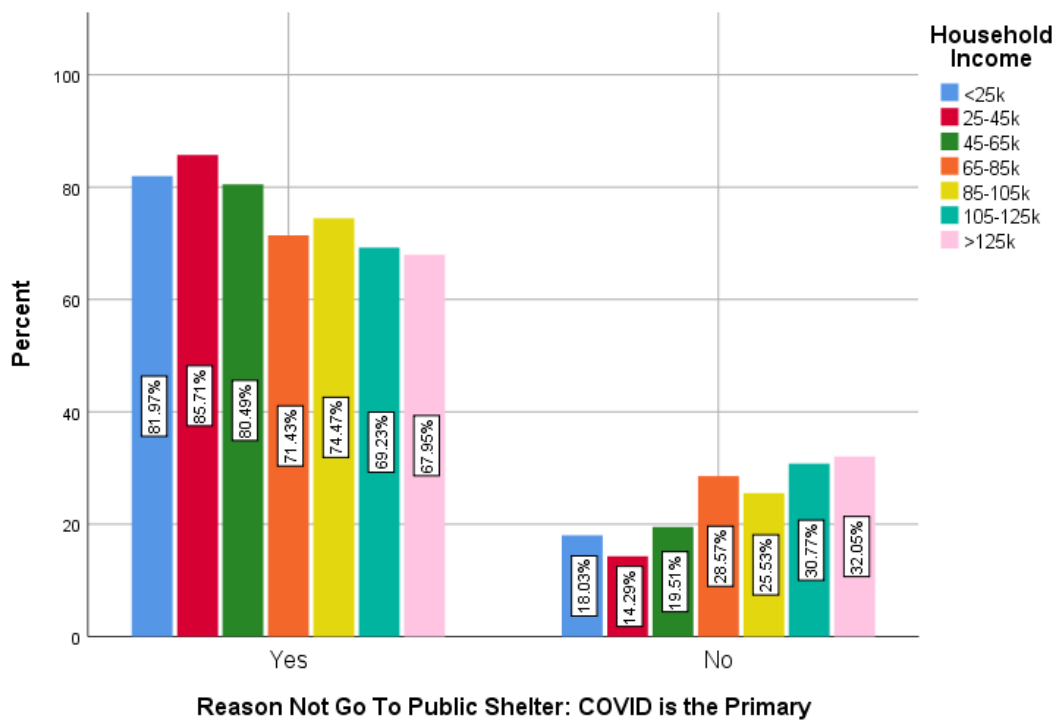
There appears a clear relationship between stating concern about COVID exposure being the primary reason for not seeking public shelter and household income. About 84 percent of low income households, over 81 percent of moderate income households, and about 72 percent of above low and moderate income households indicate that concern about COVID exposure is the primary reasons for not going to a public shelter.



..by..Granulated Household Income

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region and citing COVID as one of the reasons for not seeking public shelter, the proportions within Household Income (disaggregated into seven household income gradients) across Reason Not Go To Public Shelter: COVID is Primary (yes, no).

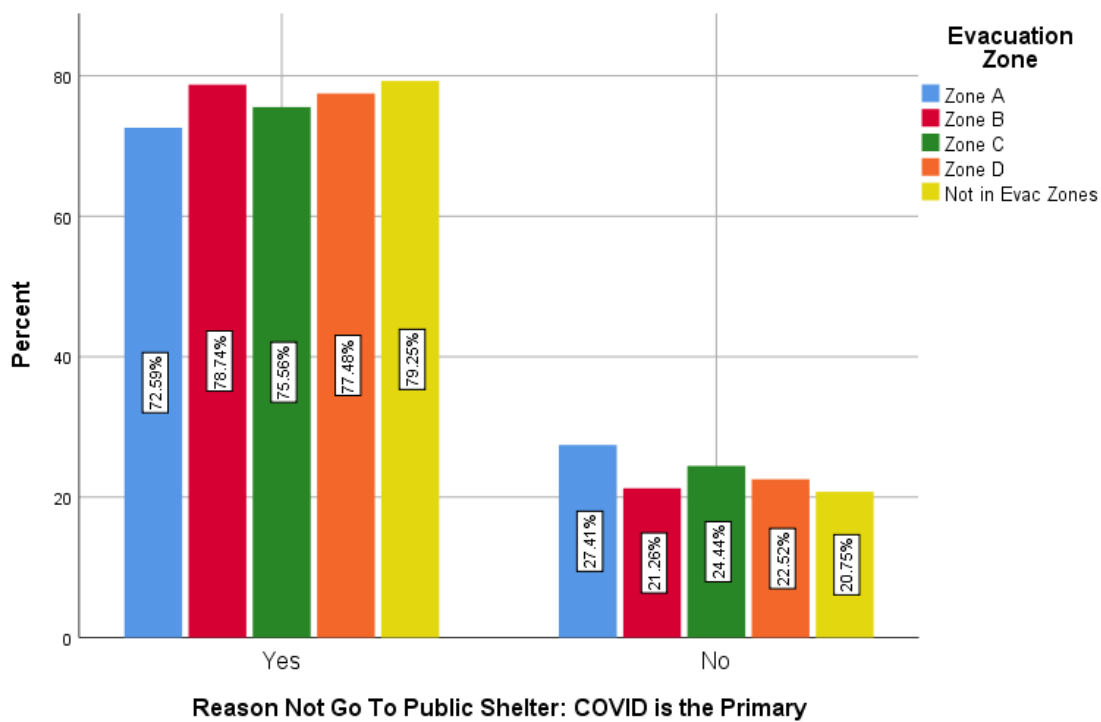
There appears a general relationship between stating concern about COVID exposure being the primary reason for not seeking public shelter and household income. There is more than 10 percentage points between lower income households and higher income households.



..by..Evacuation Zone

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region and citing COVID as one of the reasons for not seeking public shelter, the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across Reason Not Go To Public Shelter: COVID is Primary (yes, no).

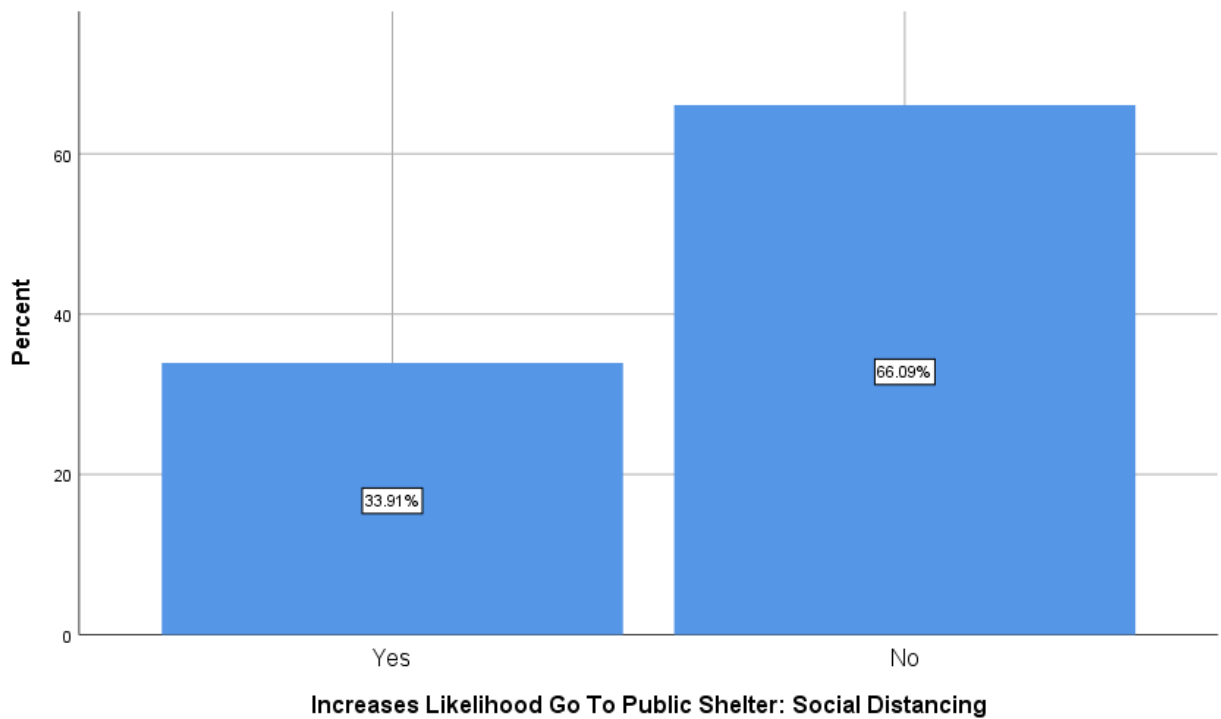
Those households not residing in an evacuation zone are more likely to cite concern with COVID exposure (64.1 percent) as being the primary reason for not seeking local public shelter relative to households in other areas. However, there does not appear to be a clear relationship between concern over COVID exposure as the primary reason not to seek public shelter and location of households.



## Increases Likelihood Go To Public Shelter: Social Distancing

Reductions in the number of persons and assurances of social distancing within the public shelter are changes to public shelter operations. Estimated are the impacts this operational change may have on the behavior of populations that anticipate evacuating out of the region.

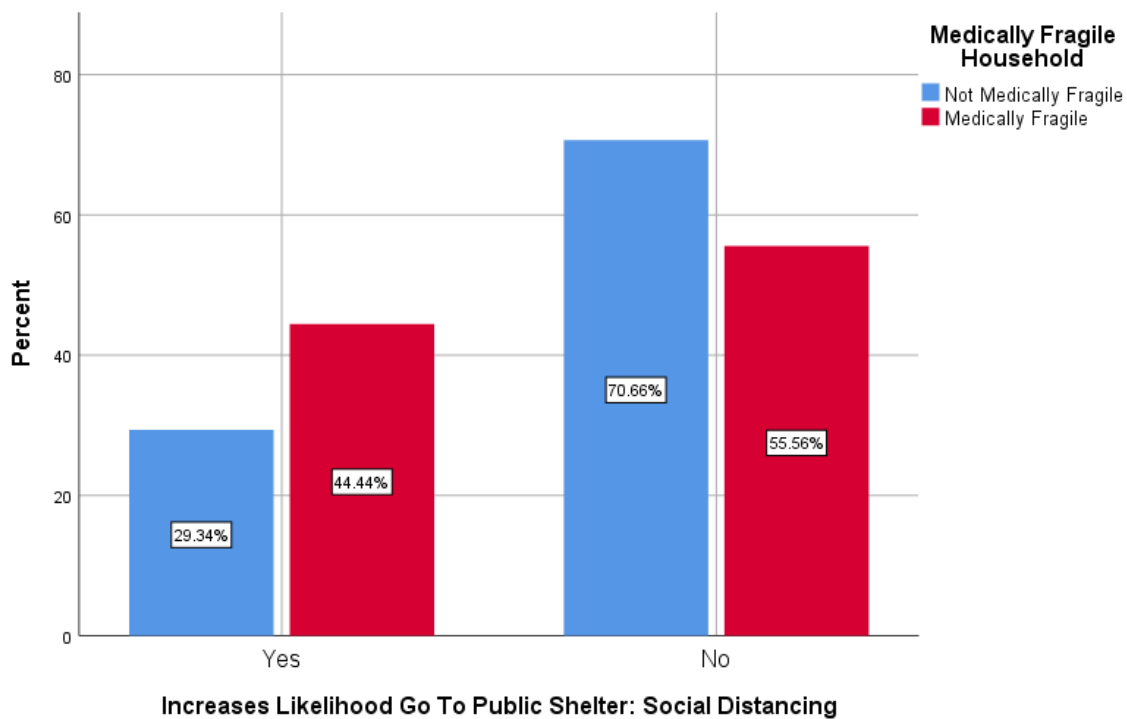
The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, that nearly 34 percent of the evacuating households may increase their likelihood of seeking local public shelter should there be reductions in the number of persons and assurances of social distancing. The seven charts on the following pages will examine this controlling for household characteristics.



..by..Medically Fragile Household

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across Increases Likelihood Go To Public Shelter: Social Distancing (yes, no).

Medically fragile households, relative to not medically fragile households, are more likely to seek public shelter given reductions in the number of persons and assurances of social distancing within the public shelter. Over 44 percent of medically fragile households and just over 29 percent of not medically fragile households are estimated to increase the likelihood of seeking public shelter given a reduction in the number of persons and assurances of social distancing within the public shelter.

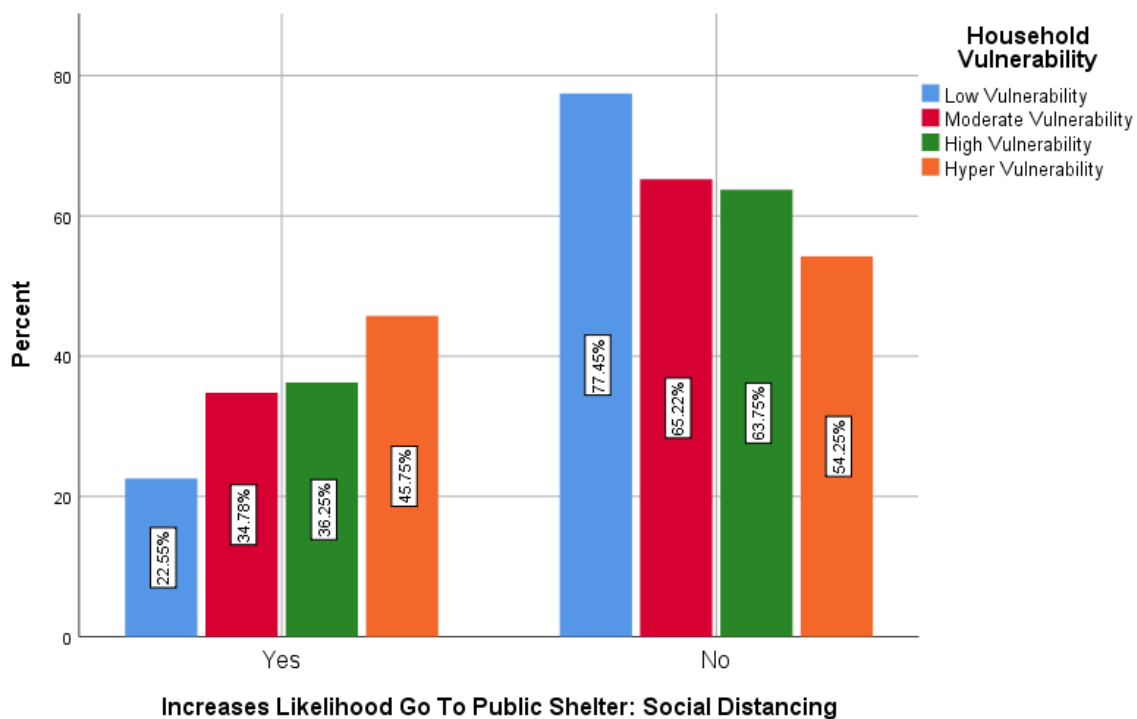




..by..Household Vulnerability

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across Increases Likelihood Go To Public Shelter: Social Distancing (yes, no).

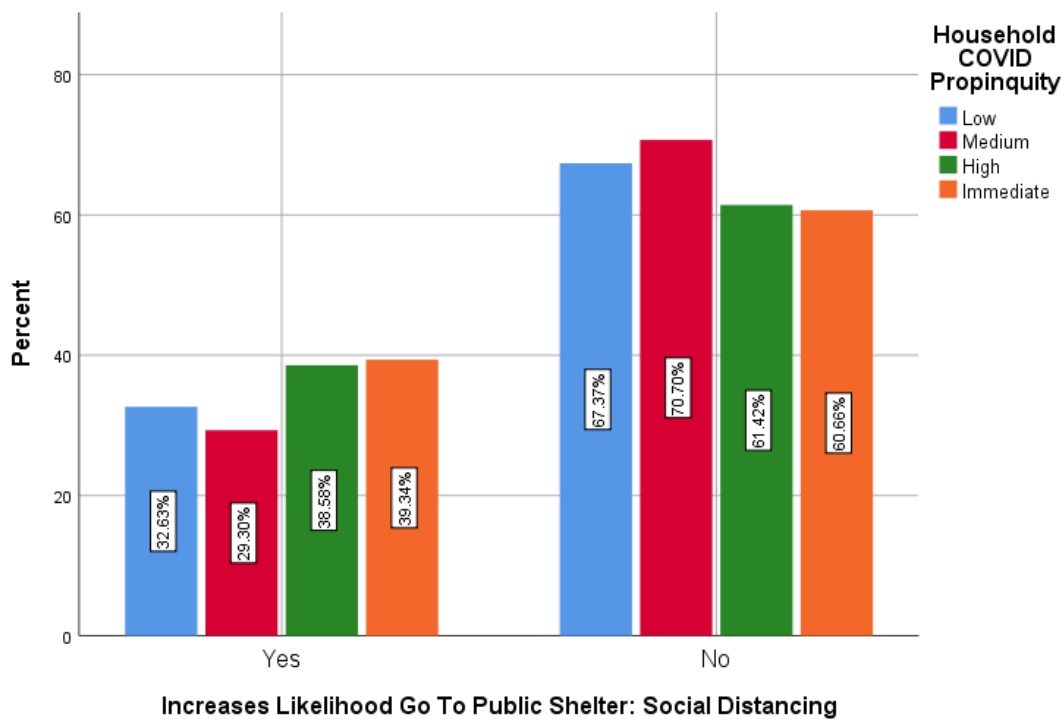
There appears a general relationship between increased likelihood to seek public shelter given reductions in the number of persons and assurances of social distancing within the public shelter and household vulnerability. Hyper vulnerability households, relative to low vulnerability households, are more likely to change behavior, nearly 46 percent and nearly 23 percent, respectively. Specifically: low vulnerability households (23 percent), moderate vulnerability households (35 percent), high vulnerability households (36 percent) and hyper vulnerability households (46 percent).



..by..Household COVID Propinquity

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across Increases Likelihood Go To Public Shelter: Social Distancing (yes, no).

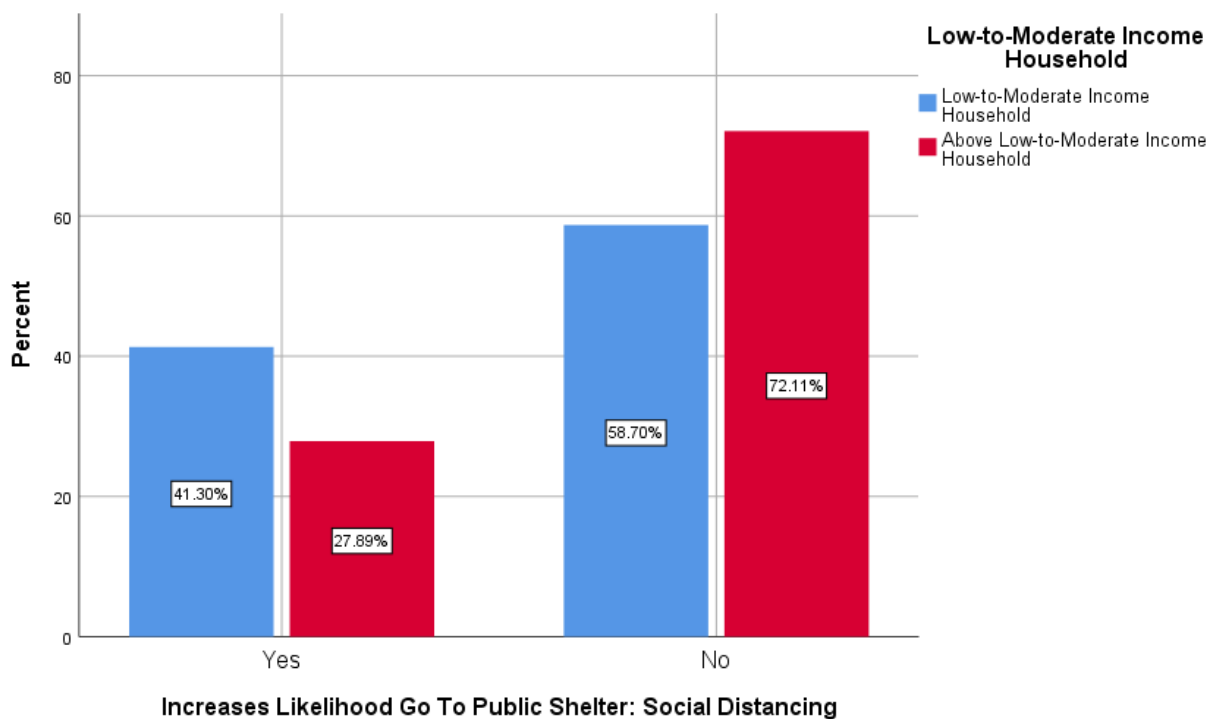
Immediate and high COVID propinquity households, relative to low and medium COVID propinquity households, are more likely to seek public shelter given reductions in the number of persons and assurances of social distancing within the public shelter. For low to medium COVID propinquity about 29-33 percent of household would be more likely to go to a public shelter, and about 39 percent of households with high to immediate COVID propinquity would be more likely to go to a public shelter with strict social distancing.



..by..Low-to-Moderate Income Household

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across Increases Likelihood Go To Public Shelter: Social Distancing (yes, no).

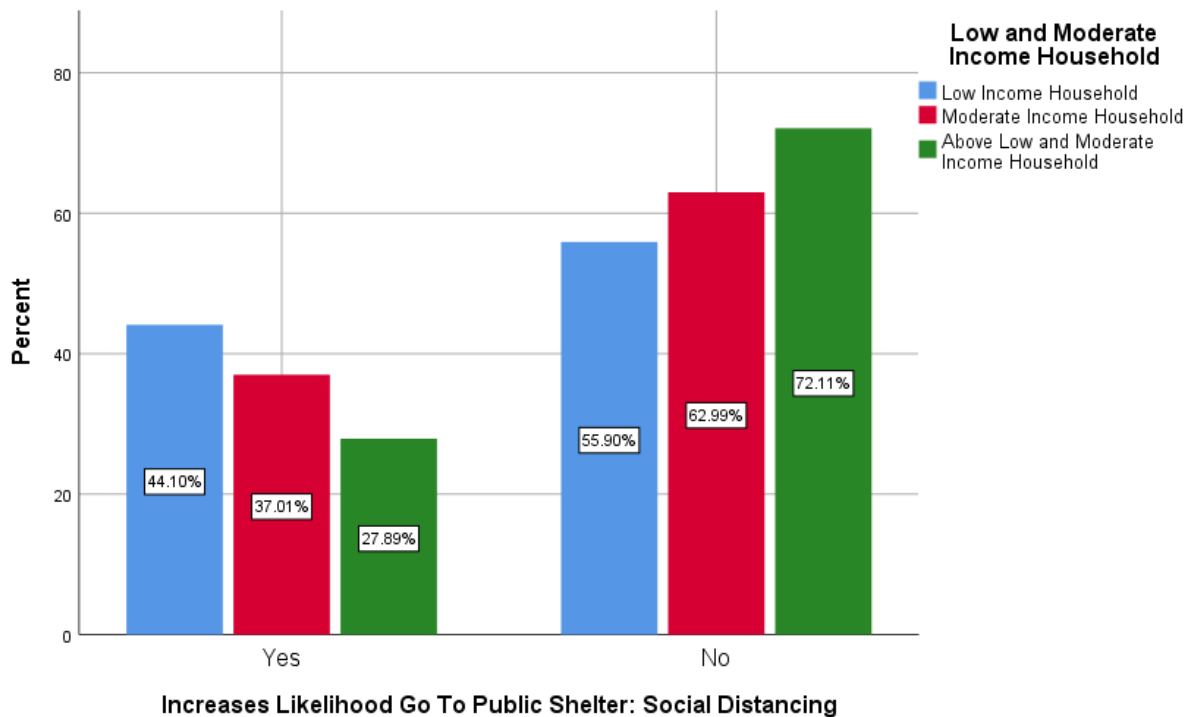
Low-to-moderate income households, relative to above low-to-moderate income households, are more likely to seek public shelter given reductions in the number of persons and assurances of social distancing within the public shelter. Over 15 percent of low-to-moderate income households and 13 percent of above low-to-moderate income households are estimated to increase the likelihood of seeking public shelter given a reduction in the number of persons and assurances of social distancing within the public shelter.



..by..Low and Moderate Income Household

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across Increases Likelihood Go To Public Shelter: Social Distancing (yes, no).

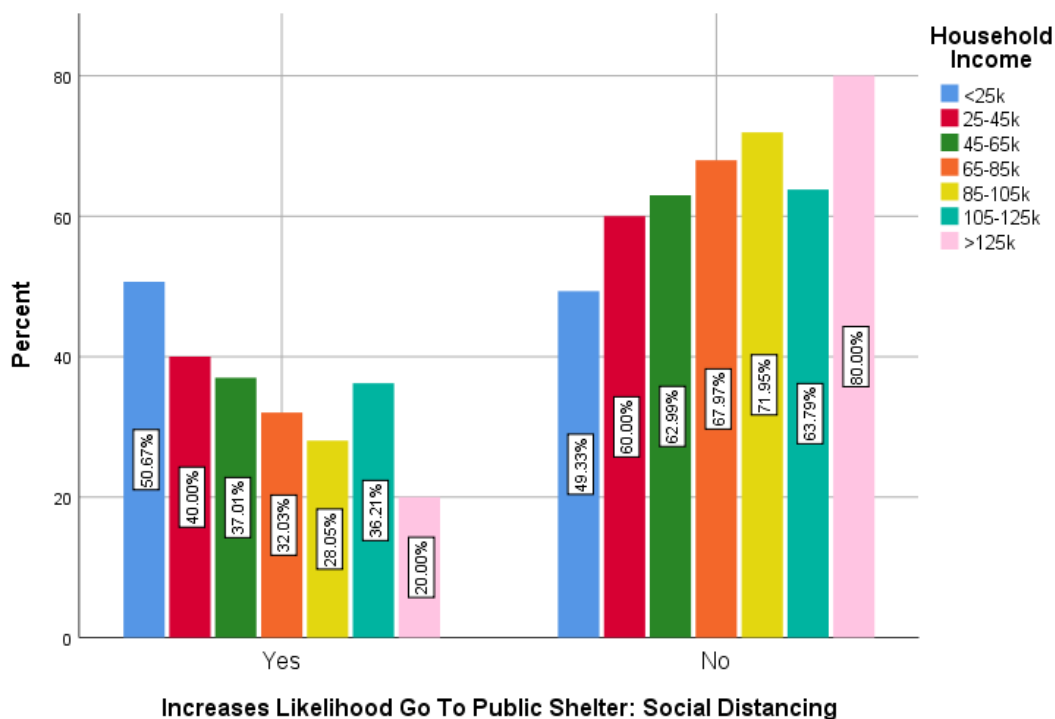
Low income households, relative to other income households, are more likely to seek public shelter given reductions in the number of persons and assurances of social distancing within the public shelter. About 44 percent of low income households, 37 percent moderate income households, and 28 percent of above low and moderate income households are estimated to increase the likelihood of seeking public shelter given a reduction in the number of persons and assurances of social distancing within the public shelter.



..by..Granulated Household Income

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Household Income (disaggregated into seven household income gradients) across Increases Likelihood Go To Public Shelter: Social Distancing (yes, no).

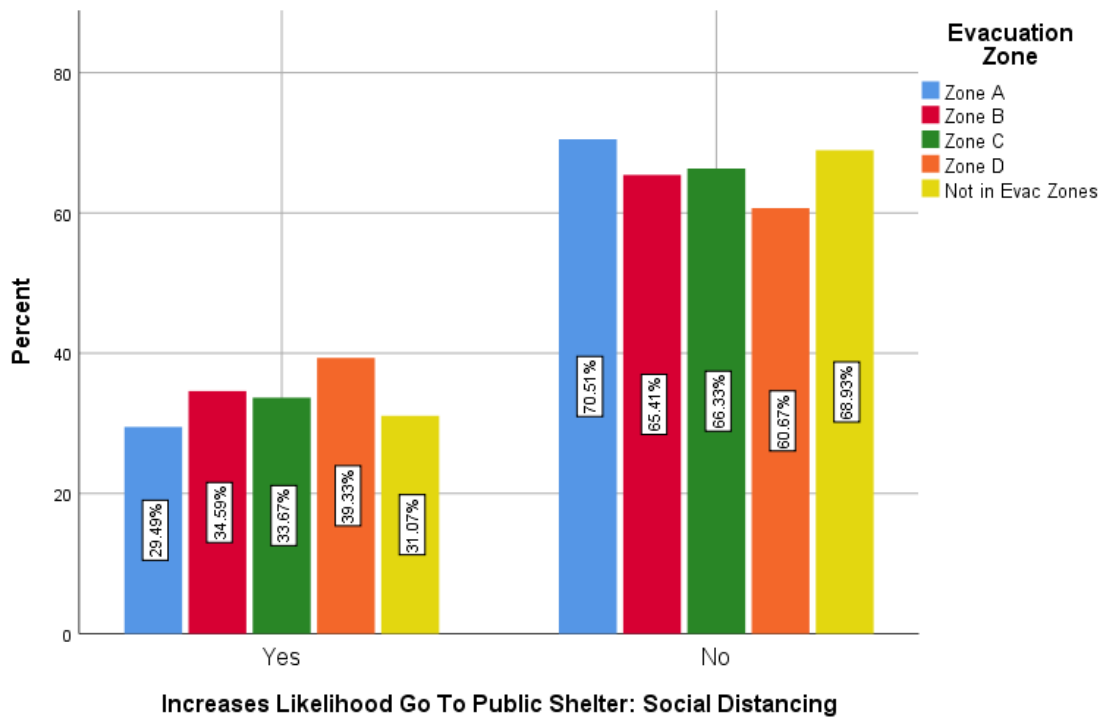
There appears a general decrease across granulated income categories. Nearly 51 percent of households with incomes <25k are likely to seek public shelter given reductions in the number of persons and assurances of social distancing within the public shelter. This is more likely relative to the other income households.



..by..Evacuation Zone

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across Increases Likelihood Go To Public Shelter: Social Distancing (yes, no).

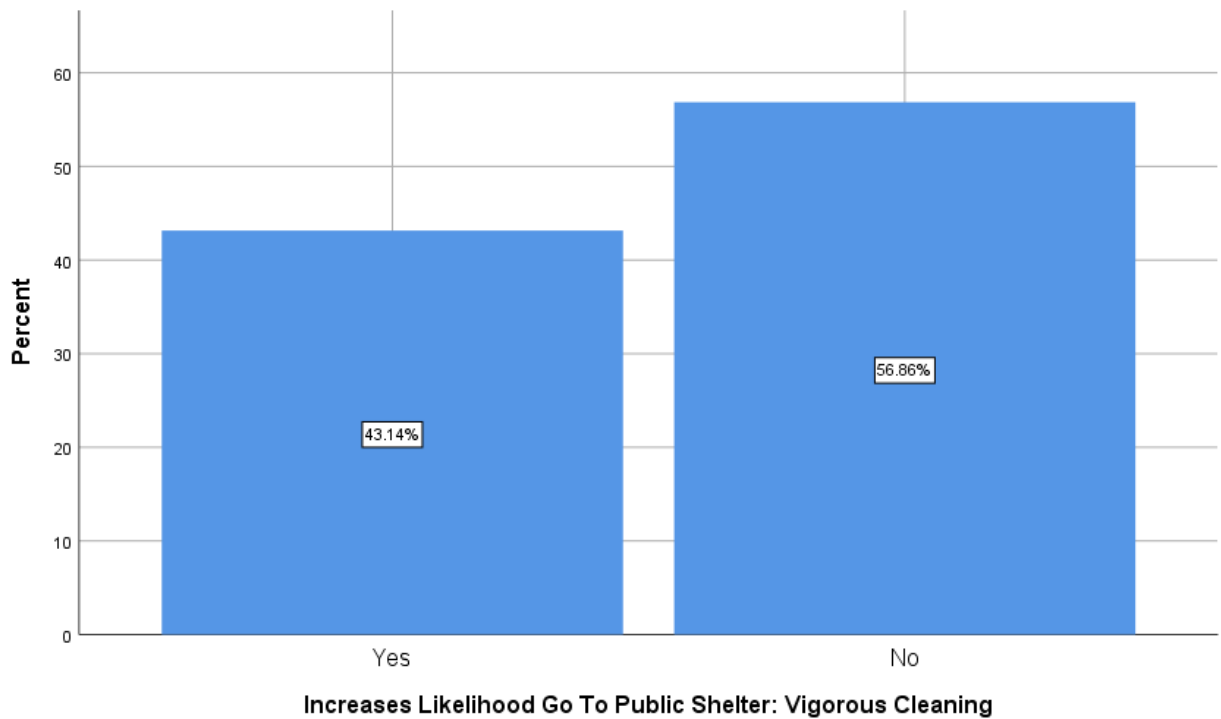
Evacuation Zone D households, relative to other evacuation zone households, are more likely to seek public shelter given reductions in the number of persons and assurances of social distancing within the public shelter. About 39 percent of Zone D, 34 percent of Zone C, 35 percent of Zone B, and 29 percent of Zone A are estimated to increase the likelihood of seeking public shelter given a reduction in the number of persons and assurances of social distancing within the public shelter.



## Increases Likelihood Go To Public Shelter: Vigorous Cleaning

Assurance of vigorous cleaning schedules within the public shelter environment is a change to public shelter operations. This operational change may be expected to change evacuation and sheltering behaviors.

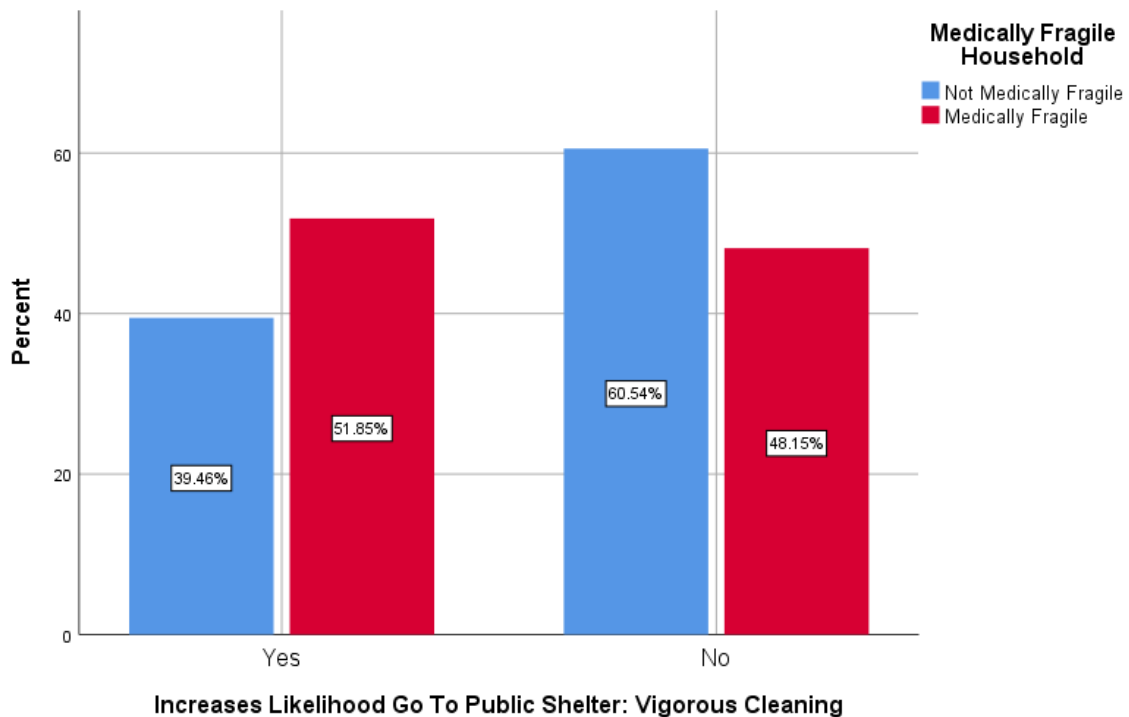
The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportion of households reporting an increased likelihood of going to a local public shelter when given assurances of vigorous cleaning protocols within shelters. As shown, 43.1 percent of households that anticipate evacuating report that the likelihood of seeking local public shelter increases with assurances about vigorous cleaning within shelters. The seven charts on the following pages will examine this reason controlling for household characteristics.



..by..Medically Fragile Household

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) Increases Likelihood Go To Public Shelter: Vigorous Cleaning (yes, no).

Medically fragile households, relative to not medically fragile households, are more likely to change behavior to seek public shelter when provided assurance of vigorous cleaning schedules within the public shelter, about 52 percent and just over 39 percent, respectively.

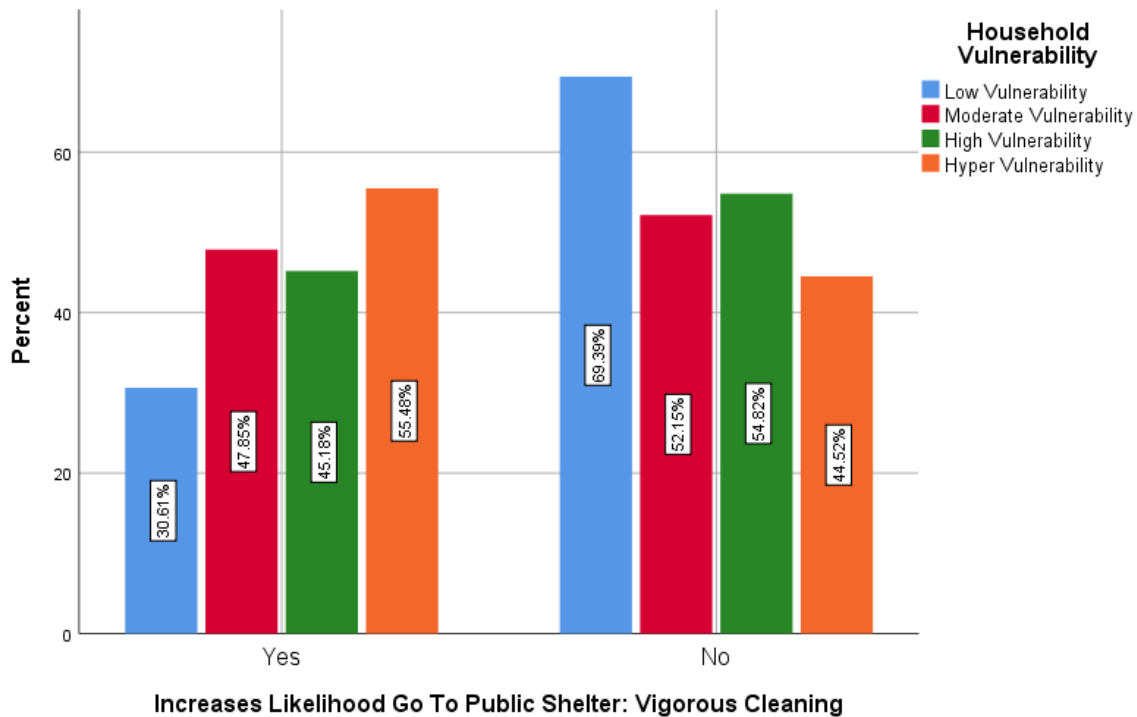




..by..Household Vulnerability

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) Increases Likelihood Go To Public Shelter: Vigorous Cleaning (yes, no).

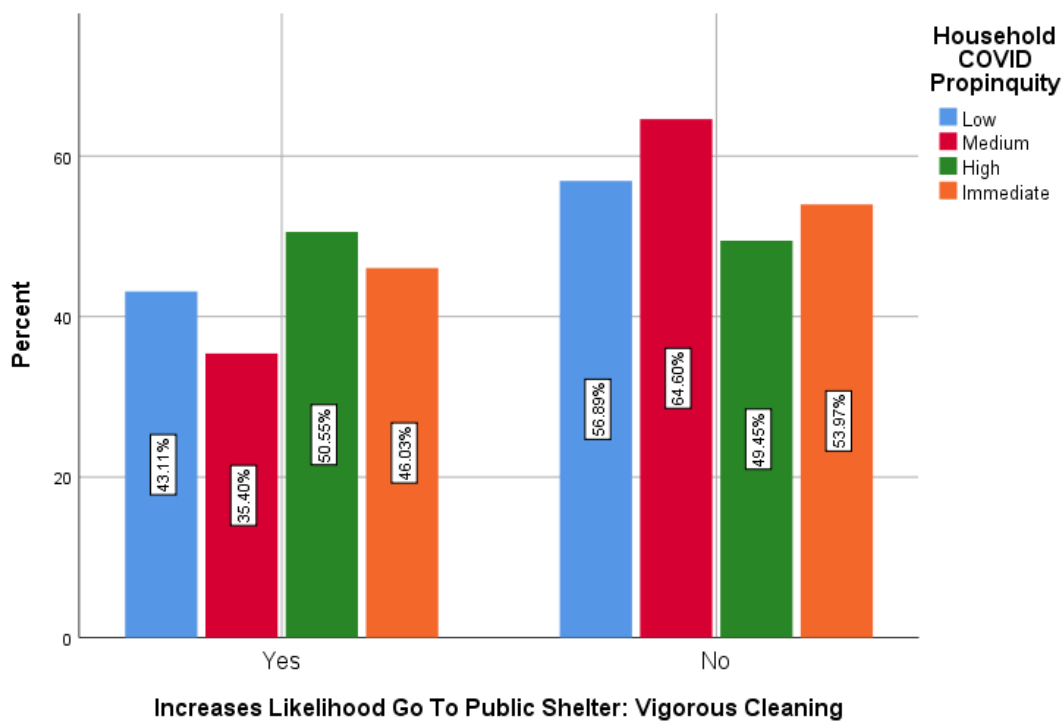
Hyper vulnerability households, relative to low vulnerability households, are more likely to change behavior to seek public shelter when provided assurance of vigorous cleaning within the public shelter. Specifically: low vulnerability (31 percent), moderate vulnerability (48 percent), high vulnerability (45 percent) and hyper vulnerability (55 percent).



..by..Household COVID Propinquity

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across Increases Likelihood Go To Public Shelter: Vigorous Cleaning (yes, no).

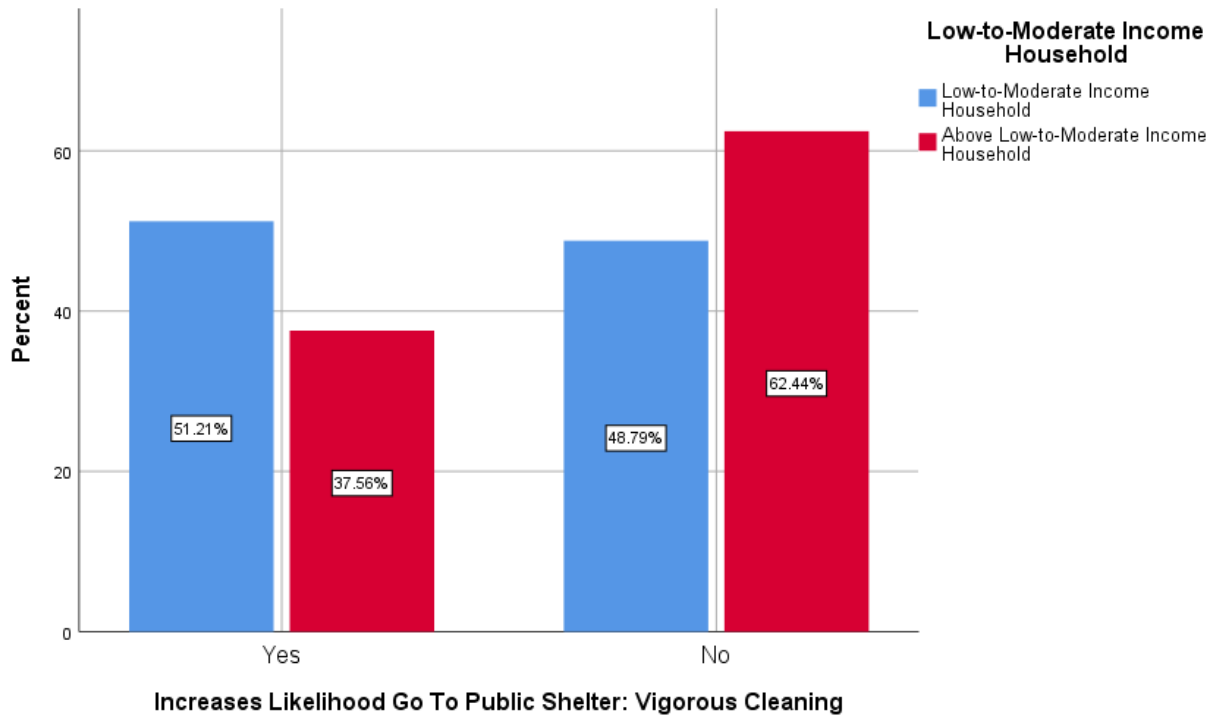
In terms of COVID propinquity, households report that between 35 percent and 51 percent are more likely to use a public shelter if they knew a regular, vigorous cleaning schedule were to be implemented. For low to medium COVID propinquity about 35 to 43 percent of household are more likely to go to a public shelter, and about 48 to 50 percent of households with high to immediate COVID propinquity would be more likely to go to a public shelter if a vigorous cleaning schedule were in place.



..by..Low-to-Moderate Income Household

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) Increases Likelihood Go To Public Shelter: Vigorous Cleaning (yes, no).

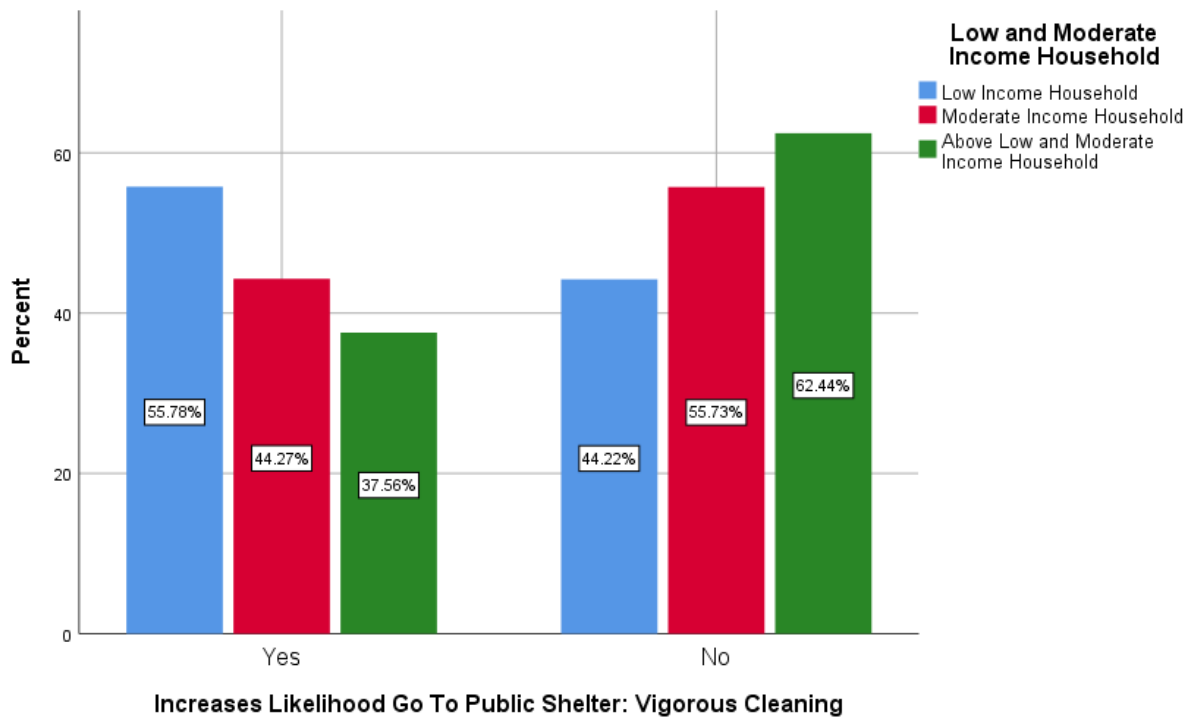
Low-to-moderate income households, relative to above low-to-moderate income households, have a higher proportion of households reporting more likely to seek public shelter in response to assurances of vigorous cleaning within the shelters. About 51 percent of low-to-moderate income households and about 38 percent of above low-to-moderate income households report more likely to use a public shelter if regular, vigorous cleaning schedule are to be implemented.



..by..Low and Moderate Income Household

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) Increases Likelihood Go To Public Shelter: Vigorous Cleaning (yes, no).

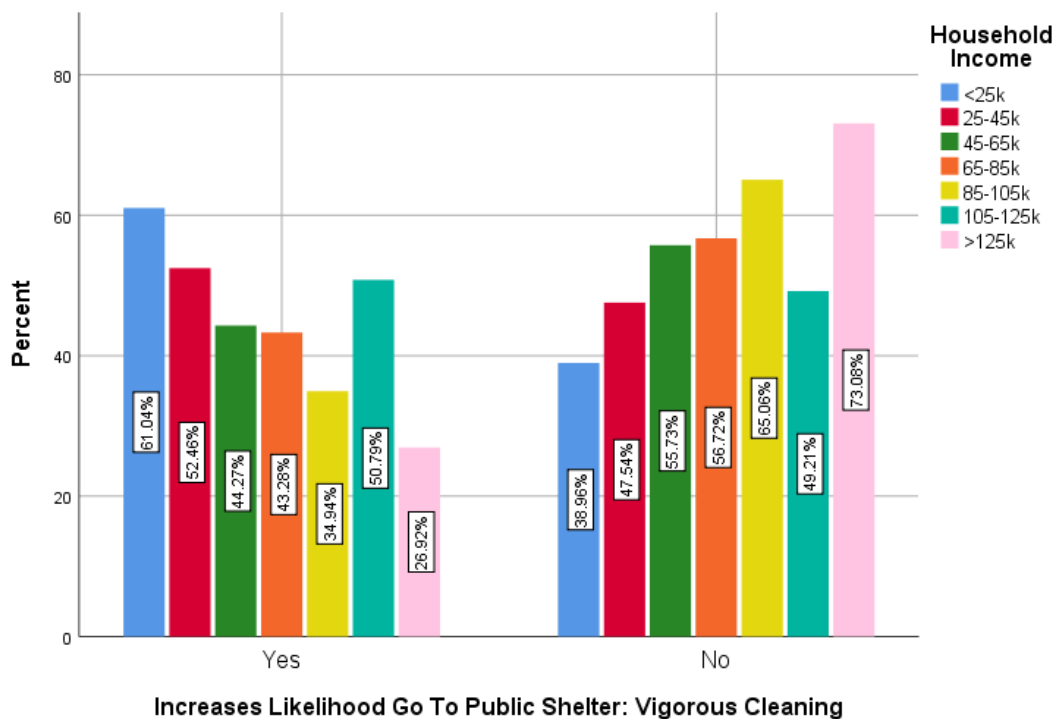
Low income households, relative to other income households, have a higher percentage of households that report they are more likely to seek public shelter in response to assurances of vigorous cleaning within the shelters. About 56 percent of low-income households, about 44 percent of moderate-income households, and about 38 percent of above moderate-income households report more likely to use a public shelter if they knew a regular, vigorous cleaning schedule are to be implemented.



..by..Granulated Household Income

This chart illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Household Income (disaggregated into seven household income gradients) Increases Likelihood Go To Public Shelter: Vigorous Cleaning (yes, no).

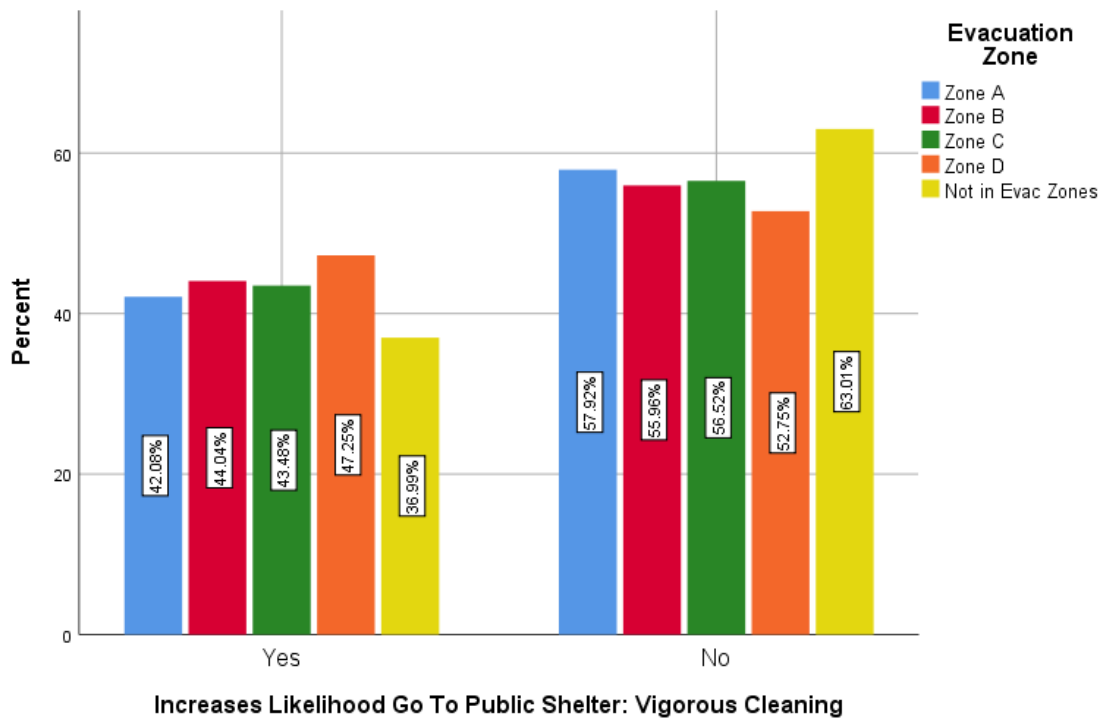
There appears a general decrease across granulated income categories. Households with incomes <25k households are more likely, relative to other income households, to seek public shelter given reductions in the number of persons and assurances of social distancing within the public shelter. Notable, lower incomes households, as a proportion, are quite malleable to altering sheltering behavior given vigorous cleaning assurances, with more than 61 percent of <25k households indicating likely change in behavior.



..by..Evacuation Zone

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) Increases Likelihood Go To Public Shelter: Vigorous Cleaning (yes, no).

Evacuation Zone D households, relative to other evacuation zone households, are more likely to seek public shelter in response to assurances of vigorous cleaning within the shelters. Over 47 percent of Zone D, over 43 percent of Zone C, just over 44 percent Zone B, and nearly 42 percent Zone A are estimated to increase the likelihood of seeking public shelter in response to assurances of vigorous cleaning within the shelters.

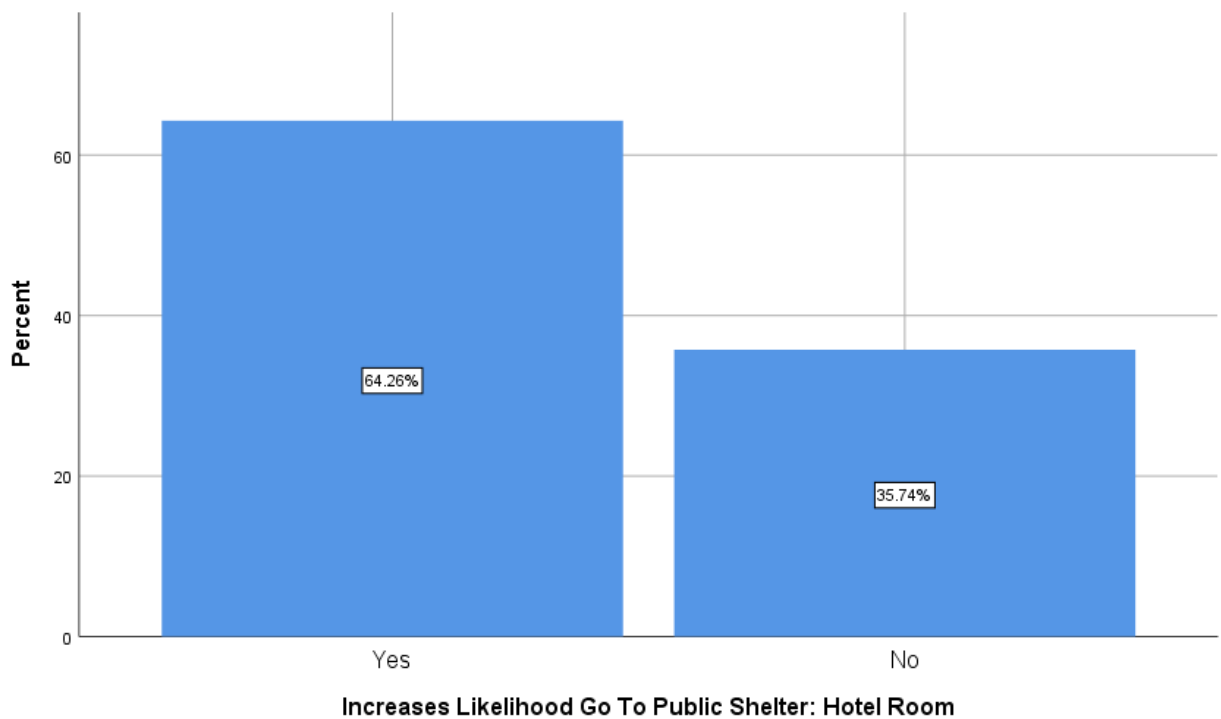


## Increases Likelihood Go To Public Shelter: Hotel Room

Being offered by the city a hotel room as a shelter, rather than a centralized place such as a school, is a change to public shelter operations. This operational change is expected to result in changed evacuation and sheltering behavior.

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, more than 64.2 percent of households that plan to evacuate from the region report that if offered a hotel room as a public shelter option, then this will change the likelihood of the household using public shelter.

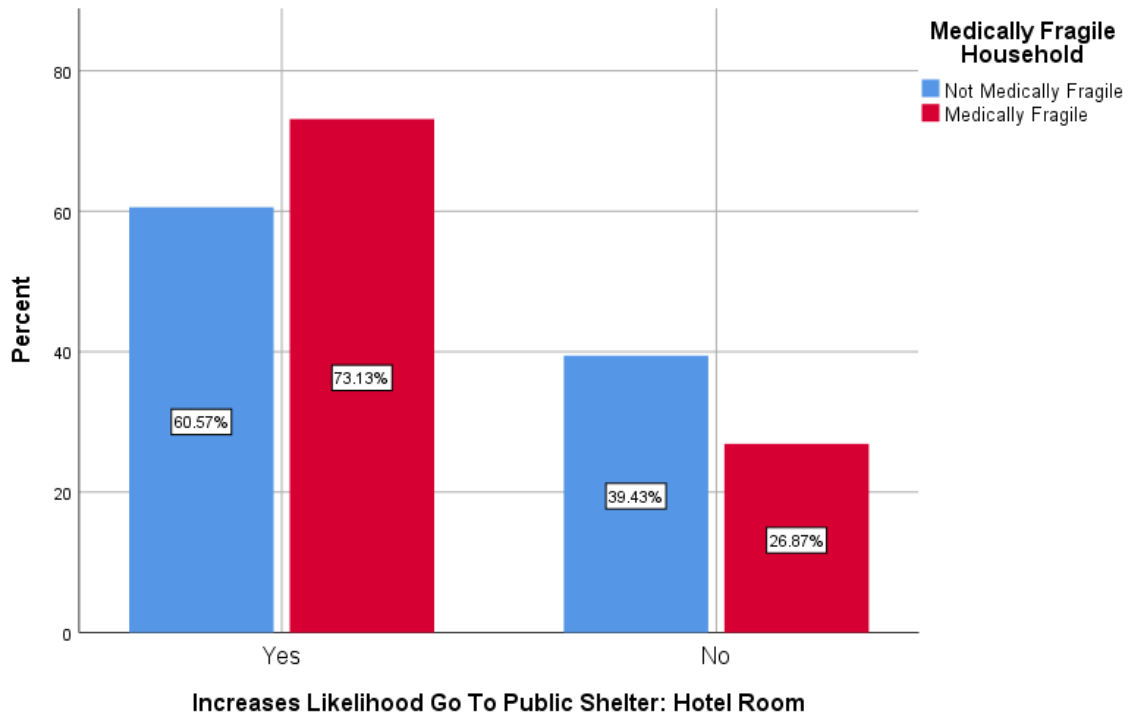
This suggests that the presence of a hotel room as a public shelter option may lessen the propensity to evacuate among households that anticipate evacuating.



..by..Medically Fragile Household

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) Increases Likelihood Go To Public Shelter: Hotel Room (yes, no).

Medically fragile households, relative to not medically fragile households, have a higher percentage of households that report they are more likely to seek public shelter in response to being offered by the city a hotel room as a shelter, rather than a centralized place such as a school, over 73 percent relative to nearly 61 percent, respectively.

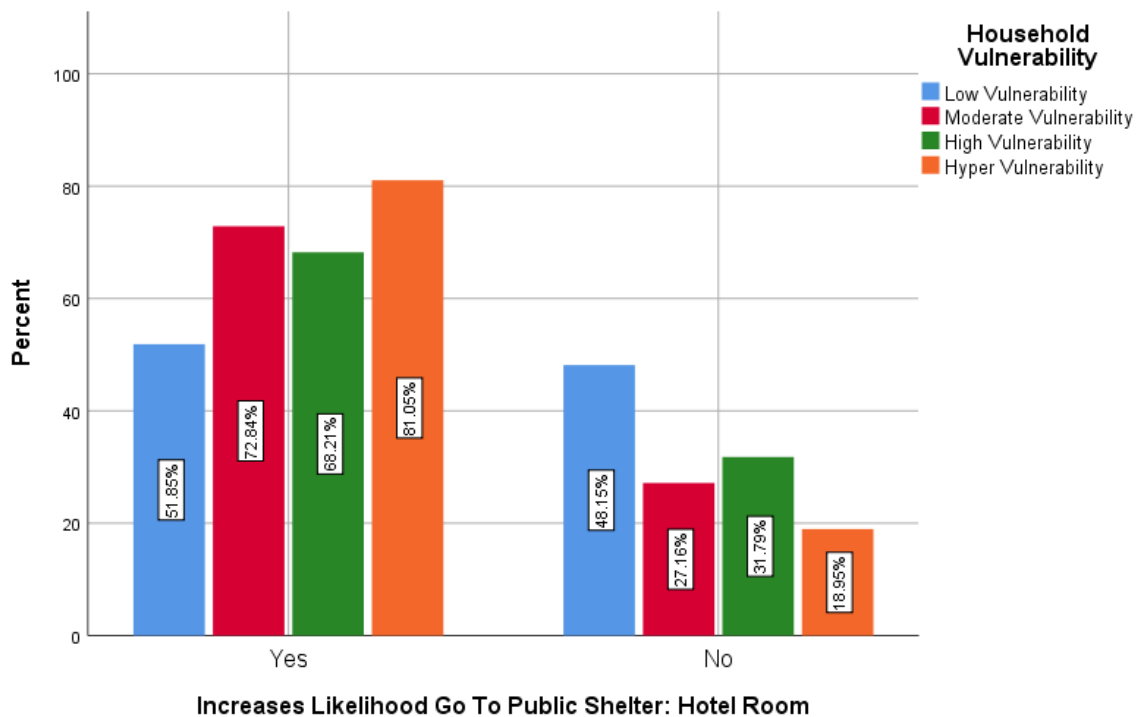




..by..Household Vulnerability

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) Increases Likelihood Go To Public Shelter: Hotel Room (yes, no).

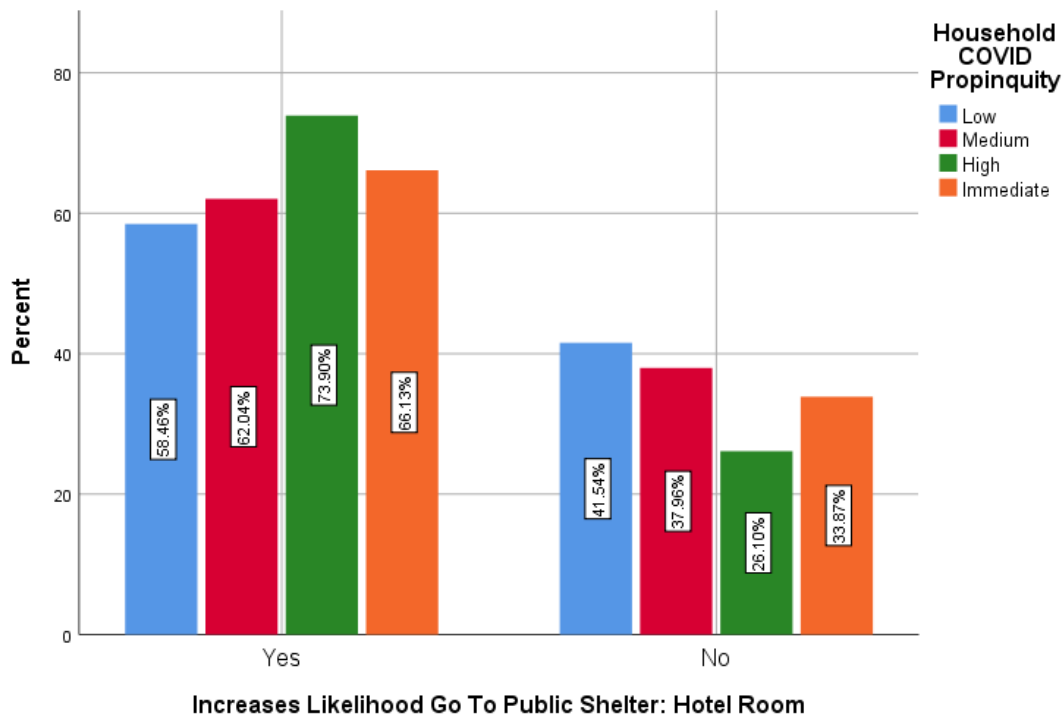
Hyper vulnerability households, relative to above low vulnerability households, have a higher percentage of households that report they are more likely to seek public shelter in response to being offered by the city a hotel room as a shelter, rather than a centralized place such as a school. Specifically: low vulnerability (51.6 percent), moderate vulnerability (72.8 percent), high vulnerability (68.2 percent) and hyper vulnerability (81.0 percent).



..by..Household COVID Propinquity

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across Increases Likelihood Go To Public Shelter: Hotel Room (yes, no).

High COVID propinquity households, relative to other COVID propinquity households, have a higher proportion of households reporting more likely to seek public shelter in response to being offered by the city a hotel room as a shelter, rather than a centralized place such as a school. Specifically: low propinquity (58.5 percent), medium propinquity (62.0 percent), high propinquity (73.9 percent) and immediate propinquity (66.1 percent).



..by..Low-to-Moderate Income Household

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) Increases Likelihood Go To Public Shelter: Hotel Room (yes, no).

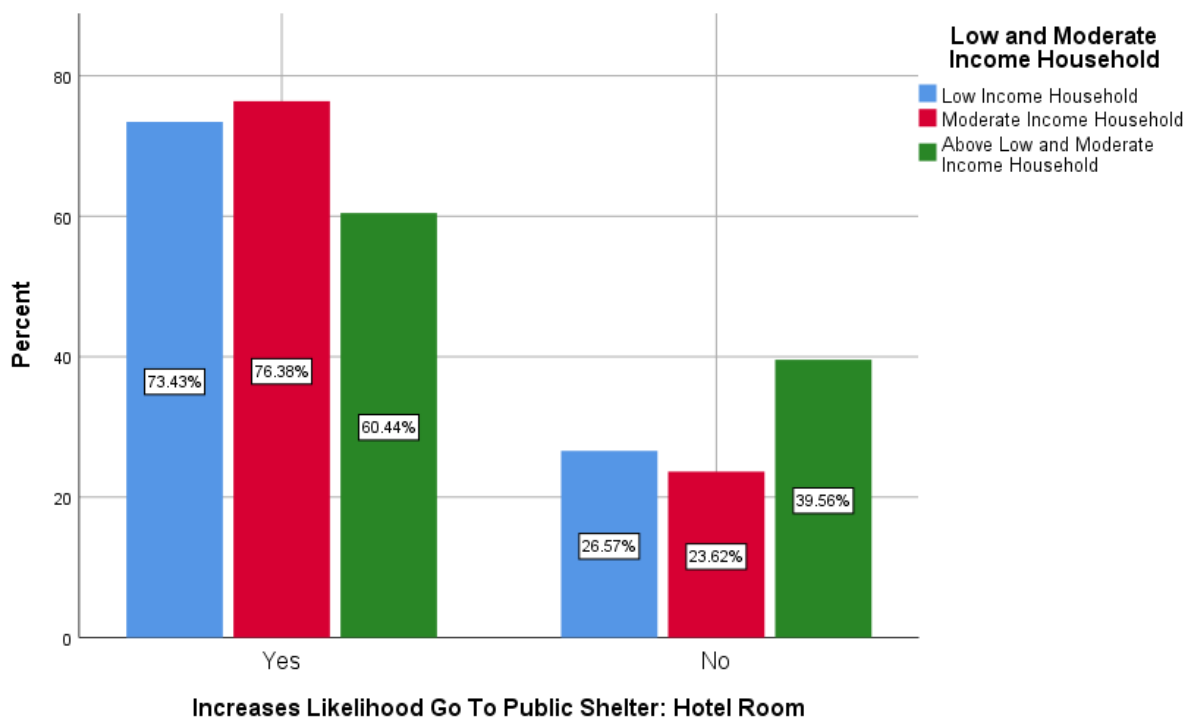
Low-to-moderate income households, relative to above low-to-moderate income households, have a higher percentage of households that report they are more likely to seek public shelter in response to being offered by the city a hotel room as a shelter, rather than a centralized place such as a school, about 74.6 percent relative to just above 60 percent, respectively.



..by..Low and Moderate Income Household

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) Increases Likelihood Go To Public Shelter: Hotel Room (yes, no).

Moderate income households, relative to other income households, have a higher percentage of households that report they are more likely to seek public shelter in response to being offered by the city a hotel room as a shelter, rather than a centralized place such as a school. That is, 73.4 percent of low-income households, about 76.4 percent of moderate-income households, and about 60.0 percent of above moderate-income report that if offered a hotel room as a public shelter option, then this increases the likelihood seeking public shelter.



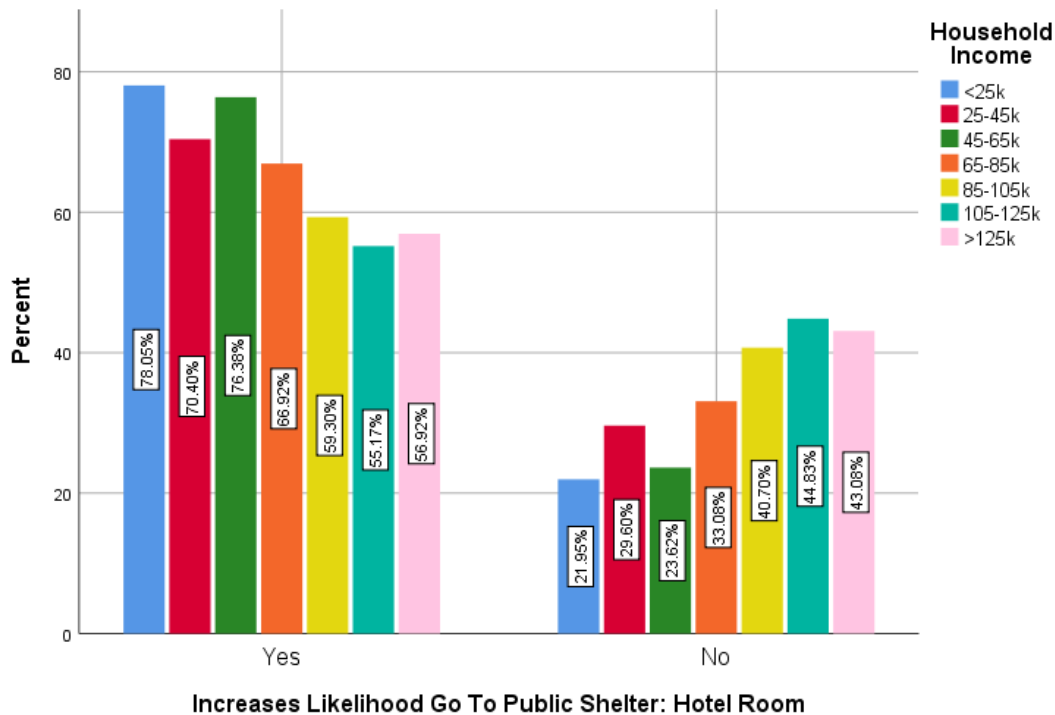
..by..Granulated Household Income

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Household Income (disaggregated into seven household income gradients) Increases Likelihood Go To Public Shelter: Hotel Room (yes, no).

There appears a general relationship among granulated income categories and proportion of the households that report increased likelihood to seek public shelter in response to being offered by the city a hotel room as a shelter, rather than a centralized place such as a school. This ranges from about 78.1 percent of households <25k income and about 56.9 percent of households >125k.

It is notable that evacuation out of the region for several days may cost the household many hundreds of dollars. Lower income households that anticipate evacuating from the region, but are nonetheless cost-sensitive due to limited household income, are much more likely to adjust behavior and stay in the region if offered a more palatable public sheltering option in the form of a hotel room.

The operational change of offering hotel accommodation is estimated to change evacuation and sheltering behavior across all groups, but will manifest especially large changes among lower income households.



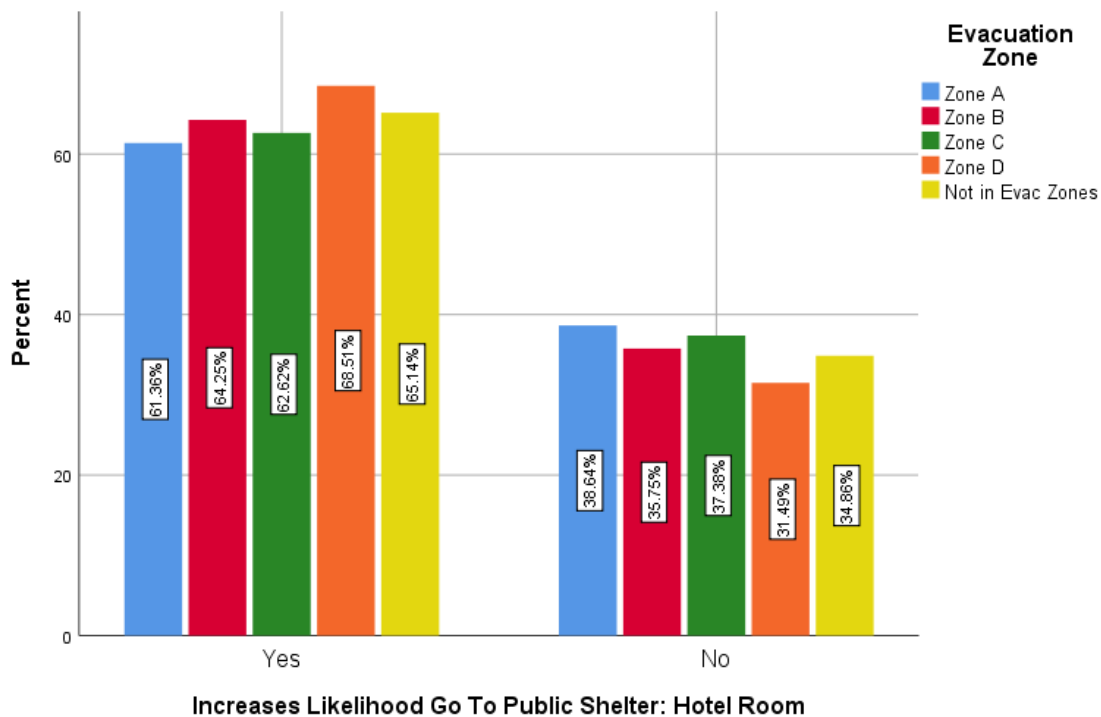
..by..Evacuation Zone

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) Increases Likelihood Go To Public Shelter: Hotel Room (yes, no).

There is not a clear pattern across the proportions within geographies reporting likelihood to seek public shelter in response to being offered by the city a hotel room as a shelter, rather than a centralized place such as a school.

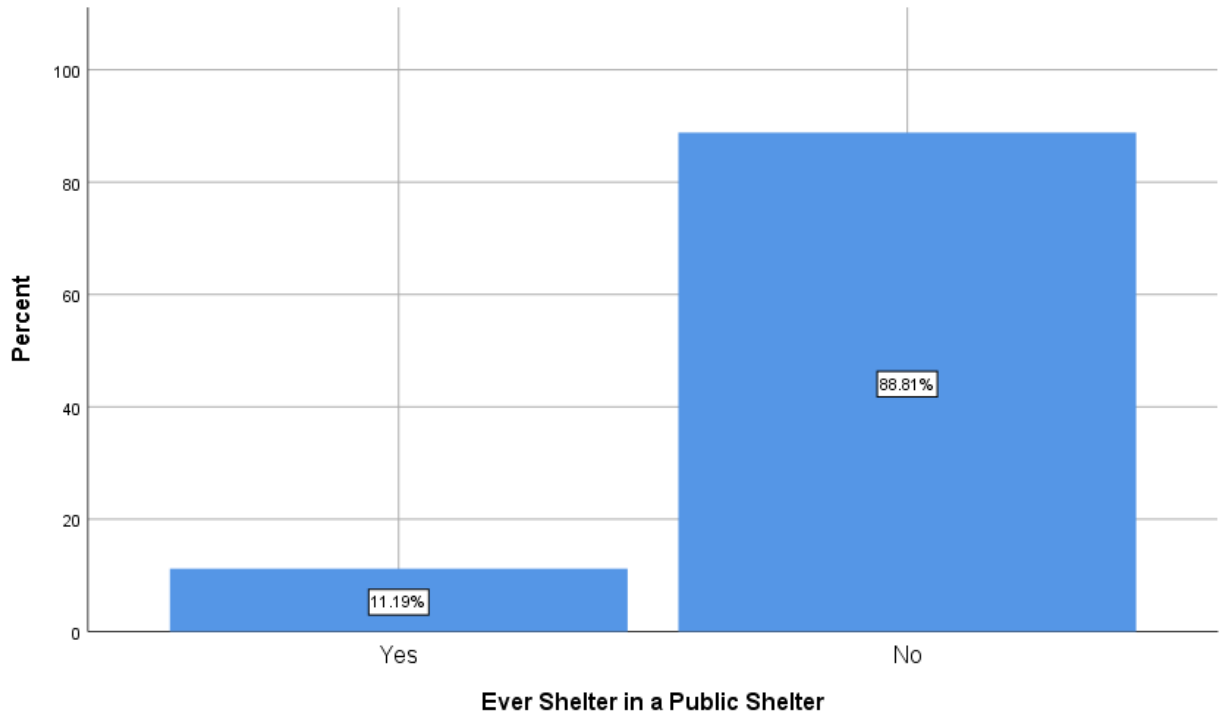
However, notable are the *sizable* proportions. Roughly 62-68 percent of households that anticipate evacuating from the region report an increased likelihood of seeking public shelter within the region should that public shelter be in the form of a hotel room rather than a centralized pace such as a school.

The operational change is estimated to result in change in behavior among those households anticipating evacuation from the region, increasing the number of households that will remain in the region.



## Household has History of Sheltering in Public Shelter Due to Storm Threat

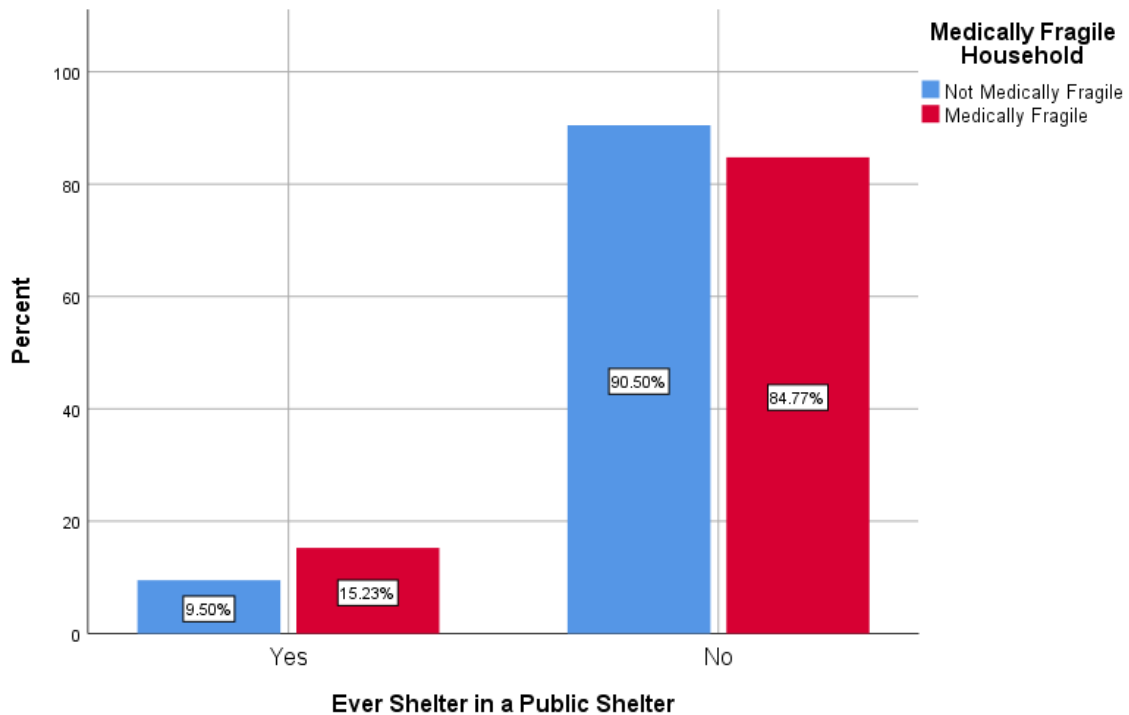
The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region when faced with a significant hurricane event, just less than 11.2 percent report having ever sheltered in the past in a public shelter due to a storm. The seven charts on the following pages will examine this reason controlling for household characteristics.



..by..Medically Fragile Household

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across Ever Shelter in a Public Shelter (yes, no).

Medically fragile households, relative to not medically fragile households, have a higher proportion of households that sought public shelter in the past due to a storm. Slightly more than 15.2 percent of medically fragile households and about 9.5 percent of non-medically fragile households that plan to evacuate from the region report having previously sought shelter at a local public shelter due to a past storm.

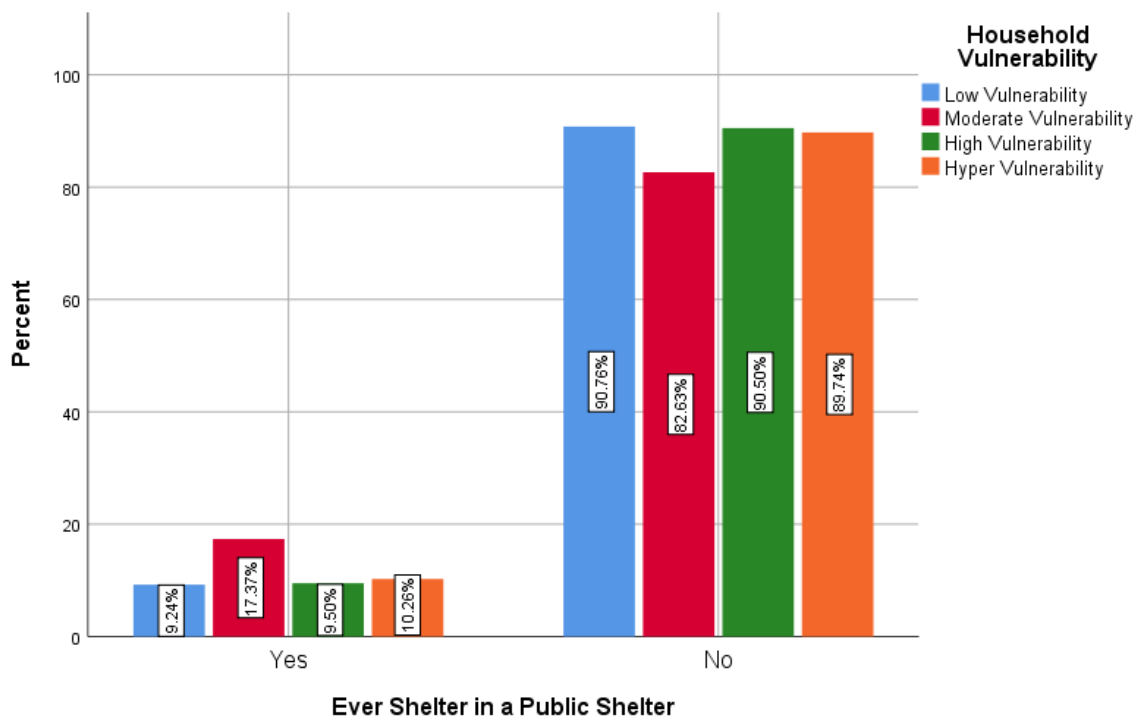




..by..Household Vulnerability

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across Ever Shelter in a Public Shelter (yes, no).

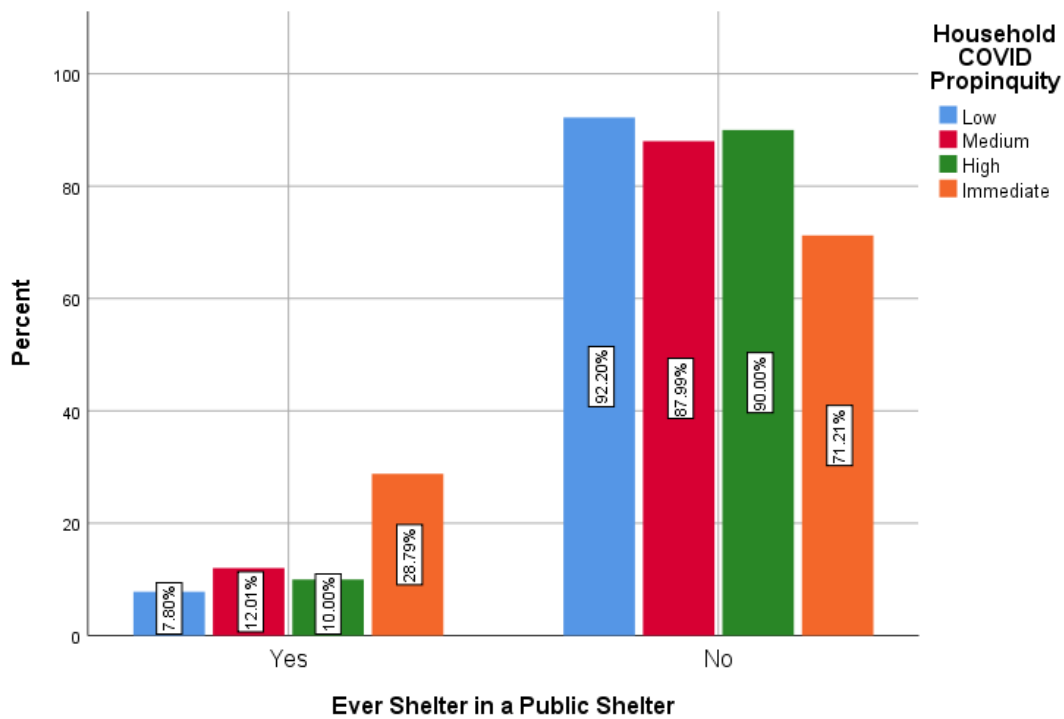
Moderate vulnerability households, relative to other vulnerability households, have a higher proportion of households that sought public shelter in the past due to a storm. Specifically: low vulnerability households (9.2 percent), moderate vulnerability households (17.4 percent), high vulnerability households (9.5 percent) and hyper vulnerability households (10.3 percent).



..by..Household COVID Propinquity

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across Ever Shelter in a Public Shelter (yes, no).

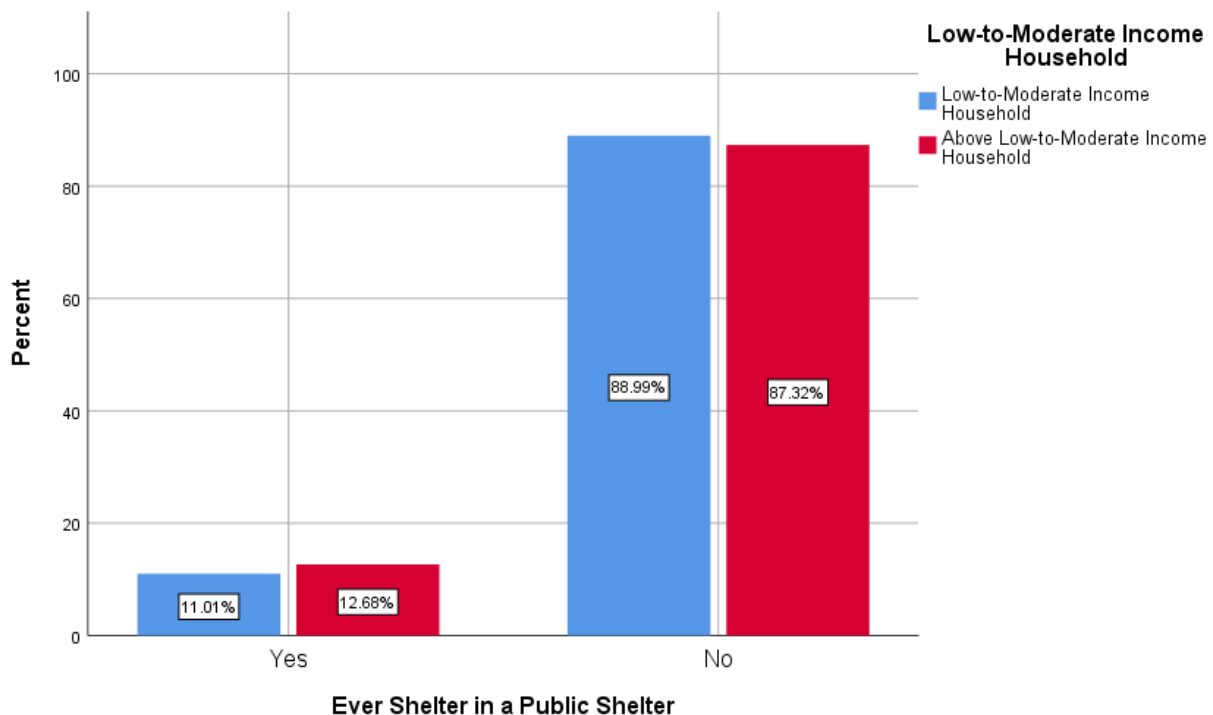
Immediate COVID propinquity households, relative to other propinquity households, have a larger proportion of households that sought public shelter in the past due to a storm. Specifically: low COVID propinquity (7.8 percent), medium COVID propinquity (12 percent), high COVID propinquity (10 percent) and immediate COVID propinquity (29.8 percent).



..by..Low-to-Moderate Income Household

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across Ever Shelter in a Public Shelter (yes, no).

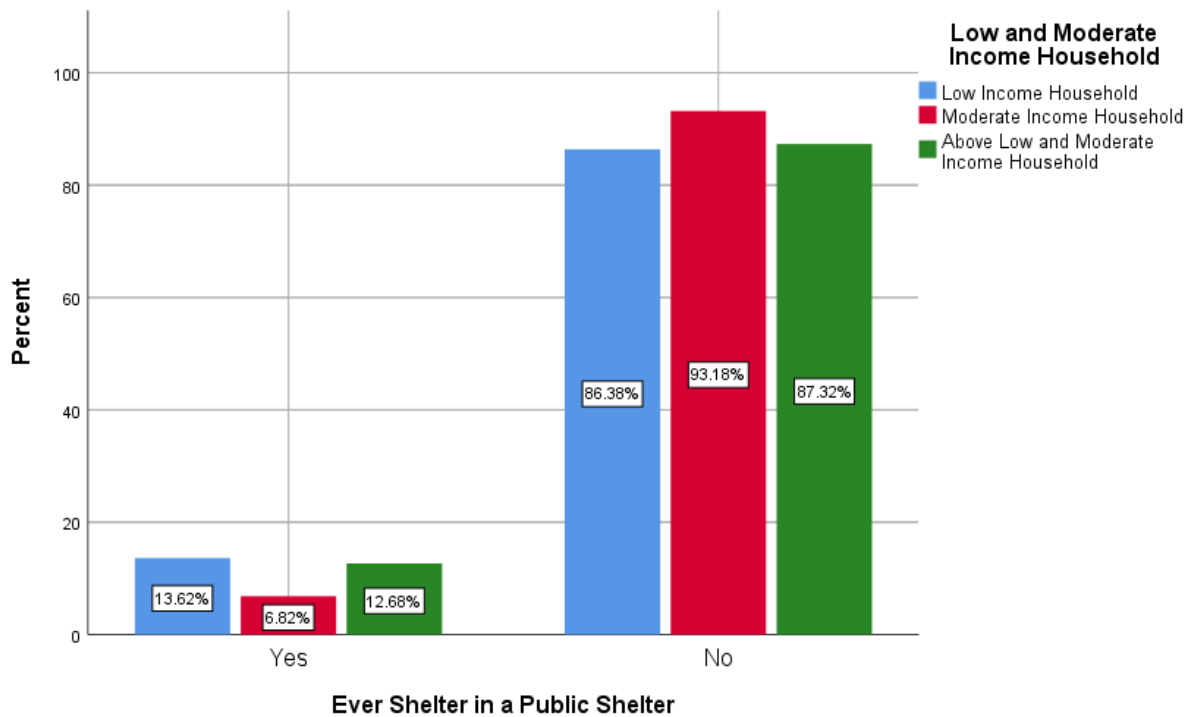
Among households that anticipate evacuating out of the Hampton Roads region, there is no statistical difference between low-to-moderate income households and above low-to-moderate income households in indicating past public sheltering. About 11.0 percent of low-to-moderate income households and about 12.7 percent of above low-to-moderate income households that plan to evacuate from the region report having previously sought shelter at a local public shelter due to a past storm.



..by..Low and Moderate Income Household

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across Ever Shelter in a Public Shelter (yes, no).

Low income households and above low and moderate income households, relative to other moderate income households, have higher proportions of households that sought public shelter in the past due to a storm. About 13.6 percent of low-income households, about 6.8 percent of moderate-income households, and about 12.7 percent of above moderate-income households that plan to evacuate from the region, report having previously sought shelter at a local public shelter due to a past storm.

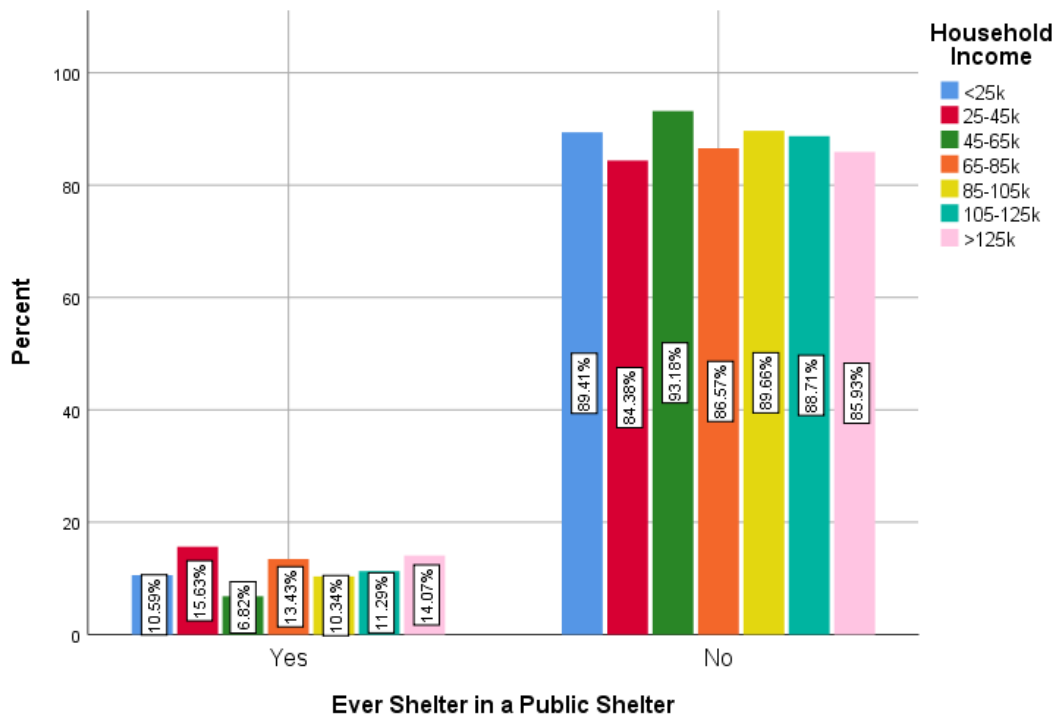


..by..Granulated Household Income

This chart illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions within Household Income (disaggregated into seven household income gradients) across Ever Shelter in a Public Shelter (yes, no).

Among households that anticipate evacuating out of the Hampton Roads region, there is not general relationship with household income.

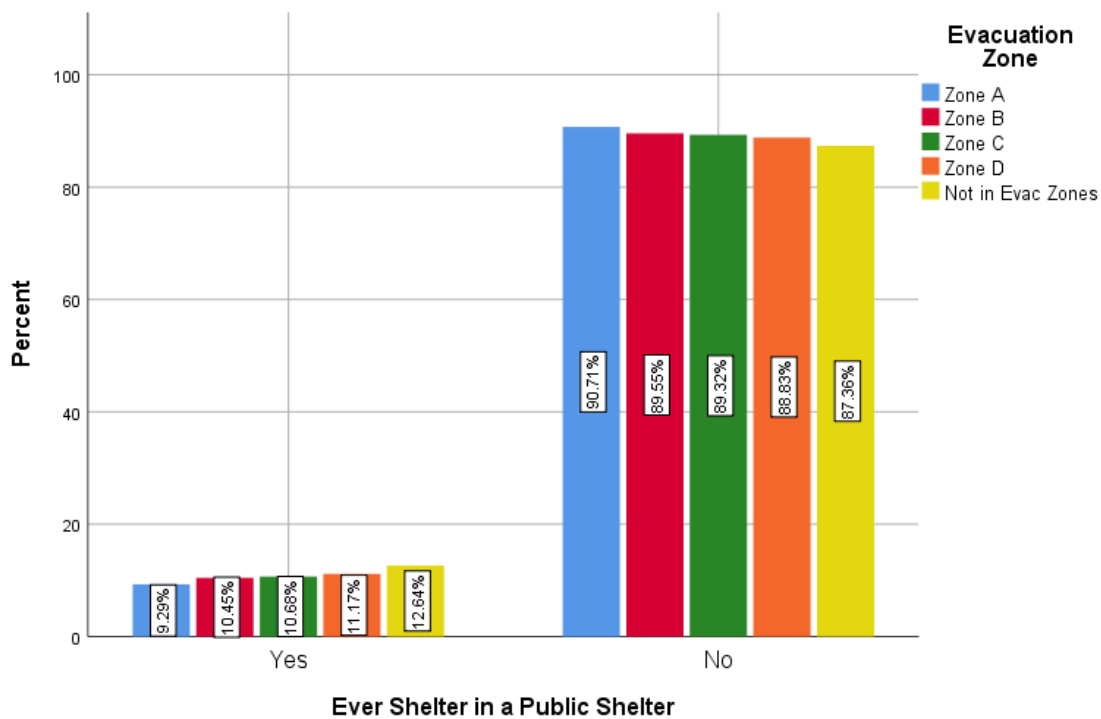
Among households that anticipate evacuating out of the Hampton Roads region,



..by..Evacuation Zone

The chart below illustrates, among households that anticipate evacuating out of the Hampton Roads region, the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across Ever Shelter in a Public Shelter (yes, no).

Among households that anticipate evacuating out of the Hampton Roads region, there is a general relationship with geographic location. Households Not in Evac Zones (generally least proximate shorelines), relative to other evacuation zone households, are more likely to report ever sheltering in a public shelter in the past due to a storm. Not in Evac Zones households report a 12.6 percent proportion relative to 9.3 percent for Zone A households.



## Part 10: Common Variable Findings

Common Variables are data that are elicited from all sampled households, unlike Branch variables which interview households according to their anticipated evacuation and shelter behaviors.

Part 10 reports findings for:

1. Enough Cash or Credit to Evacuate
2. Lost Wages Impact Upon Rent or Mortgage
3. Suffered Property Loss
4. Suffered Injury
5. COVID Impact Upon Household Income
6. Know a Person who has Died from COVID
7. Know a Person who has been Sick from COVID
8. Person in Households has been Infected with COVID
9. Frequency of Street Flooding
10. Evacuation Zone Awareness
11. Evacuation Zone (Validated Location of Household)

These Common Variables are further explored by controlling for eight key variables of interest:

1. Medically Fragile Household
2. Household Vulnerability
3. Household COVID Proximity
4. Low-to-Modest Income Household
5. Low and Modest Income Household
6. Granulated Household Income
7. At or Near Federal Poverty Level\*
8. Evacuation Zone

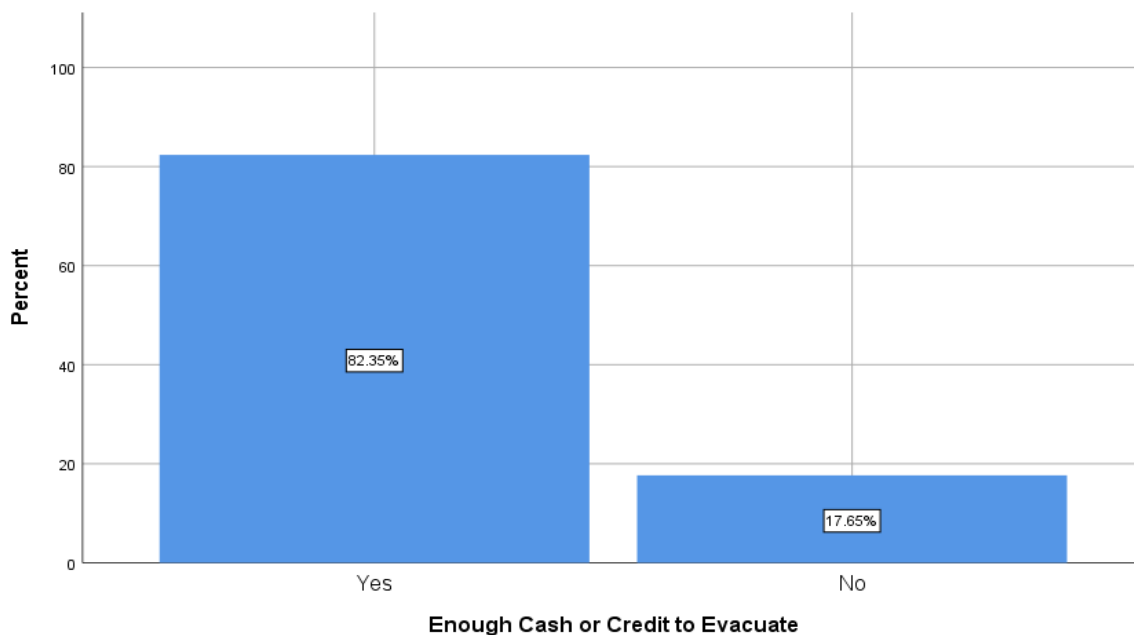
*\*This is an additional control variable beyond the original seven control variables; it is applied to selected Common Variables in Part 10.*

## Enough Cash or Credit to Evacuate

A compelling case may be made that risk perceptions drive shelter and evacuation behavior. That is, if the impending storm is perceived to be a significant risk, then it may be expected that populations will be animated to remove from harm's way and have increased propensities to seek public shelter or evacuate from the region. However, this linkage between risk perceptions behavior is conditioned by several important variables. A general grouping of 'resource' variables condition the relationship. Thus, if storm risk perception is high then this may not translate into increased propensity to evacuate if the household is constrained by limited resources. Household were asked if they had to evacuate out of the region for five days, did their household have enough cash or credit cards to support everyone outside the region including the cost of gas, food, and lodging.

In order to evacuate a family out of Hampton Roads due to a storm event, available cash or credit resources are necessary to sustain the family for about five days. Households that perceive the impending storm to be risky also consider the availability of resources when weighing the decision to evacuate. That is, availability of resources conditions the behavior decision.

The chart below illustrates, among all households, in the hurricane season, about 17.7 percent of households indicate that the household would not have enough cash or credit to support everyone in the household if evacuation was required. This means that approximately 116,095 Hampton Roads households, comprising 340,509 citizens, report a paucity of resources to support the household in the eventuality of evacuation.



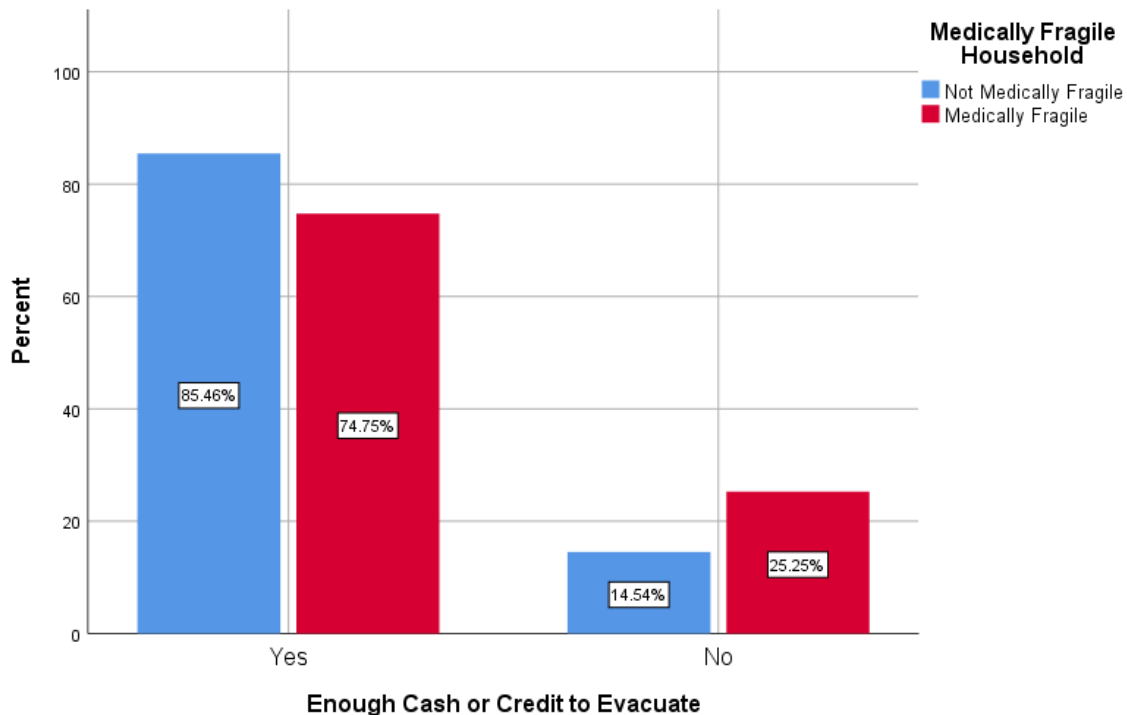


..by..Medically Fragile Household

The chart below illustrates, among all households, the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across Enough Cash or Credit to Evacuate (yes, no).

Medically fragile households, relative to not medically fragile households, are more likely to report not having enough cash or credit to sustain the family for about five days. About 25.6 percent of medically fragile households and 14.4 percent of not medically fragile households do not have enough cash or credit to effectuate household evacuation.

It is notable that, for medically fragile households, evacuation may be more expensive due to the additional costs and resources associated with assisting vulnerable household members who need additional support/supplies, such as medications, specific medical equipment, diapers, special dietary restrictions, etc.

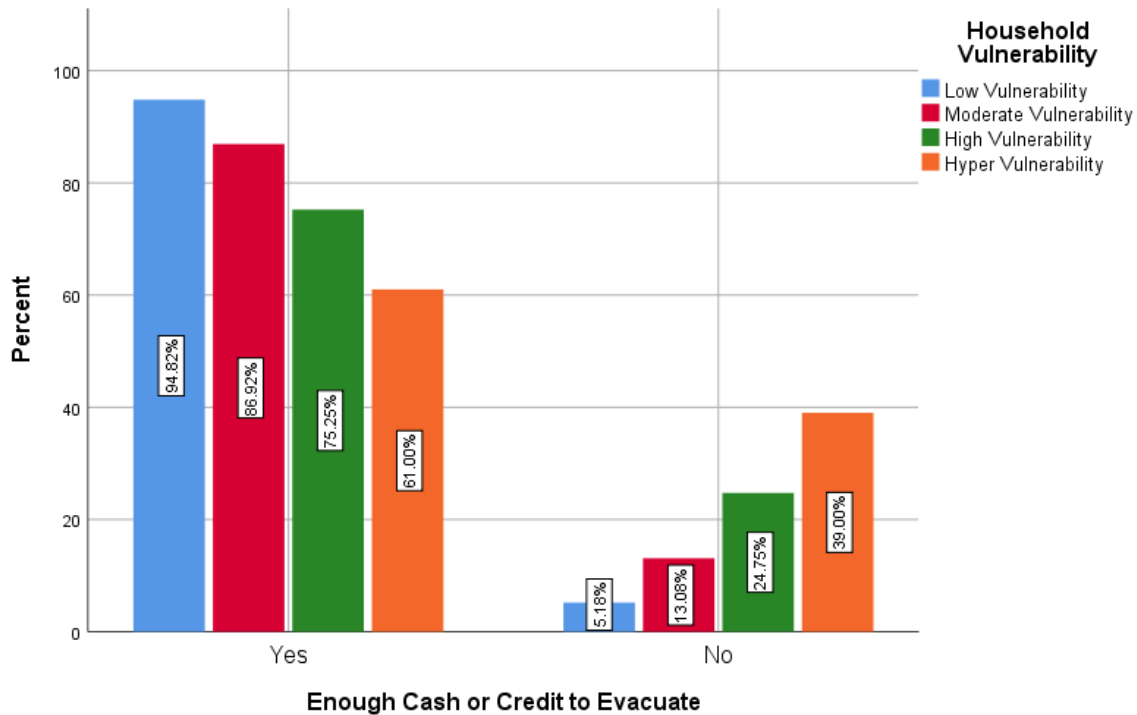


..by..Household Vulnerability

The chart below illustrates, among all households, the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across Enough Cash or Credit to Evacuate (yes, no).

There is a clear relationship between not having enough cash or credit to evacuate and households vulnerability.

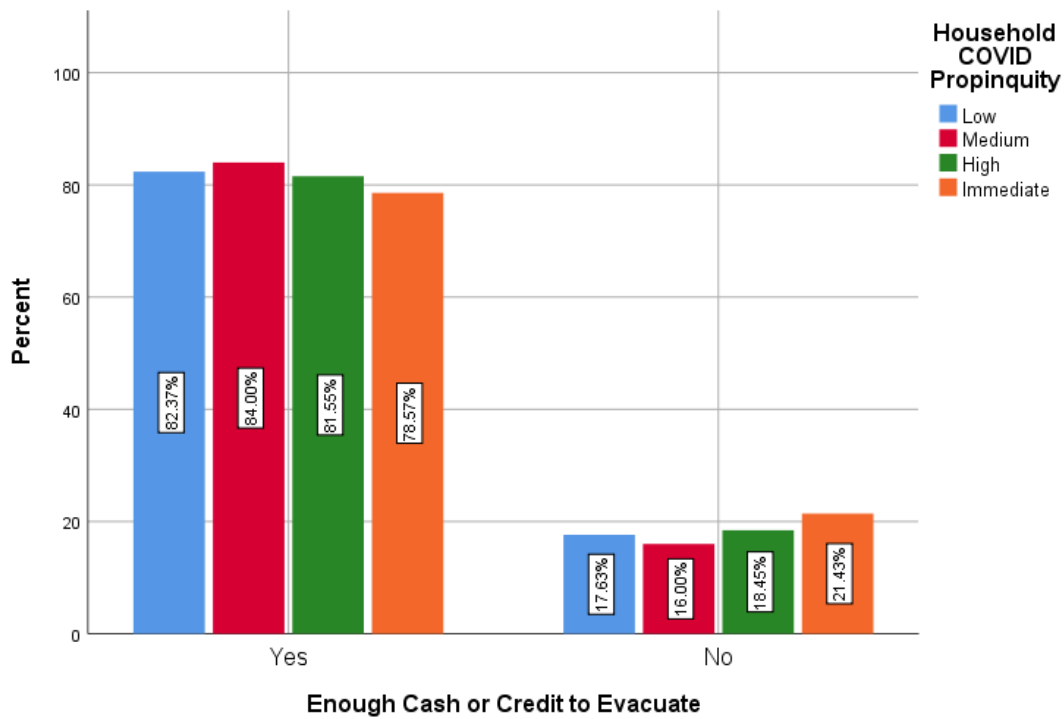
Hyper vulnerability households, relative to low vulnerability households, are more likely to report not having enough cash or credit. Specifically: low vulnerability households (5.2 percent), moderate vulnerability households (13.1 percent), high vulnerability households (24.8 percent) and hyper vulnerability households (39.0 percent).



..by..Household COVID Propinquity

The chart below illustrates, among all households, the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across Enough Cash or Credit to Evacuate (yes, no).

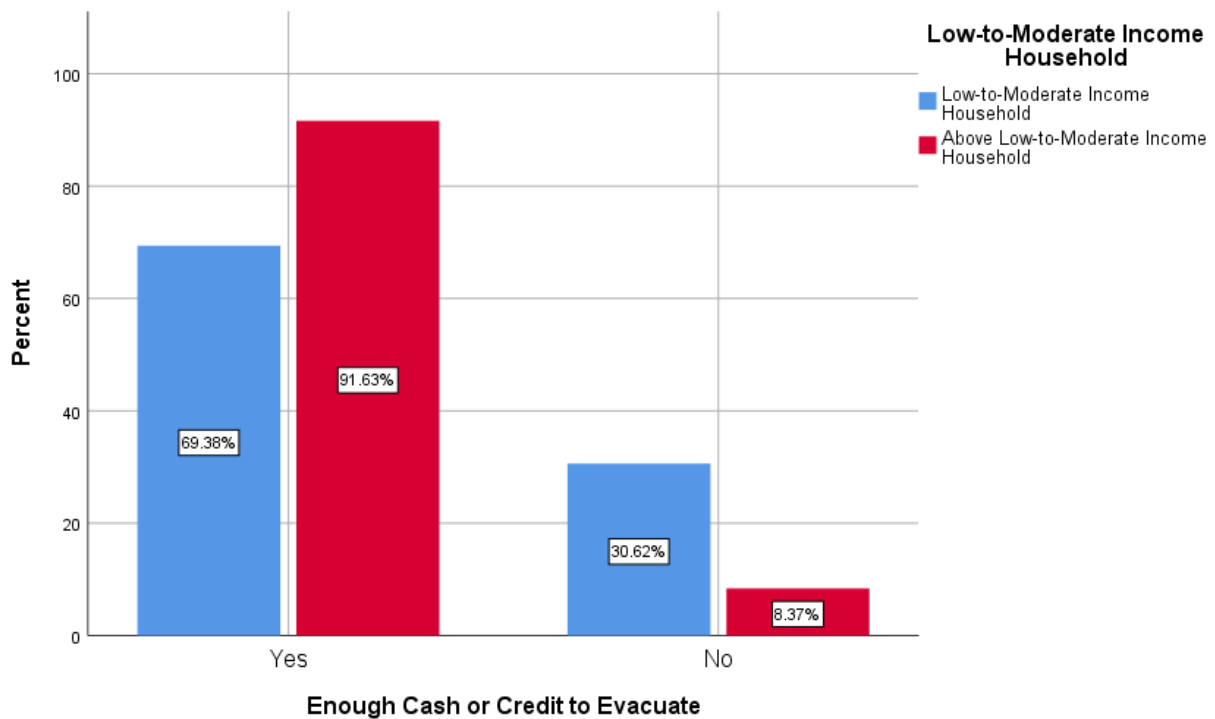
Immediate COVID propinquity households, relative to other COVID propinquity households, are more likely to report not having enough cash or credit to evacuate. Specifically: low COVID propinquity (17.6 percent), medium COVID propinquity (16.0 percent), high COVID propinquity (18.5 percent) and immediate COVID propinquity (21.4 percent).



..by..Low-to-Moderate Income Household

The chart below illustrates, among all households, the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across Enough Cash or Credit to Evacuate (yes, no).

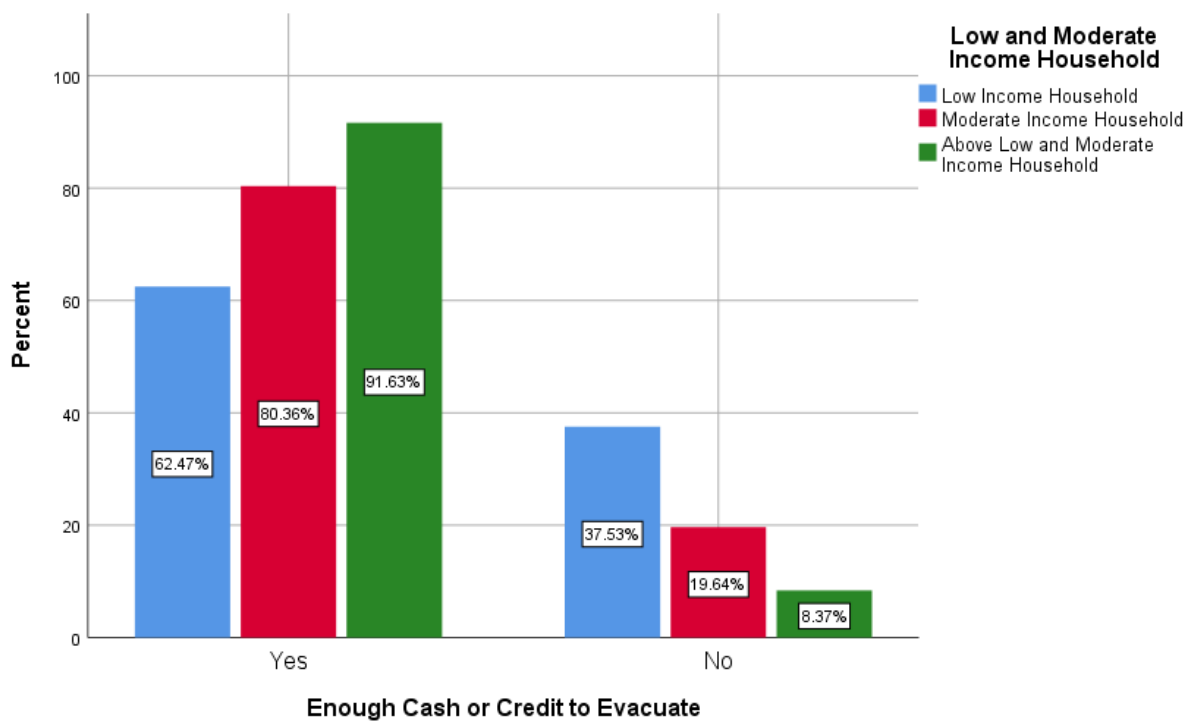
Low-to-moderate income households, relative to above low-to-moderate income households, are more likely to report not having enough cash or credit to evacuate. Over 30.6 percent of low-to-moderate income households and 8.4 percent of above low-to-moderate income households are estimated not to have enough cash or credit to evacuate.



..by..Low and Moderate Income Household

The chart below illustrates, among all households, the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across Enough Cash or Credit to Evacuate (yes, no).

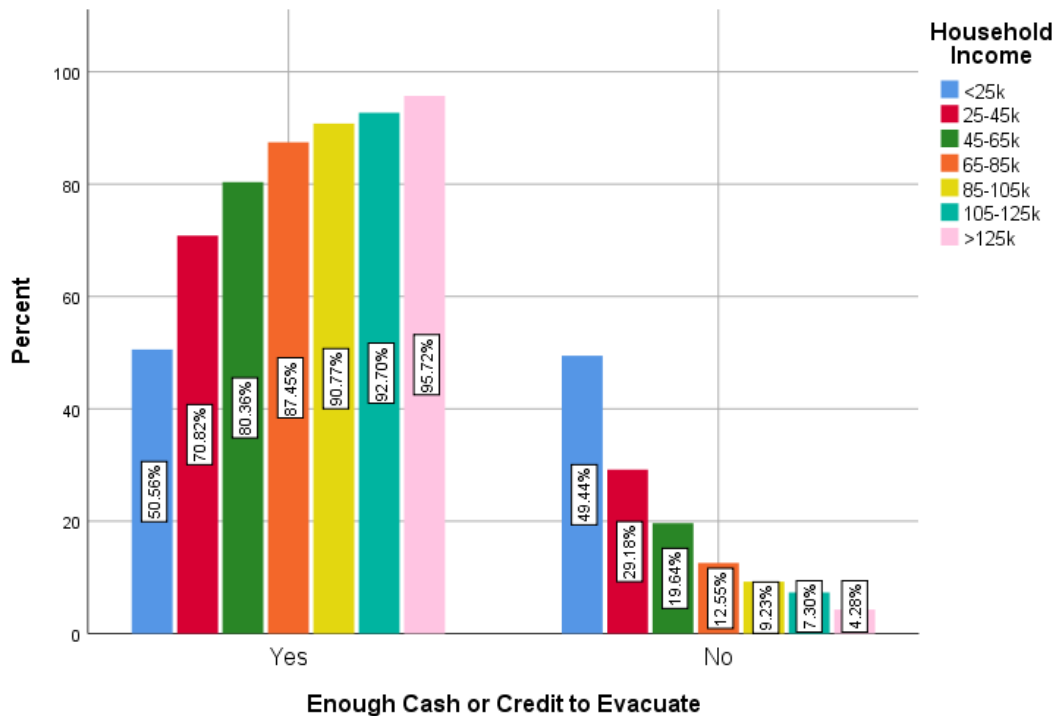
There is a clear relationship between not having enough cash or credit to evacuate and household income. Over 37.5 percent of low income households, 19.6 percent of moderate income households, and 8.4 percent of above low and moderate income households report not having enough cash or credit to evacuate.



..by..Granulated Household Income

The chart below illustrates, among all households, the proportions within Household Income (disaggregated into seven household income gradients) across Enough Cash or Credit to Evacuate (yes, no).

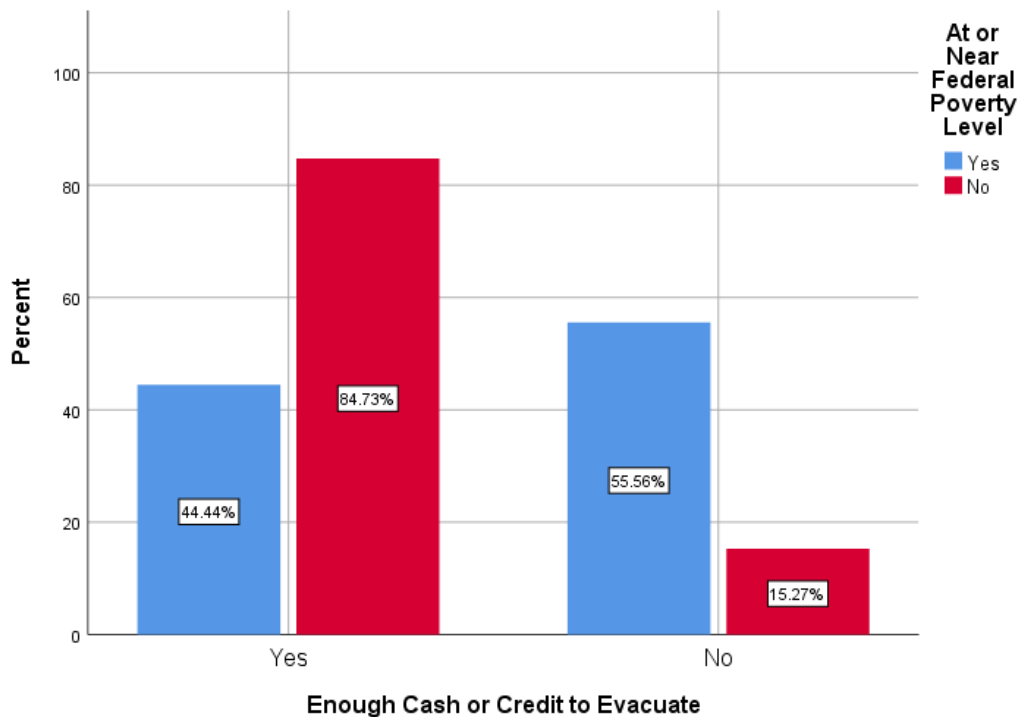
There is a clear relationship between income and not having enough financial resources to support the household for 5 days if the household had to evacuate out of the region. The relationship accelerates across income classifications, with 4.3 percent of households with incomes >125k and nearly 49.5 percent of households with incomes <25k not having enough cash or credit to evacuate.



..by..At or Near Federal Poverty Level

The chart below illustrates, among all households, the proportions of households within At or Near Poverty Level (yes, no) across Enough Cash or Credit to Evacuate (yes, no).

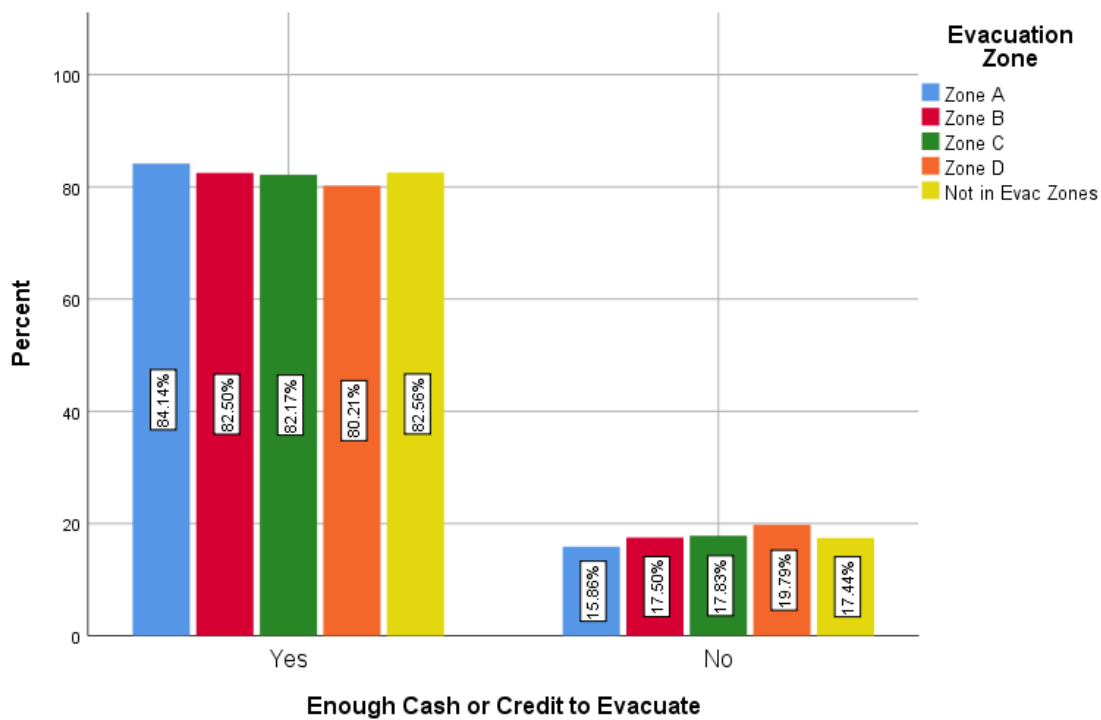
When determining if households have enough cash or credit cards to evacuate by poverty level, about 44 percent of households that are at or near federal poverty level report having enough resources to evacuate. However about 85 percent of respondents that are above the federal poverty level have the resources to evacuate. These figures bring to light the large number of Hampton Roads households that will require additional resources to sustain living outside the Region for five days. The constraints of limited financial resources are documented in this report as a consideration limiting the propensity to depart the region. Efforts by government agencies to either increase departure rates or mandate evacuation must recognize this tension.



..by..Evacuation Zone

The chart below illustrates, among all households, the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across Enough Cash or Credit to Evacuate (yes, no).

Having enough cash or credit to support everyone while evacuating out of the region for 5 days does not seem to be related to the evacuation zone, as the following report not having enough cash or credit to evacuate: Zone A (16 percent), Zones B and C (18 percent), and Zone D (20 percent).

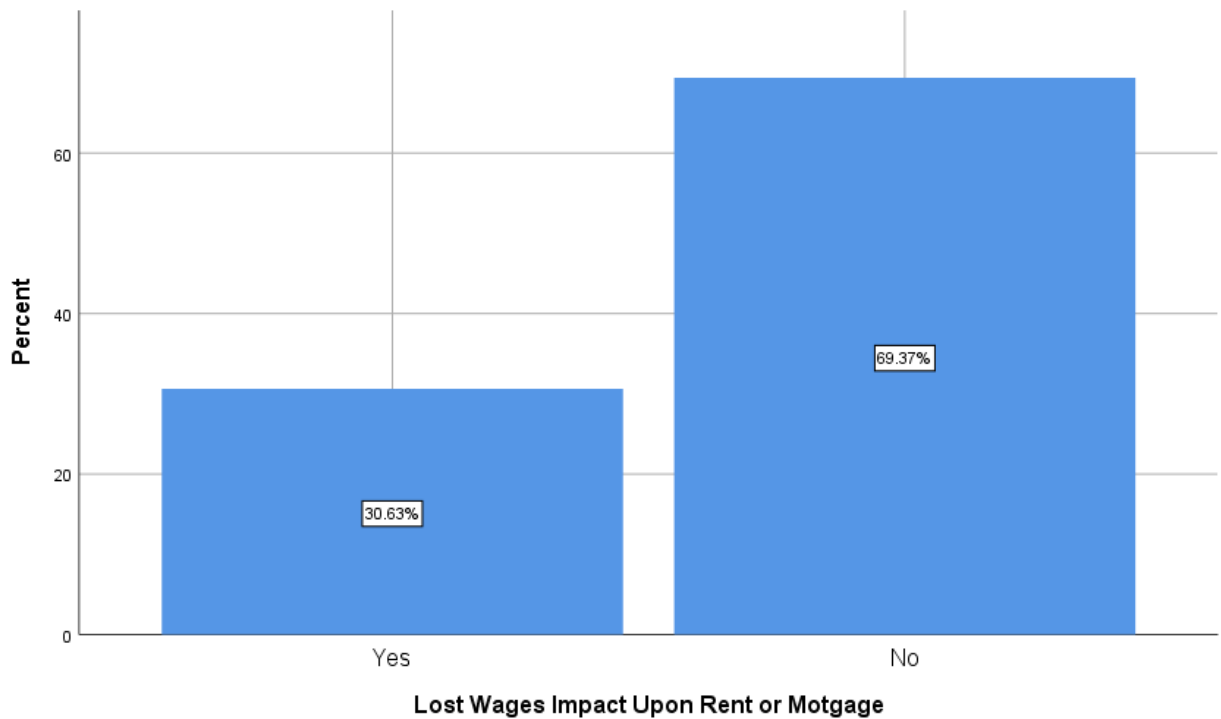




## Lost Wages Impact Upon Rent or Mortgage

A storm even can be disruptive to normal business and economic activities. Disruptions to work may be associated with loss of pay, which in turn can cause difficulty for some households to cover the next month's rent or mortgage payments.

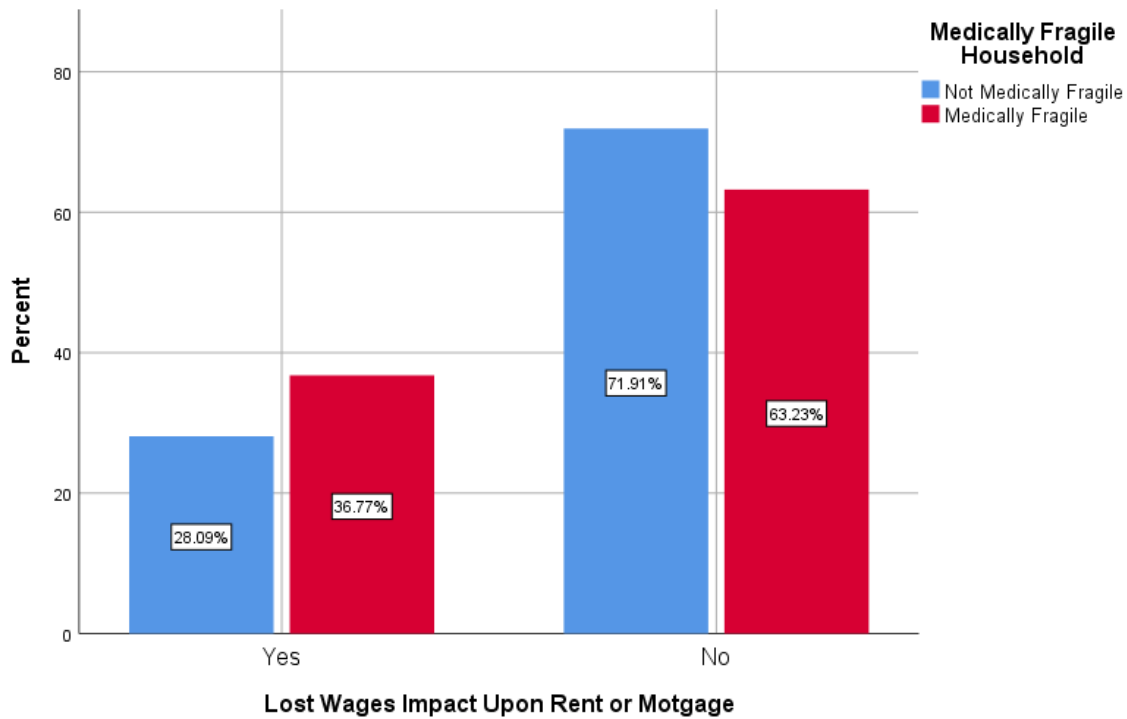
The chart below illustrates, among all households, the proportion of households that report there would be difficulty in making the next month's rent or mortgage payment if a week's pay were to be lost due to a storm. Nearly 31.6 percent of all households report that losing a week's pay due to a storm would cause difficulty in making the next month's rent or mortgage payment. The eight charts on the following pages will examine this controlling for household characteristics.



..by..Medically Fragile Household

The chart below illustrates, among all households, the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across Lost Wages Impact Upon Rent or Mortgage (yes, no).

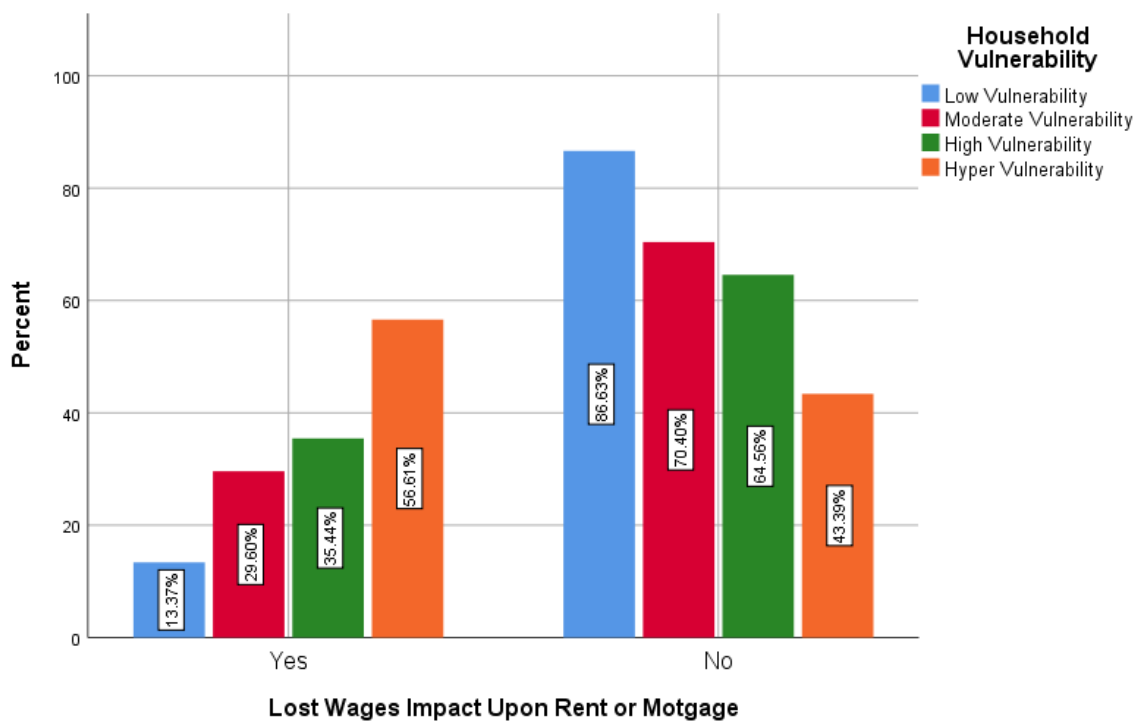
Medically fragile households, relative to not medically fragile households, are more likely to report that there would be difficulty in making the next month's rent or mortgage payment if a week's pay were to be lost due to a storm, nearly 36.8 percent and 28.1 percent, respectively.



..by..Household Vulnerability

The chart below illustrates, among all households, the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across Lost Wages Impact Upon Rent or Mortgage (yes, no).

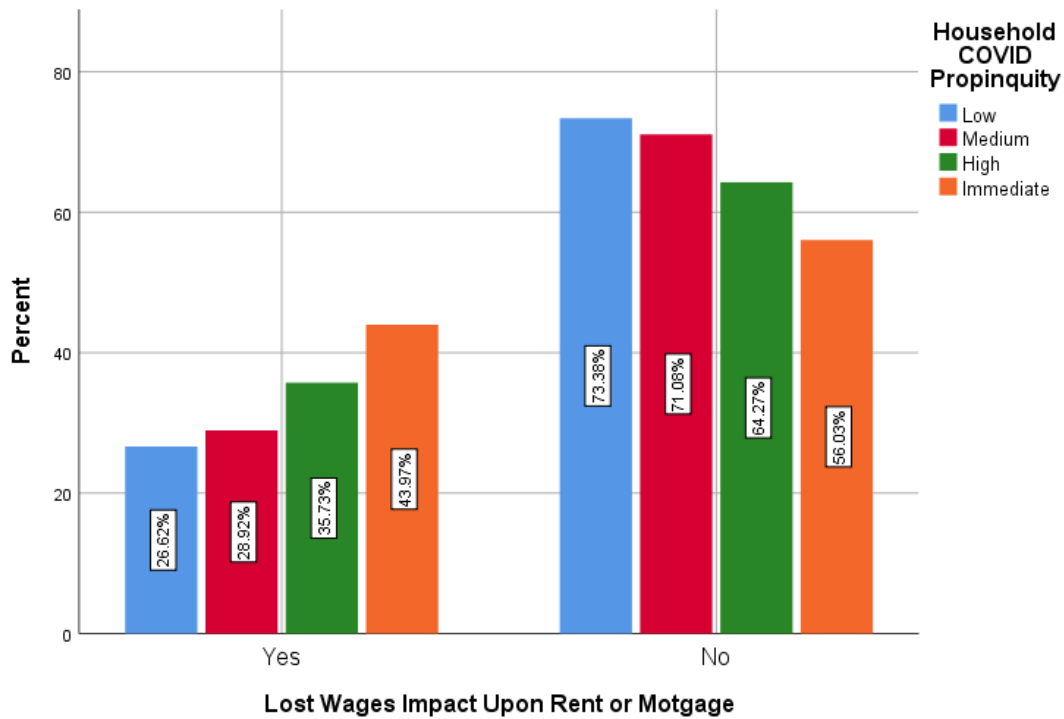
There is a clear relationship between difficulty in making rent or mortgage and household vulnerability. Hyper vulnerability households, relative to other vulnerability households, are more likely to report difficulty in making next month's rent or mortgage if the household were to lose a week's pay due to a storm. This includes about 13.4 percent of low vulnerability, 29.6 percent of moderate vulnerability, about 35.4 percent of high vulnerability, and just over 56.6 percent of hyper vulnerability households being unable to pay next month's rent or mortgage.



..by..Household COVID Propinquity

The chart below illustrates, among all households, the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across Lost Wages Impact Upon Rent or Mortgage (yes, no).

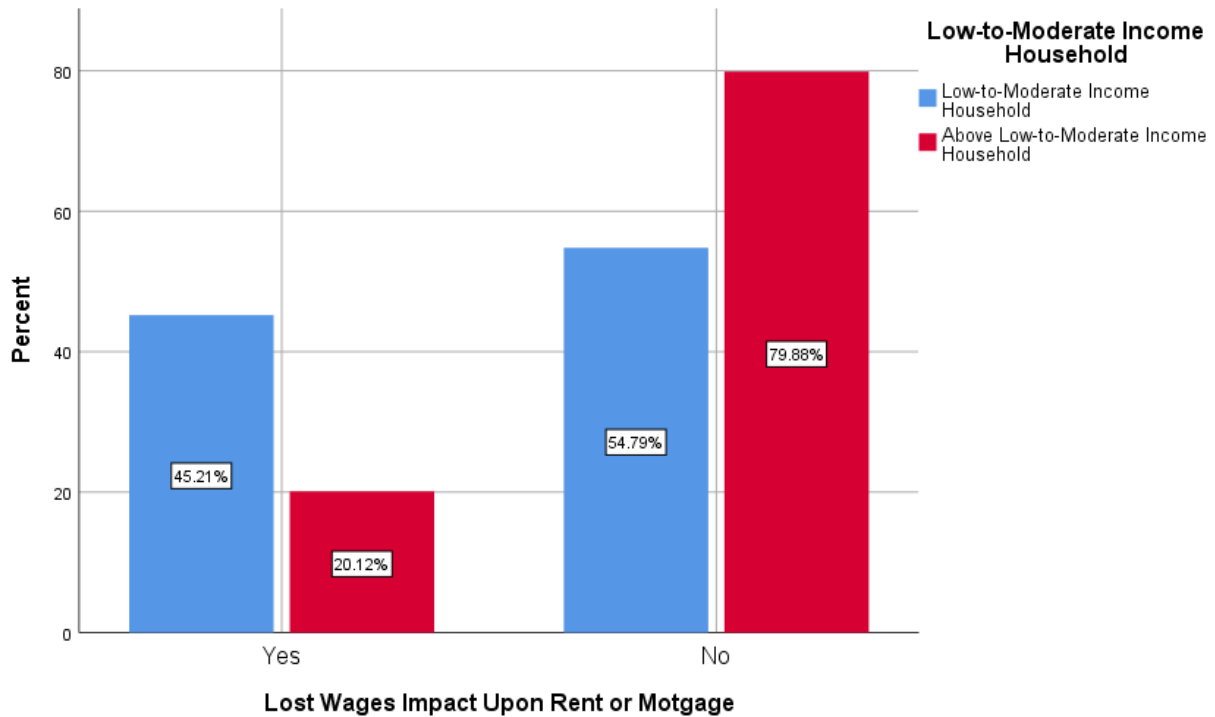
There is a clear relationship between difficulty in making rent or mortgage and household COVID propinquity. Immediate COVID propinquity households, relative to other COVID propinquity households, are more likely to report difficulty in making next month's rent or mortgage if the household were to lose a week's pay due to a storm. Specifically: low household COVID propinquity (26.6 percent), medium household COVID propinquity (29 percent), high household COVID propinquity (36.7 percent) and immediate household COVID propinquity (44 percent).



..by..Low-to-Moderate Income Household

The chart below illustrates, among all households, the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across Lost Wages Impact Upon Rent or Mortgage (yes, no).

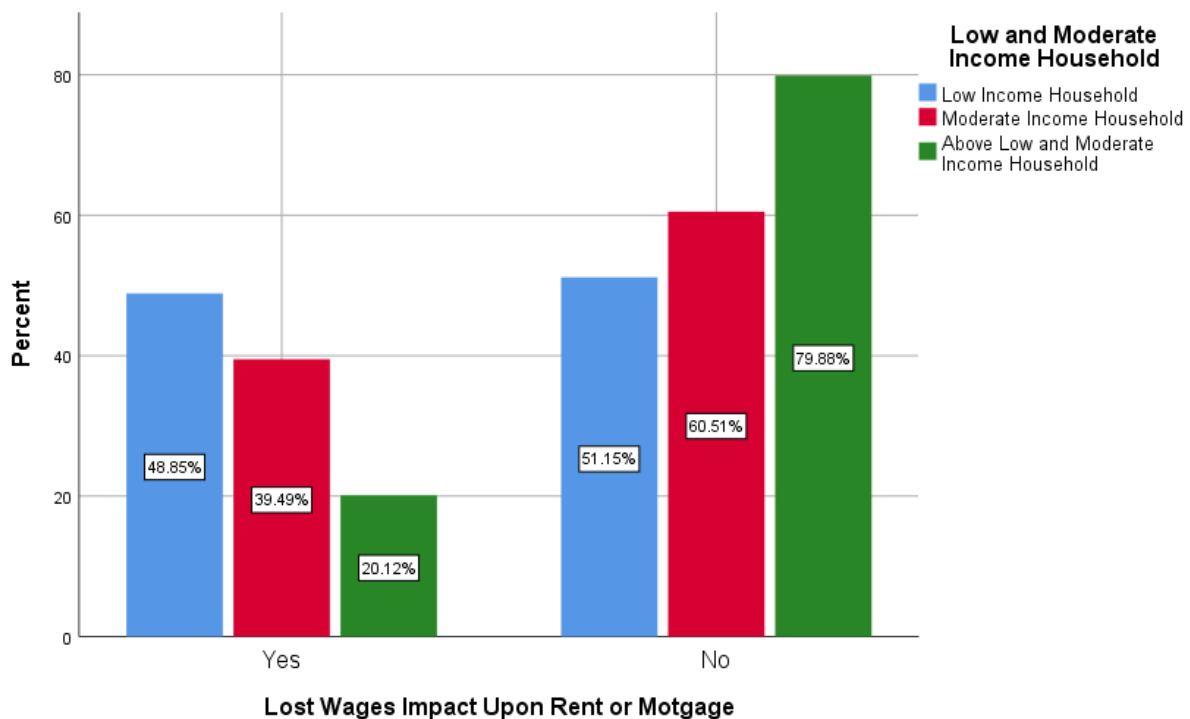
As the household income decreased, the households saw increased difficulty of making the next month's rent or mortgage payment should the household lose a week's pay due to the storm. Approximate 45.2 percent of low-to-moderate income households and 20.1 percent of above low-to-moderate income will have difficulty making their next month's rent or mortgage payment.



..by..Low and Moderate Income Household

This chart illustrates, among all households, the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across Lost Wages Impact Upon Rent or Mortgage (yes, no).

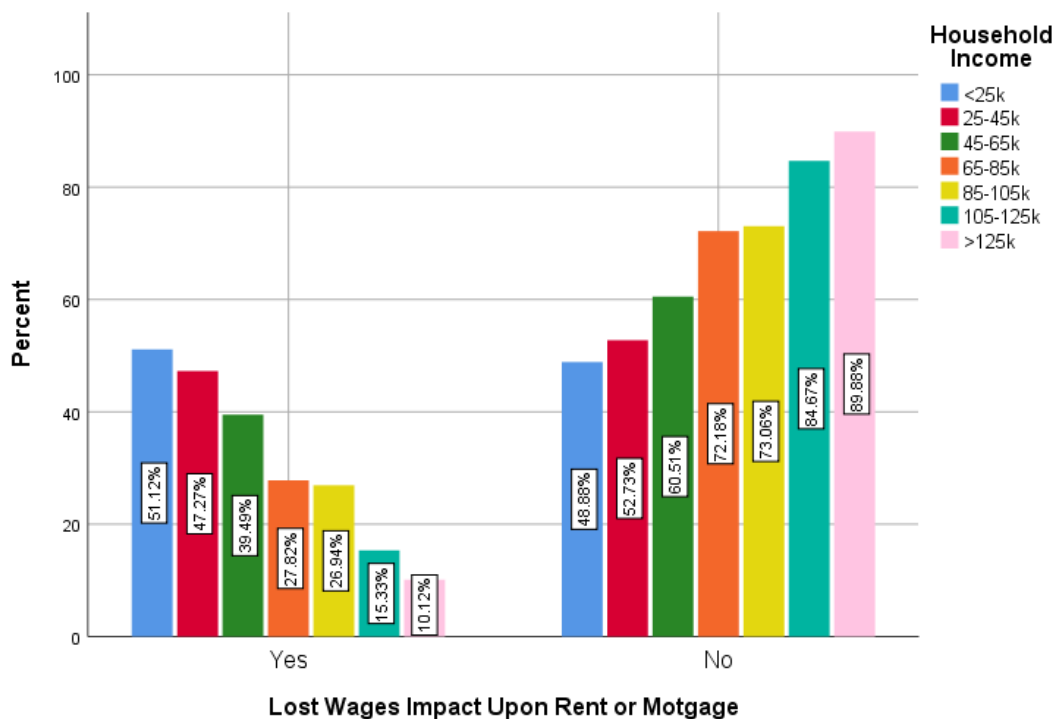
There is a clear relationship between difficulty in making rent or mortgage and household income. As household income decreases, the proportion of households reporting difficulty in making the next month's rent or mortgage payment increases. Approximate 20.1 percent of above low and moderate income households, about 39.5 percent of moderate-income households, and about 48.9 percent of low income households report, if they were to lose a week's pay due to a storm, then they would have difficulty making next month's rent or mortgage payment.



..by..Granulated Household Income

The chart below illustrates, among all households, the proportions within Household Income (disaggregated into seven household income gradients) across Lost Wages Impact Upon Rent or Mortgage (yes, no).

There is a clear relationship between difficulty in making rent or mortgage and granulated household income. Just over 51.1 percent of households making <25k would have difficulty paying their rent or mortgage from loss of a week’s pay due to a storm. For those households making >105k, about 10-15 percent indicate that losing a week’s pay would negatively impact their ability to make the next month’s rent or mortgage payment.

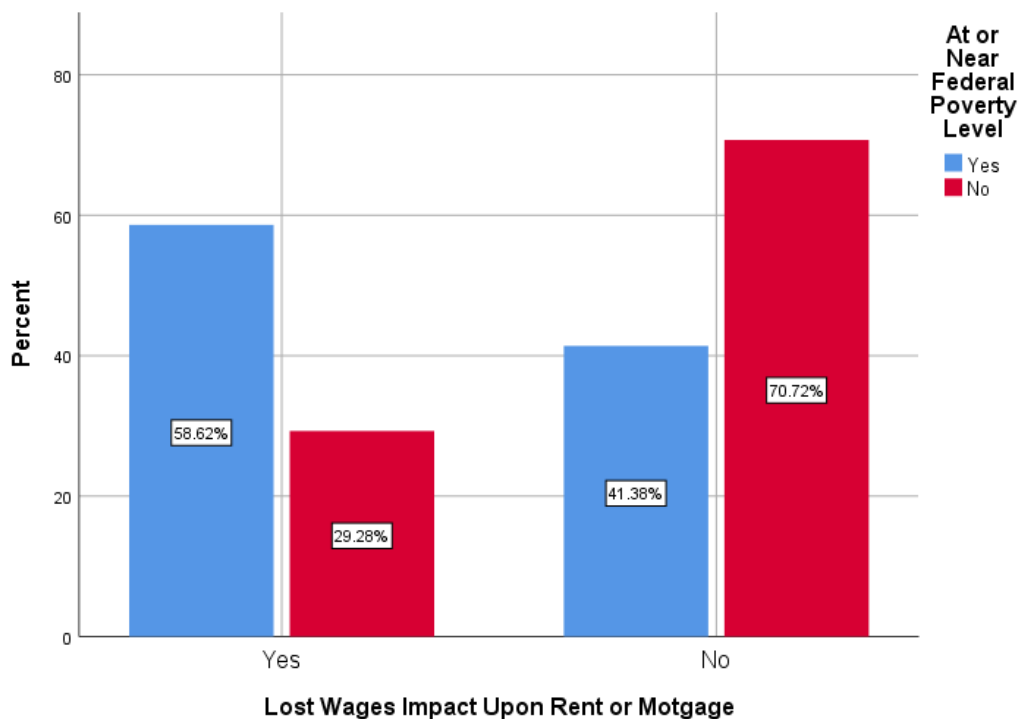


..by..At or Near Federal Poverty Level

The chart below illustrates, among all households, the proportions of households within At or Near Poverty Level (yes, no) across Lost Wages Impact Upon Rent or Mortgage (yes, no).

When considering federal poverty level, about 59.6 percent of households at or near the federal poverty level, and about 29.3 percent of households above the federal poverty level, report that losing a week's pay due to a storm would result in difficulty making next month's rent or mortgage.

While it may not be surprising that households at or near the poverty level do not have reserve reduces when income is disrupted, notable is that nearly a third of all other households also anticipate not being able to make next month's rent or mortgage should income be disrupted.

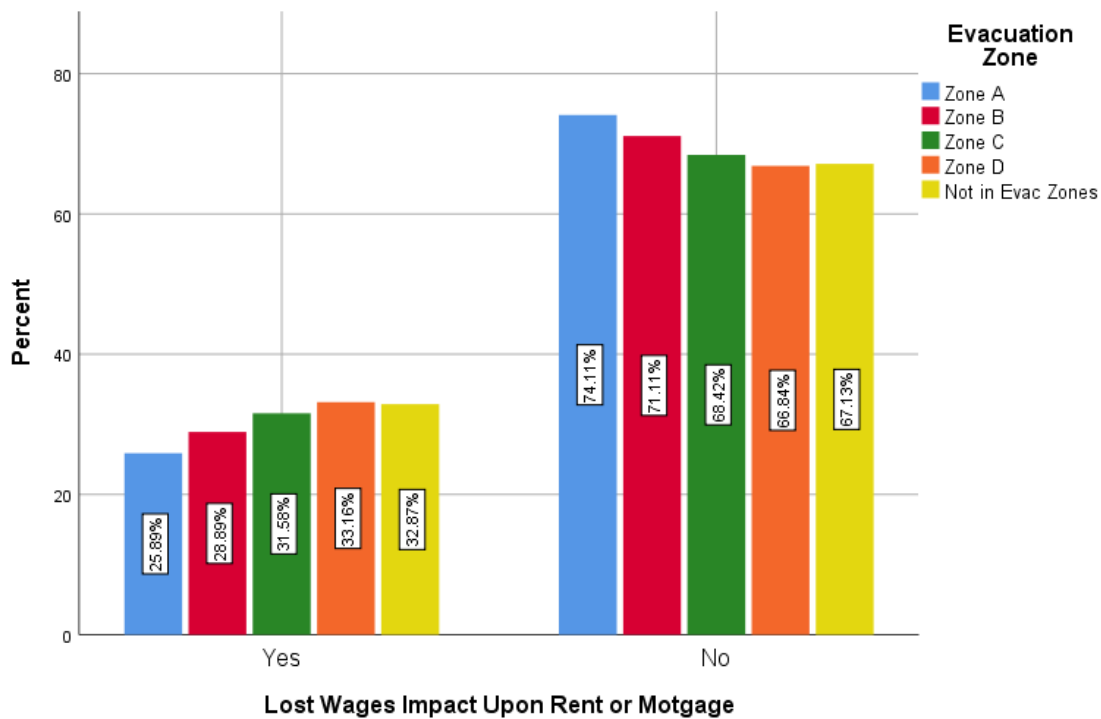




..by..Evacuation Zone

The chart below illustrates, among all households, the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across Lost Wages Impact Upon Rent or Mortgage (yes, no).

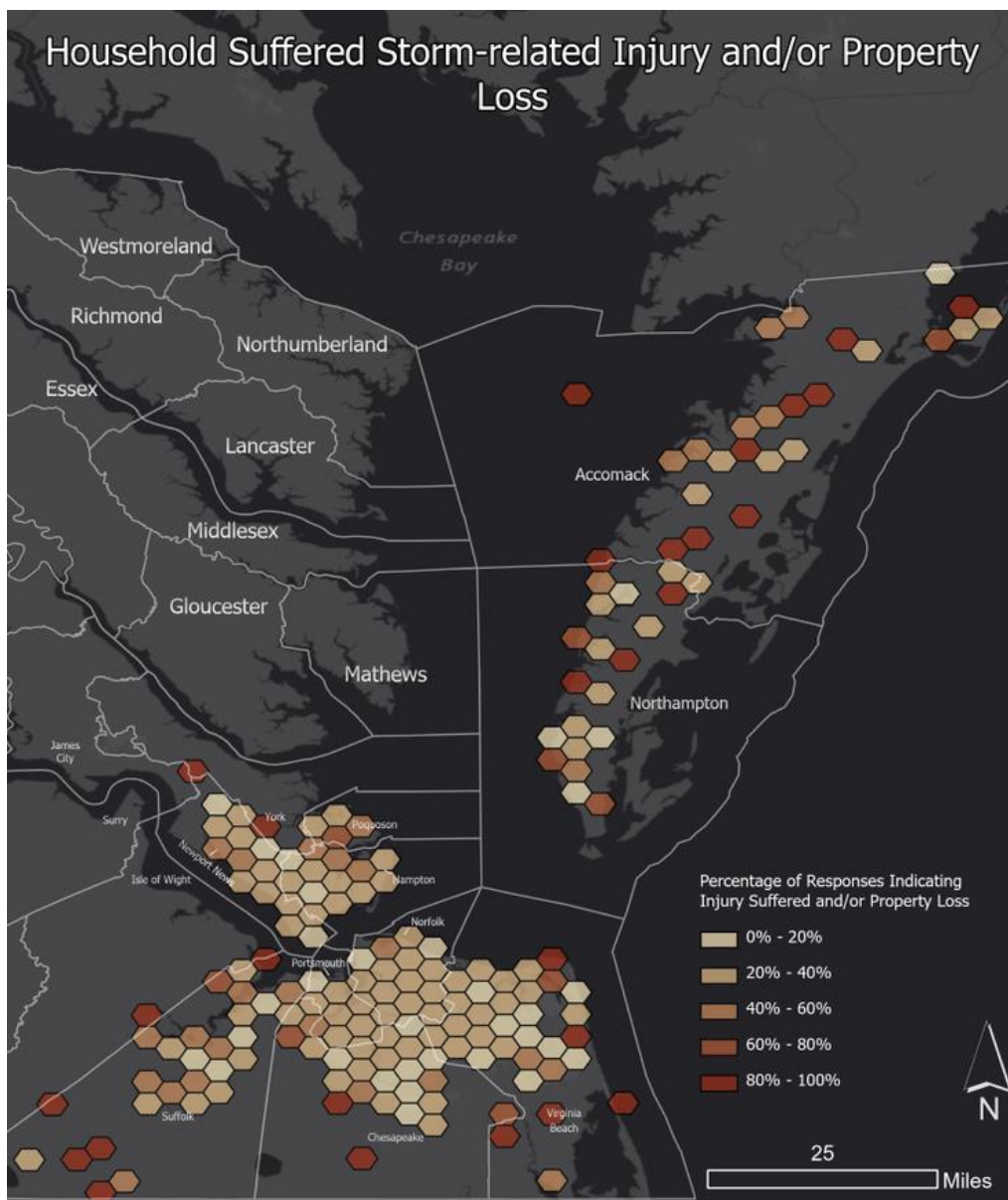
There is a clear relationship between difficulty in making rent or mortgage and geographic location. Approximately 25.9 percent of households living in Zone A, about 28.9 percent of households living in Zone B, about 31.6 percent of households living in Zone C, and about 33.2 percent of households living in Zone D report that losing a week's pay would have a negative impact upon the ability to pay the next month's rent or mortgage.



## Suffered Property Loss and/or Injury (Map)

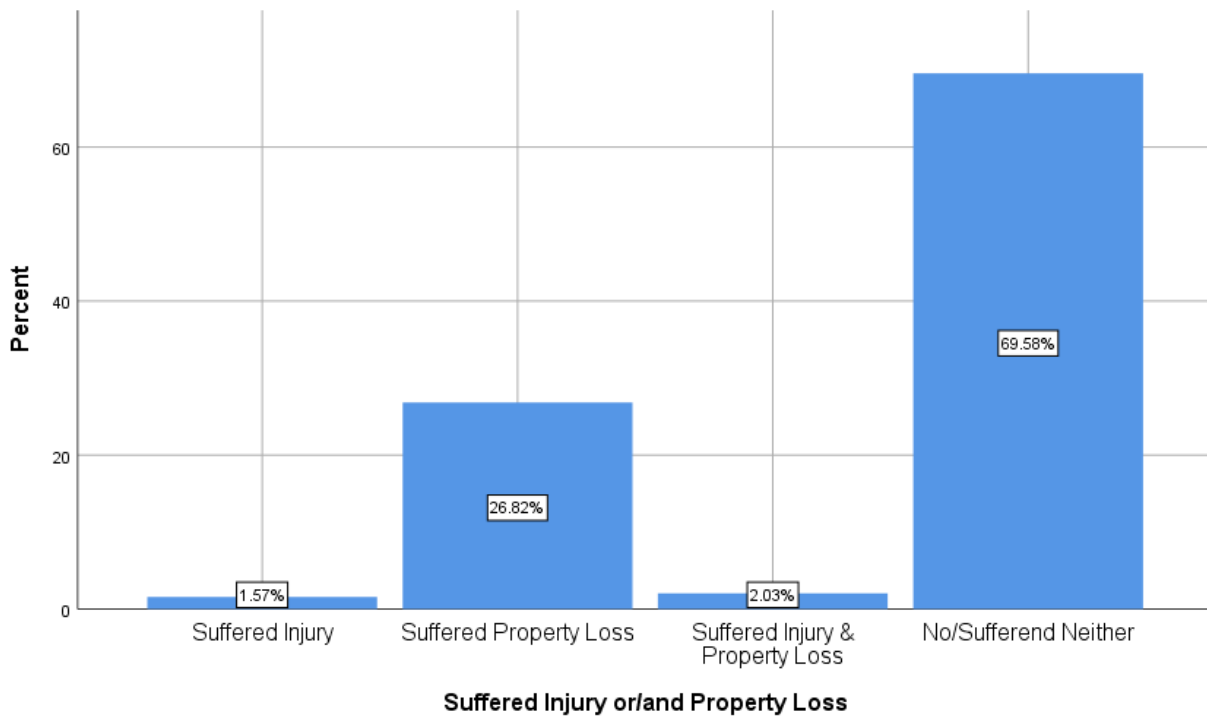
The below hexagonal cluster map illustrates the percent of households within hexagonal areas that report 'yes,' a household has suffered storm-related injury and/or property loss.

Each polygon contains geolocated study cases. A household's yes score is associated with a particular polygon within which it falls. The percent of 'yes' responses within a polygon is associated with a particular color coding; more yes responses are associated with darker colors representing the intensity of storm-related injury and/or property loss. As illustrated, neighborhoods in Accomack, Northampton, Virginia Beach, Chesapeake, and Newport News have high injury and/or loss relative to other areas across the region.



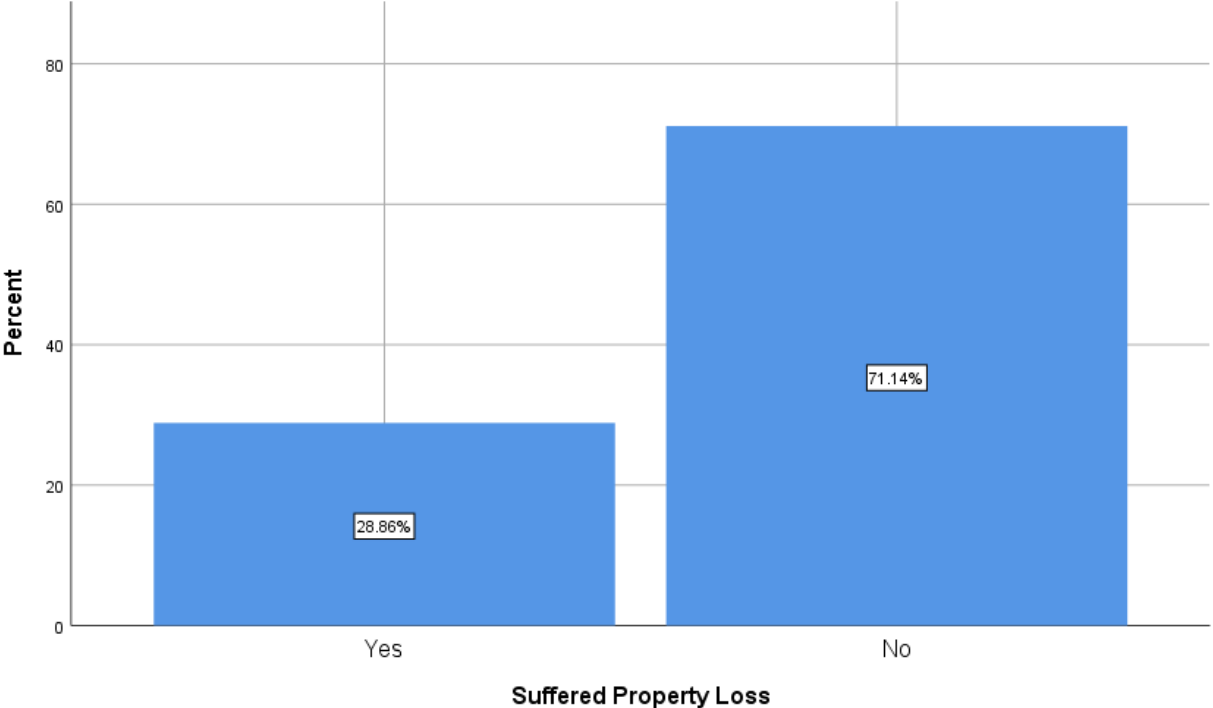
## Suffered Property Loss and/or Injury

Reported in the chart below, among all households, are the percentage that experience property loss and/or injury due to past severe weather events, such as storm-related flooding. As shown, 3.6 percent of households have at least a single family member that has suffered a storm-related injury (1.57 + 2.03 percent) and 28.9 percent of households have suffered storm-related property loss (26.82 + 2.03 percent). Together, slightly more than 30 percent of households have suffered some form of storm-induced loss.



### Suffered Property Loss

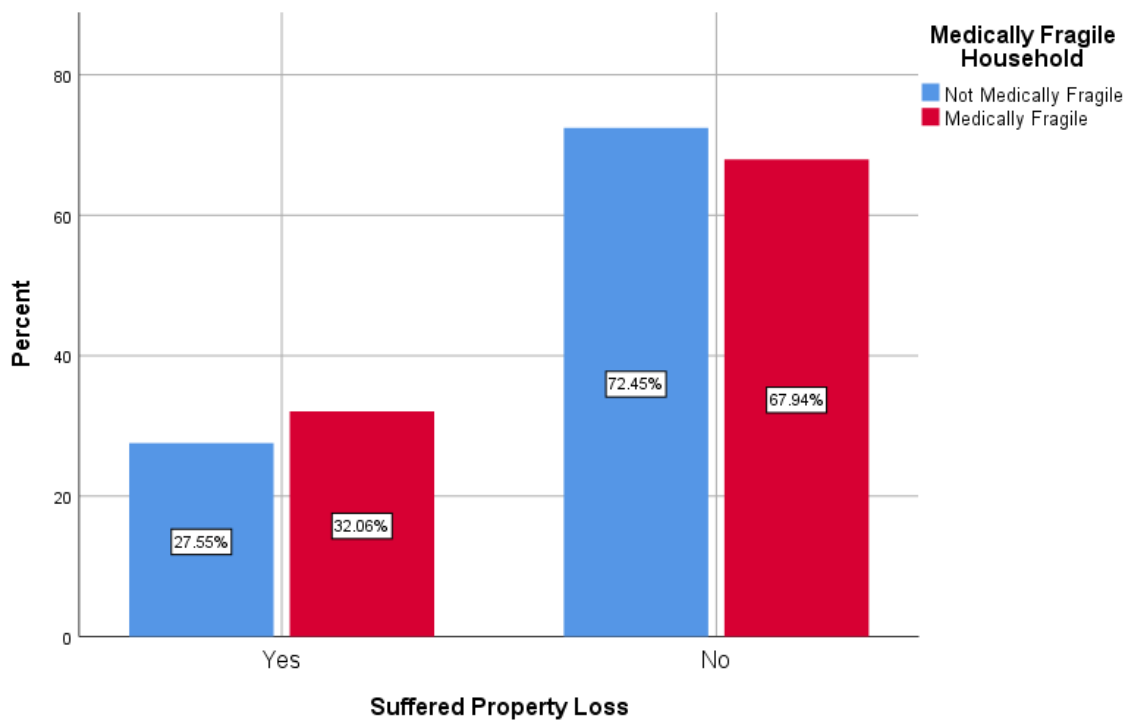
The chart below illustrates, among all households, nearly 28.9 percent report suffering a storm-related property loss at least a single time. The eight charts on the following pages will examine this controlling for household characteristics.



..by..Medically Fragile Household

The chart below illustrates, among all households, the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across Suffered Property Loss (yes, no).

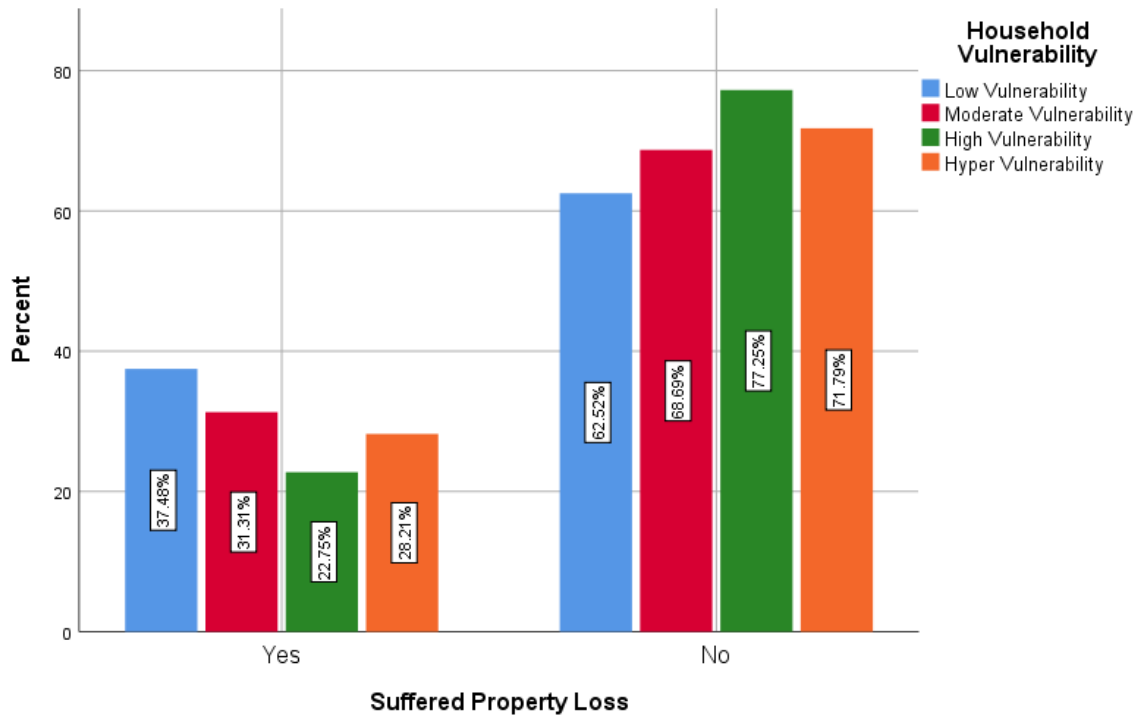
Medically fragile households, relative to not medically fragile households, are more likely to report suffering a property loss, nearly 32.1 percent and 27.6 percent, respectively.



..by..Household Vulnerability

The chart below illustrates, among all households, the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across Suffered Property Loss (yes, no).

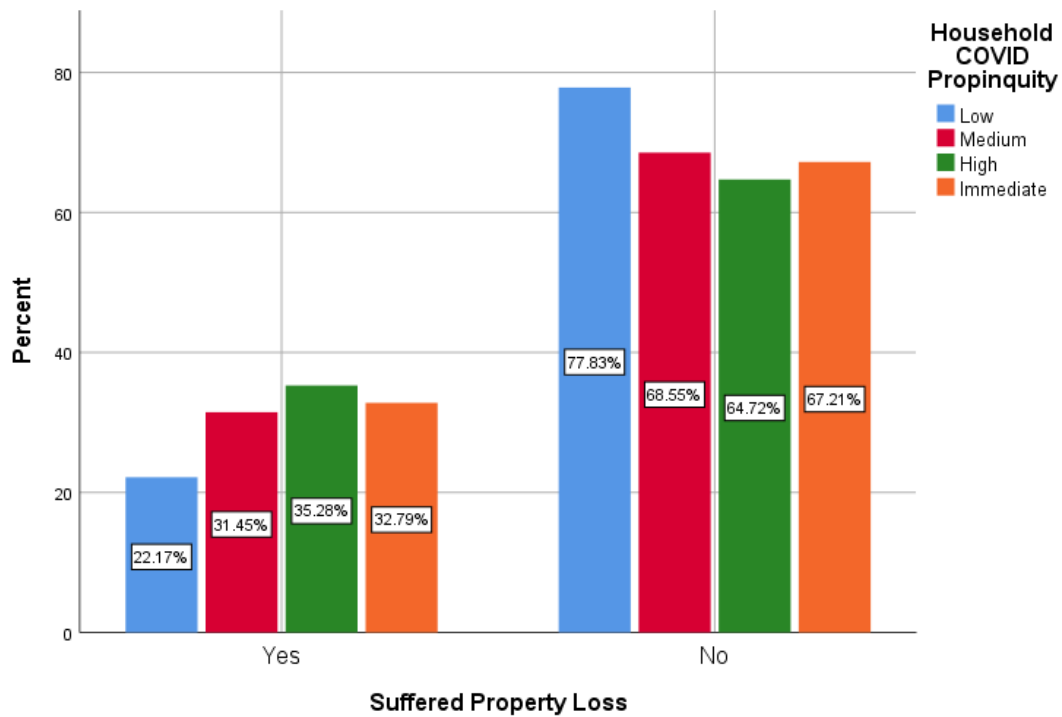
Low vulnerability households, relative to other vulnerability households, are more likely to report suffering a property loss. Specifically: low vulnerability (37.5 percent), moderate vulnerability (31.3 percent), high vulnerability (22.6 percent), and hyper vulnerability (26.2 percent)



..by..Household COVID Propinquity

The chart below illustrates, among all households, the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across Suffered Property Loss (yes, no).

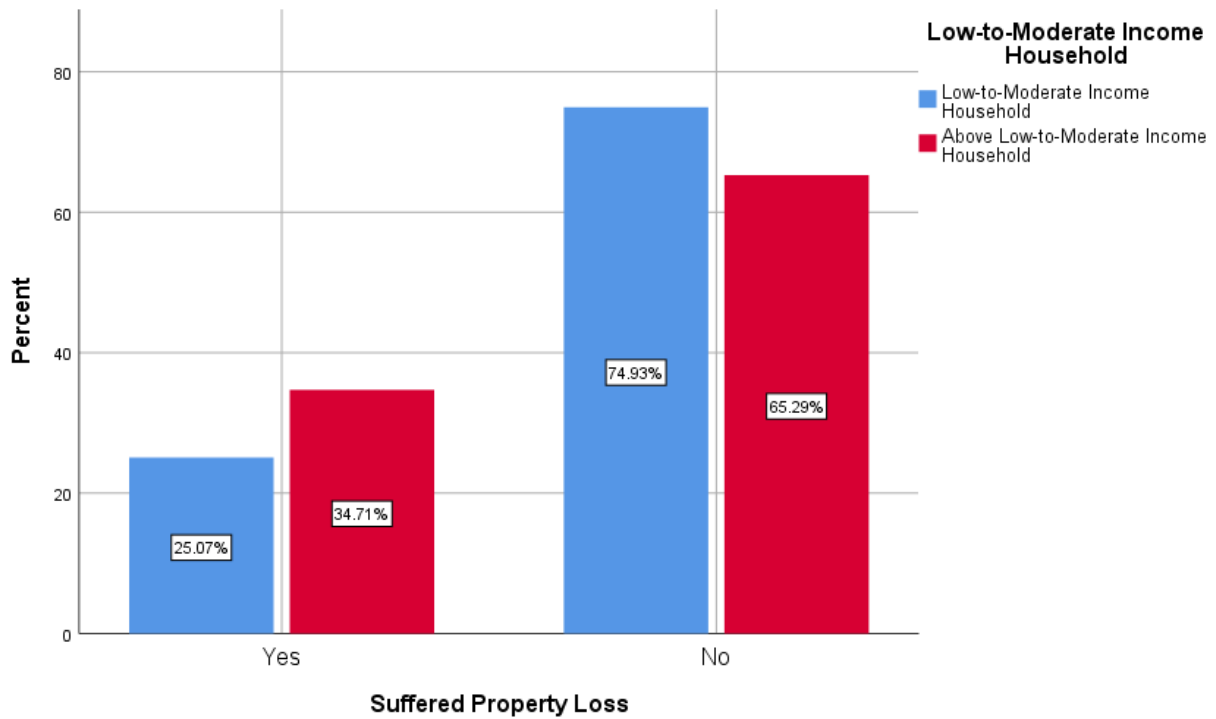
High COVID propinquity households, relative to other propinquity households, are more likely to report suffering a property loss. Specifically : low COVID propinquity households (21.2 percent), medium COVID propinquity households (31.5 percent), high COVID propinquity households (35.3 percent), and immediate COVID propinquity households (32.8 percent).



..by..Low-to-Moderate Income Household

The chart below illustrates, among all households, the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across Suffered Property Loss (yes, no).

Above low-to-moderate income households, relative to low-to-moderate income households, are more likely to report suffering a property loss, about 34.7 percent and 25.1 percent, respectively.

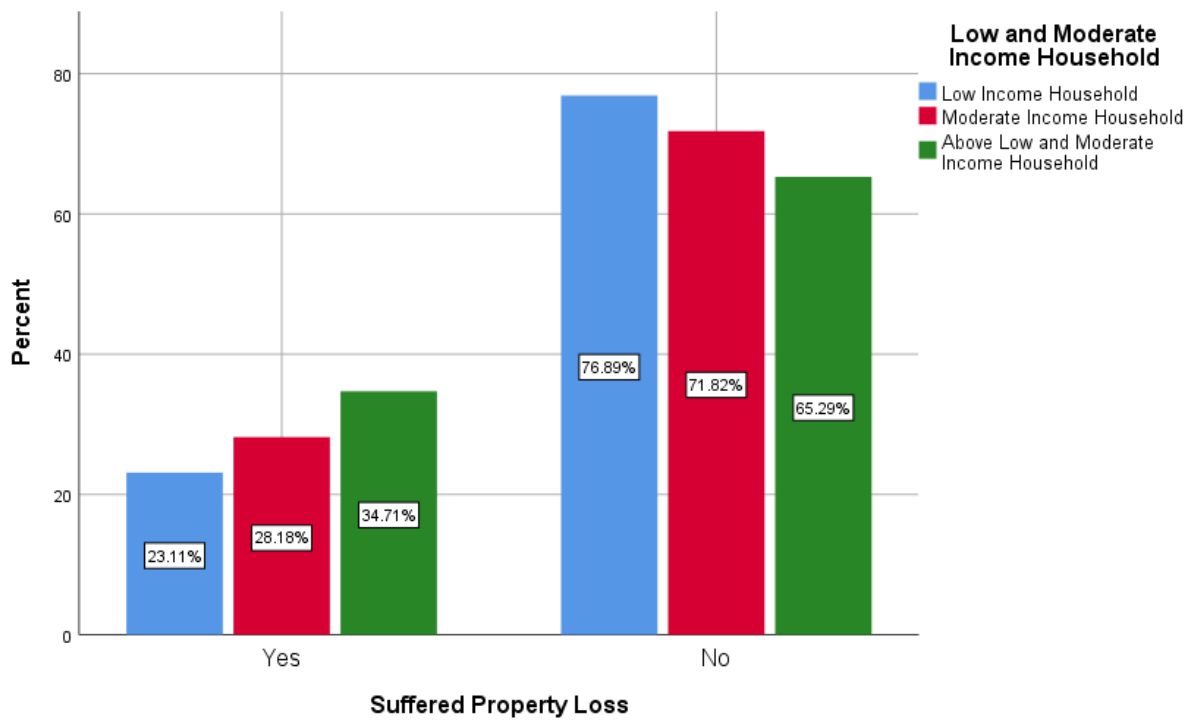




..by..Low and Moderate Income Household

This chart illustrates, among all households, the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across Suffered Property Loss (yes, no).

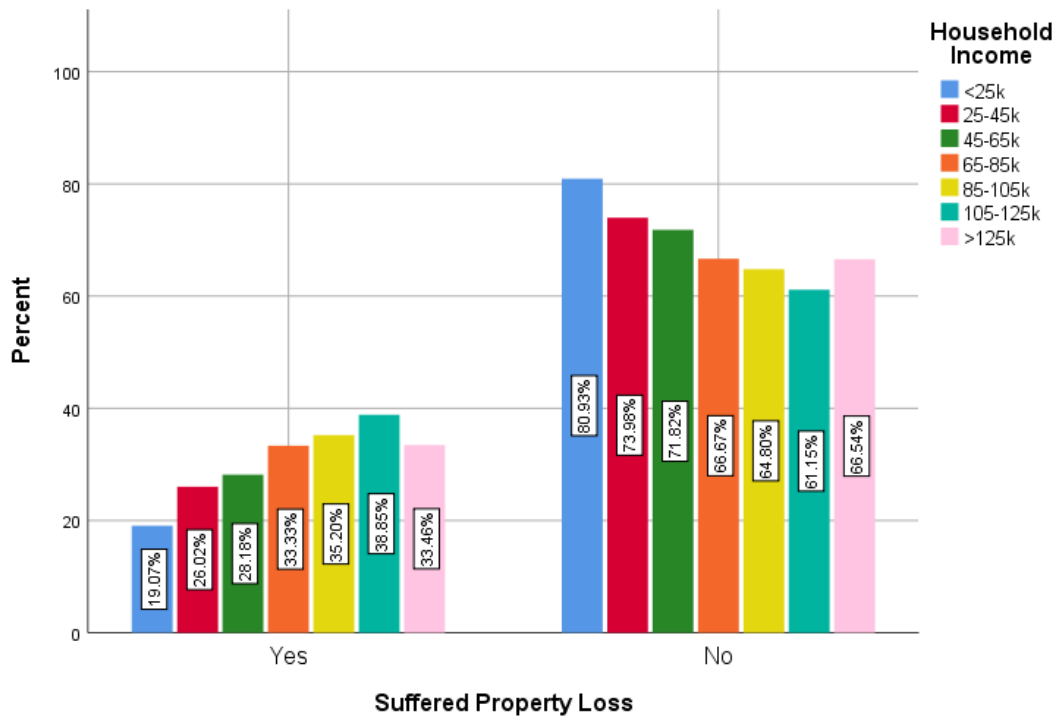
There is a clear relationship between income and suffered property loss due to past storm. In past severe weather events, about 23.1 percent of low income households, about 28.2 percent of moderate income households, and about 34.7 percent of above low and moderate income households suffered property loss.



..by..Granulated Household Income

This chart illustrates, among all households, the proportions within Household Income (disaggregated into seven household income gradients) across Suffered Property Loss (yes, no).

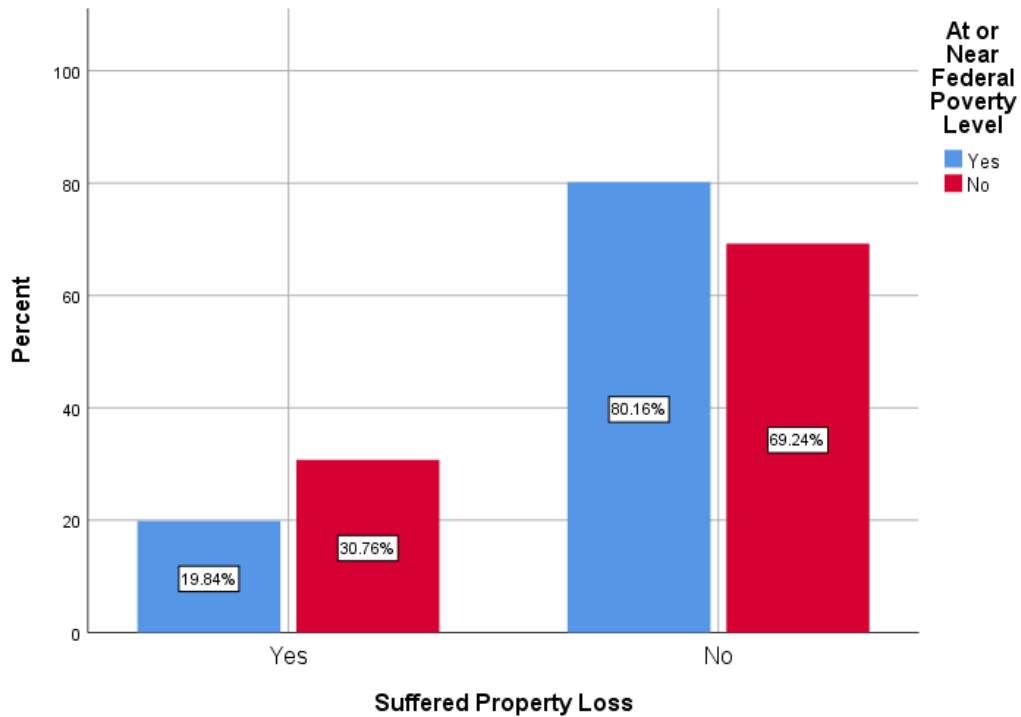
There is a clear relationship between granulated income and suffered property loss due to past storm. While 19.1 percent of households <25k report loss, more than 38.5 percent of households 105-125k income report loss.



..by..At or Near Federal Poverty Level

This chart illustrates, among all households, the proportions of households within At or Near Poverty Level (yes, no) across Suffered Property Loss (yes, no).

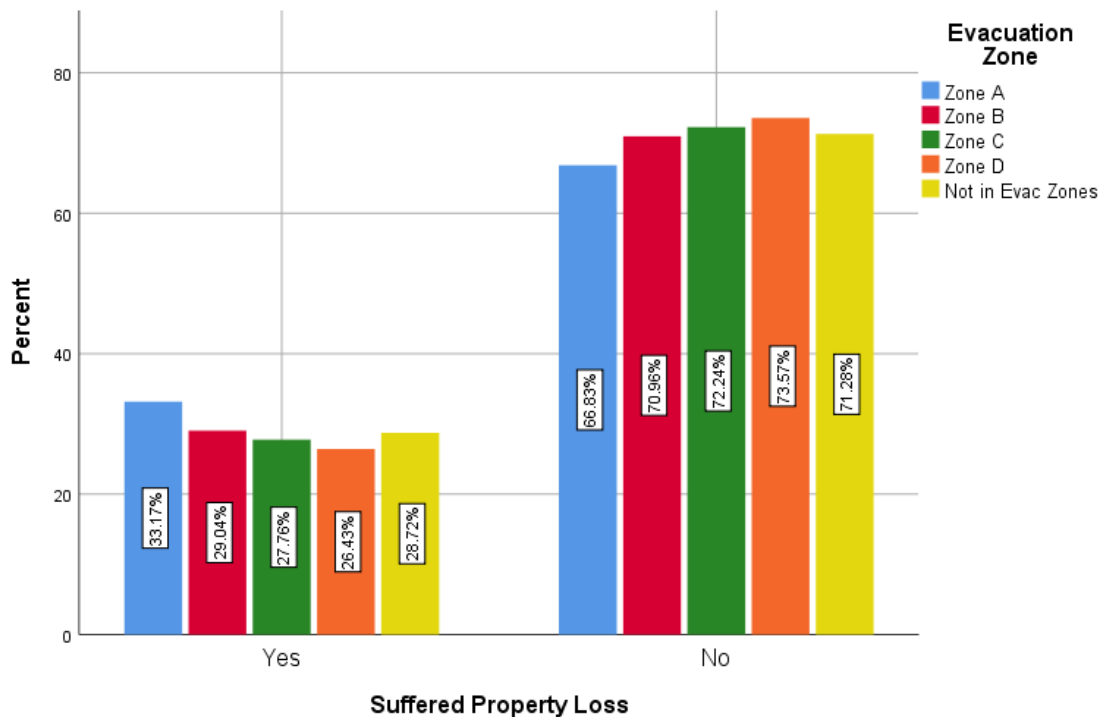
When considering federal poverty level, about 19.8 percent of households at or near the federal poverty level, and about 30.8 percent of households above the federal poverty level, report that suffering a loss due to a past storm.



..by..Evacuation Zone

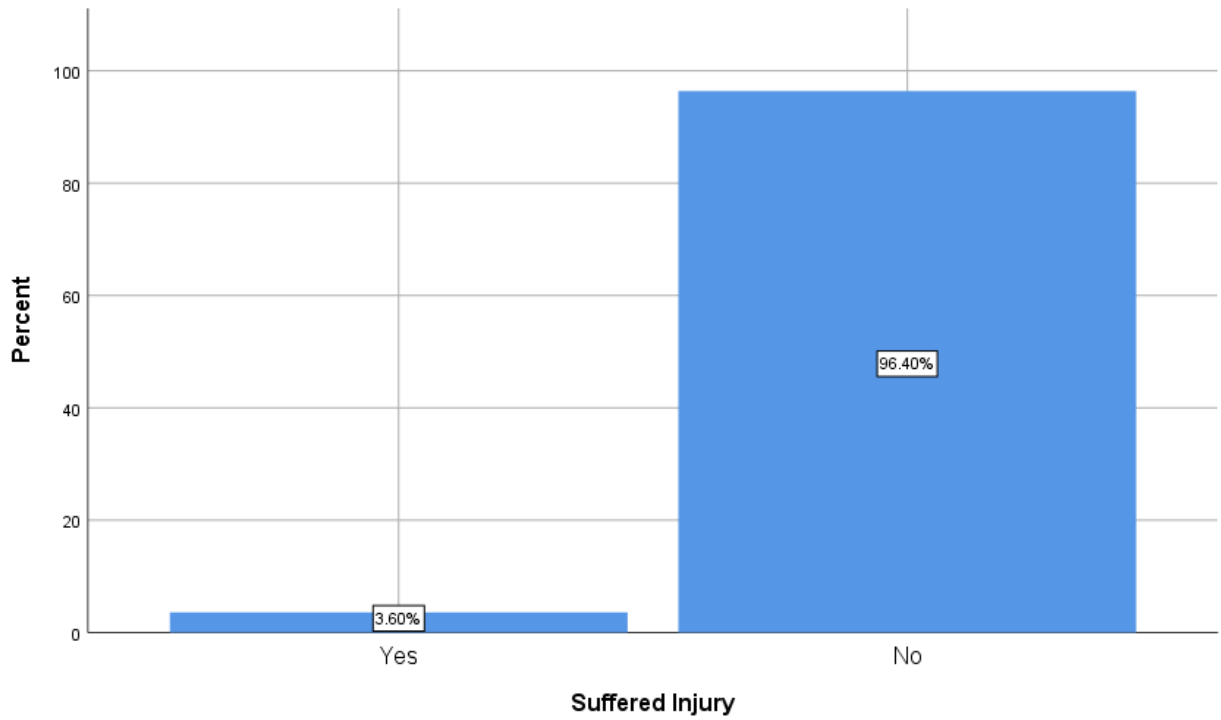
The chart below illustrates, among all households, the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across Suffered Property Loss (yes, no).

There is a clear relationship between geographic location and suffered property loss due to past storm. Households that are more proximate to shoreline (as indicated by evacuation zone), are more likely to report property loss relative to households less proximate to shorelines. Approximately 33.2 percent of households living in Zone A, about 29.0 percent of households living in Zone B, about 27.8 percent of households living in Zone C, and about 26.4 percent of households living in Zone D report having suffered property loss during a past severe weather event.



## Suffered Injury

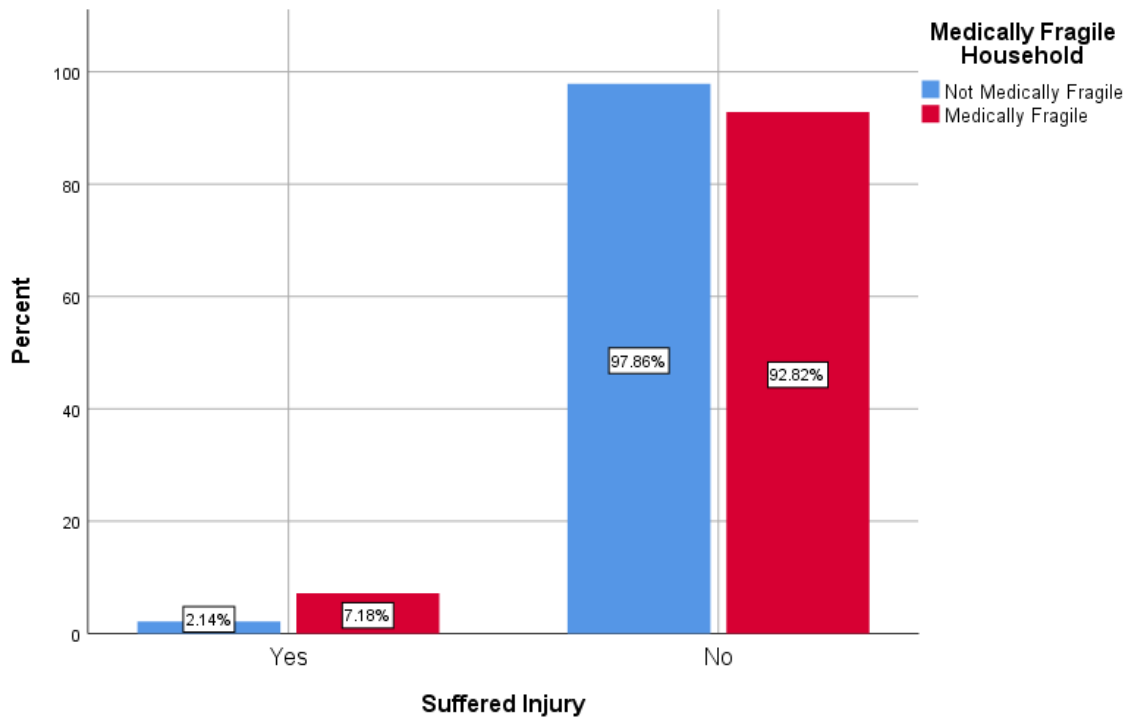
The chart below illustrates, among all households, 3.6 percent report at least a single family member suffering a storm-related injury at least a single time. The eight charts on the following pages will examine this controlling for household characteristics.



..by..Medically Fragile Household

The chart below illustrates, among all households, the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across Suffered Injury (yes, no).

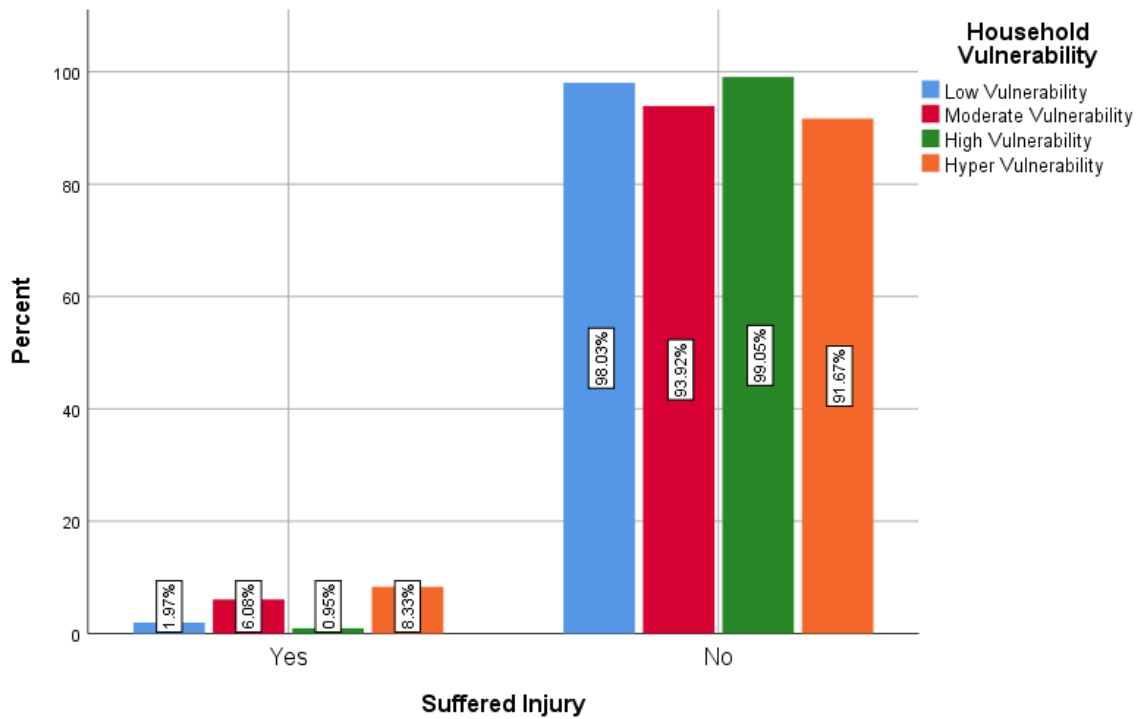
Medically fragile households, relative to not medically fragile households, are more likely to report suffering an injury. Approximately 7.2 percent of medically fragile households and about 2.1 percent of not medically fragile households report having suffered an injury in a past severe weather event.



..by..Household Vulnerability

The chart below illustrates, among all households, the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across Suffered Injury (yes, no).

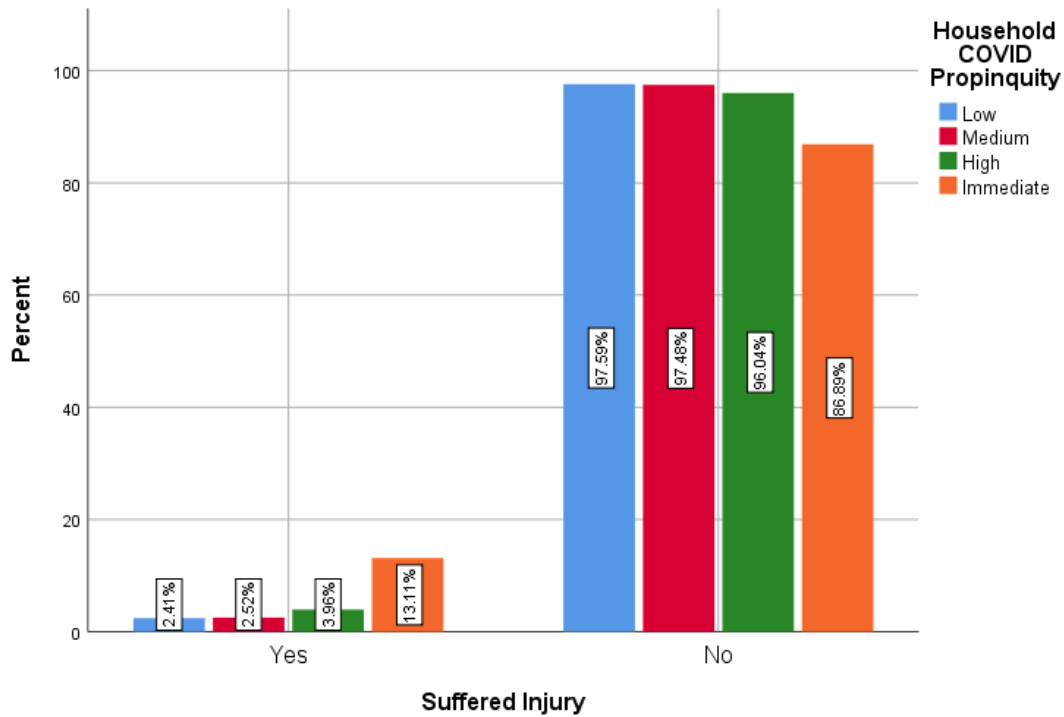
Hyper vulnerability households, relative to other vulnerability households, are more likely to report suffering an injury from a past storm event, 8.3 percent.



..by..Household COVID Propinquity

This chart illustrates, among all households, the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across Suffered Injury (yes, no).

Immediate COVID propinquity households, relative to other COVID propinquity households, are more likely to report suffering an injury from a past storm event, 13.1 percent. Households with immediate propinquity are about 3-4 times more likely to suffer injury or have a family member to suffer injury than those with a low, moderate, or high COVID propinquity.

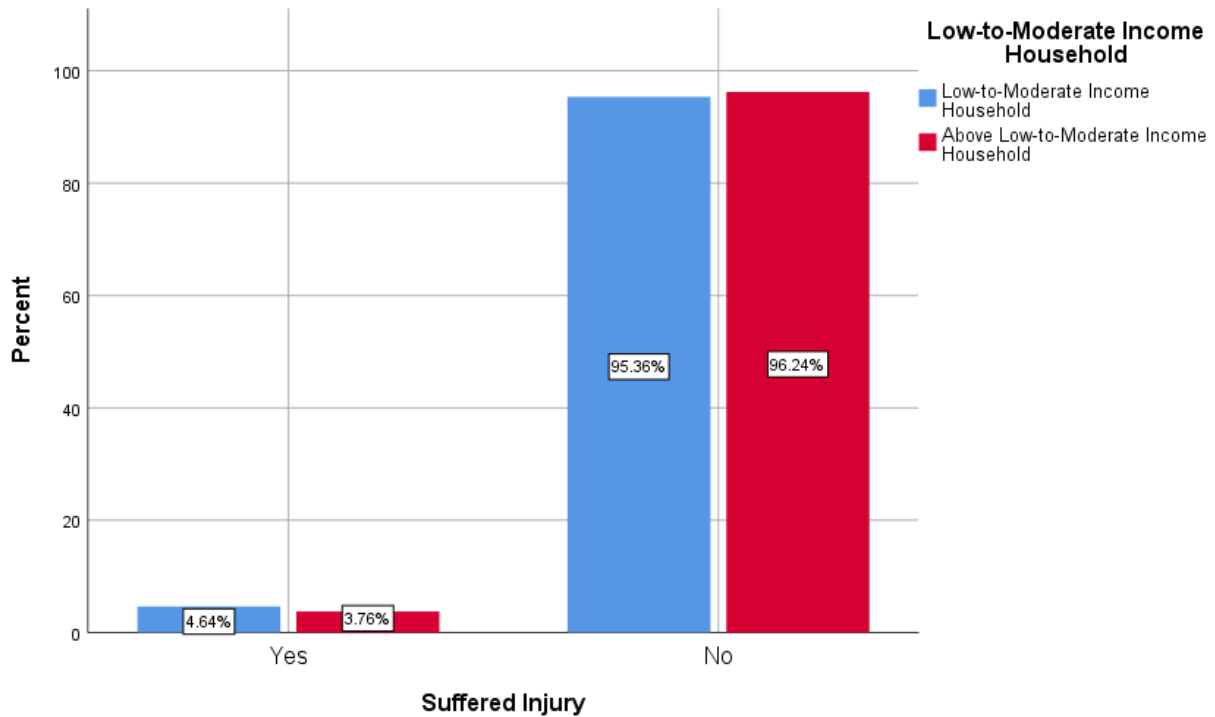




..by..Low-to-Moderate Income Household

The chart below illustrates, among all households, the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across Suffered Injury (yes, no).

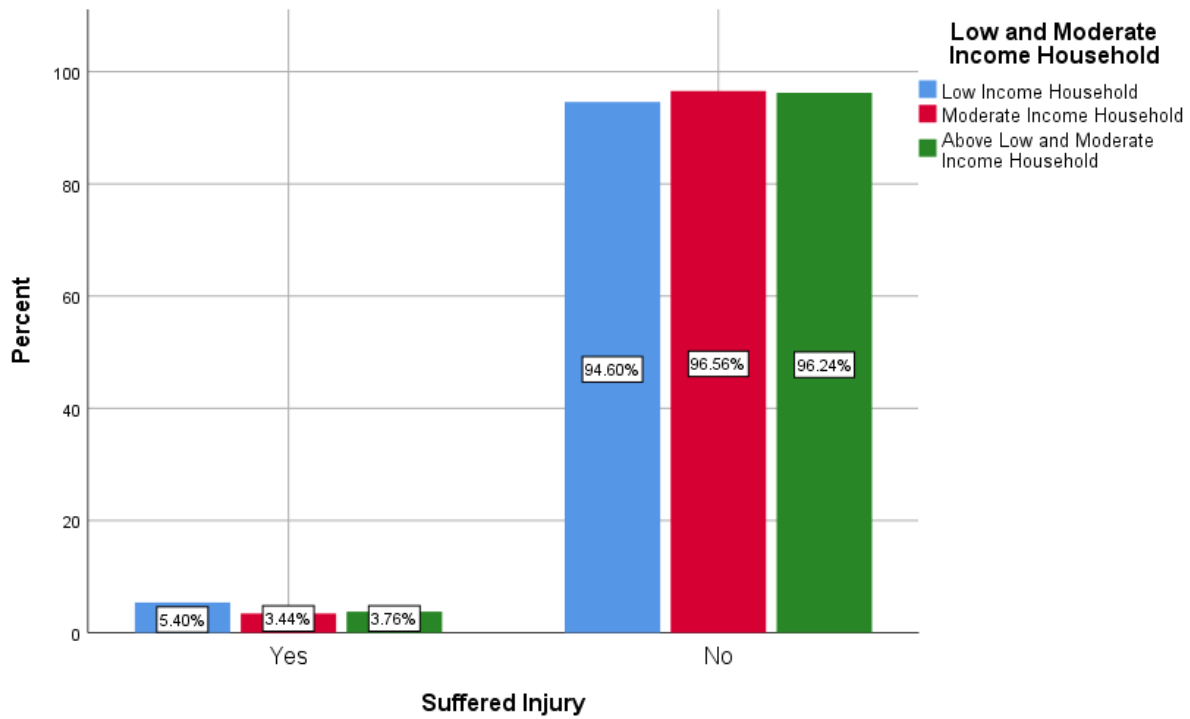
Statistically, there is no difference between low-to-moderate income households and above low-to-moderate income households in the likelihood of suffering injury from past storm event, roughly 3.8-4.6 percent.



..by..Low and Moderate Income Household

The chart below illustrates, among all households, the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across Suffered Injury (yes, no).

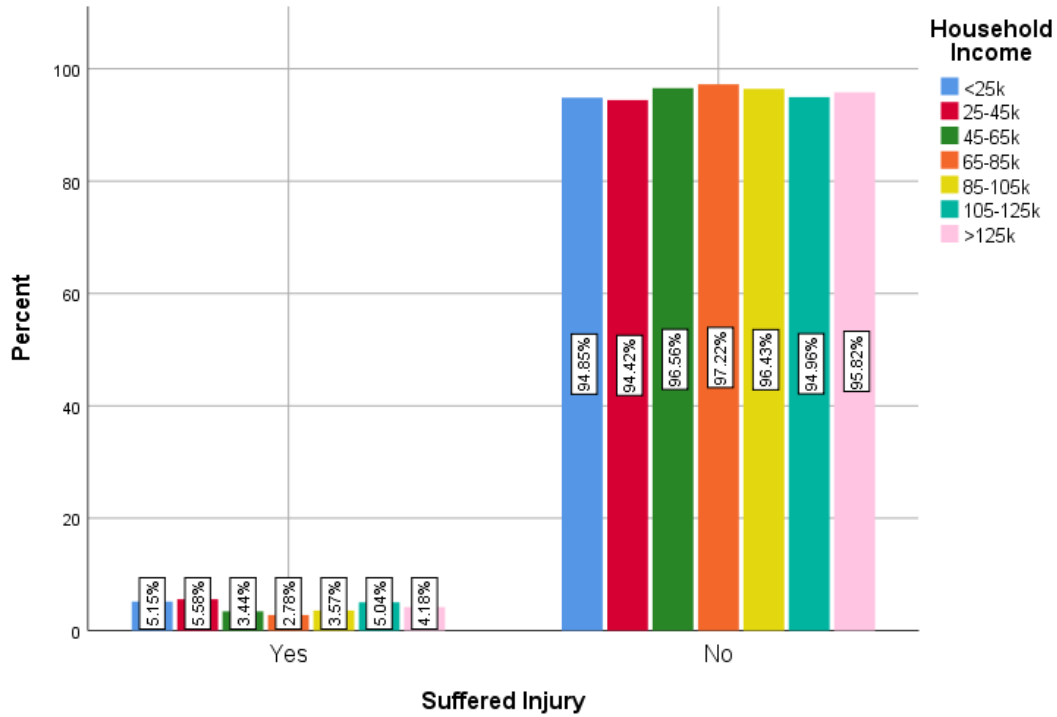
Low income households, relative to other income households, are slightly more likely to report suffering injury from past storm events.



..by..Granulated Household Income

This chart illustrates, among all households, the proportions within Household Income (disaggregated into seven household income gradients) across Suffered Injury (yes, no).

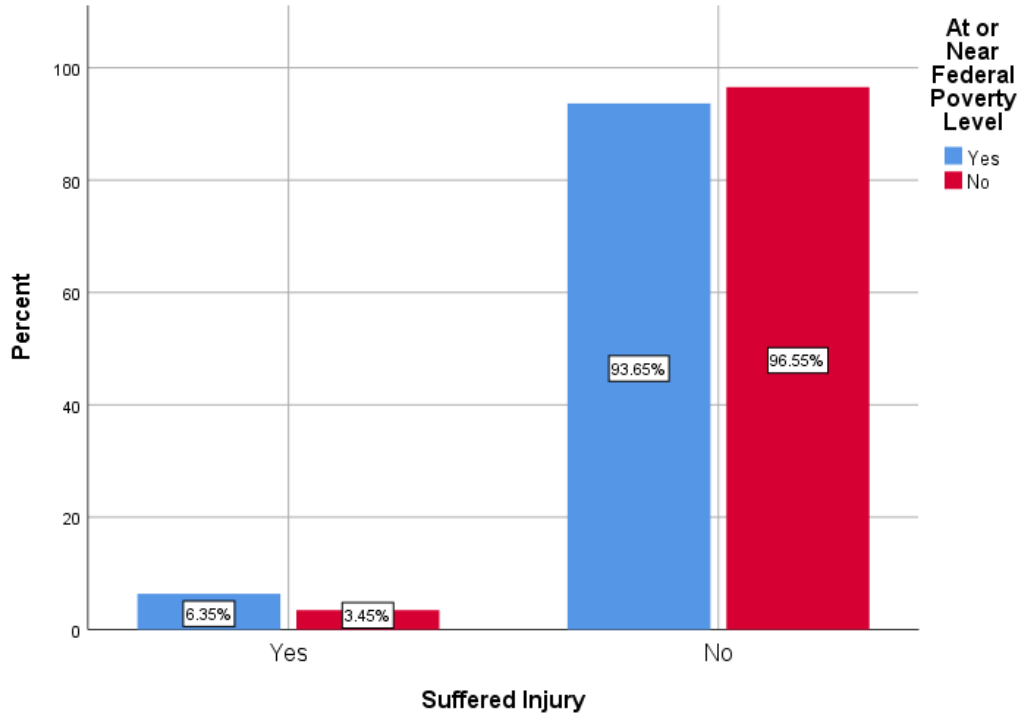
There is no clear pattern across income gradients among proportions reporting suffered injury from past storm events.



..by..At or Near Federal Poverty Level

The chart below illustrates, among all households, the proportions of households within At or Near Poverty Level (yes, no) across Suffered Injury (yes, no).

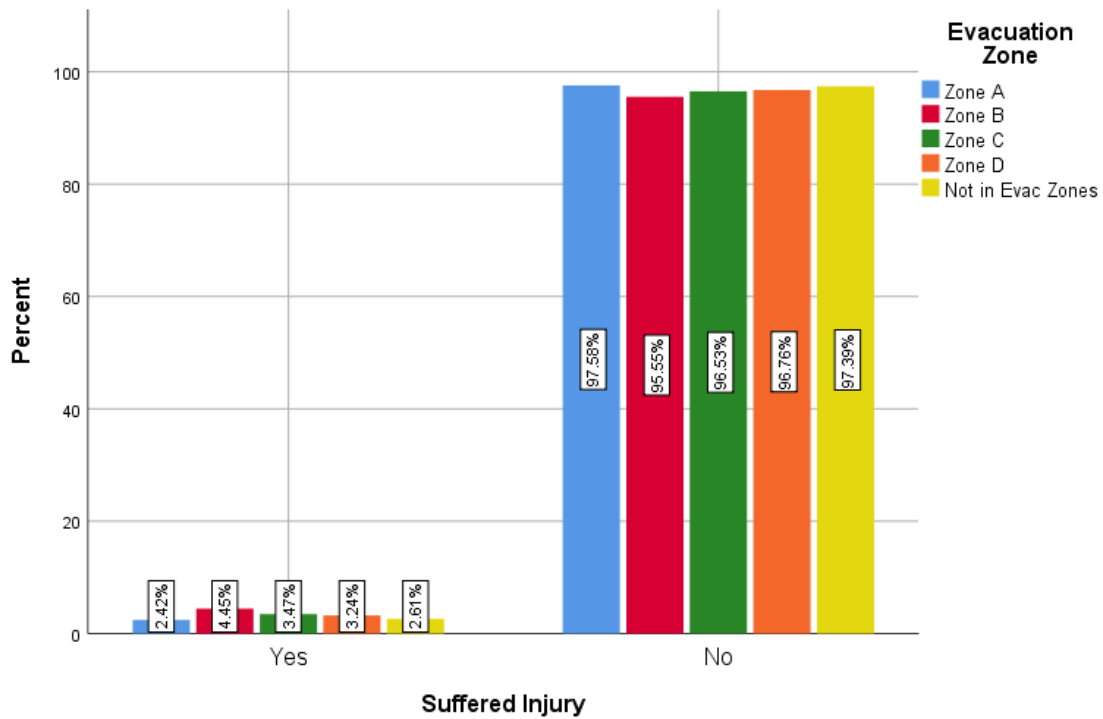
Households at or near federal poverty level, relative to households above this level, are more likely to report suffering an injury, approximately 6.4 percent and 3.5 percent, respectively.



..by..Evacuation Zone

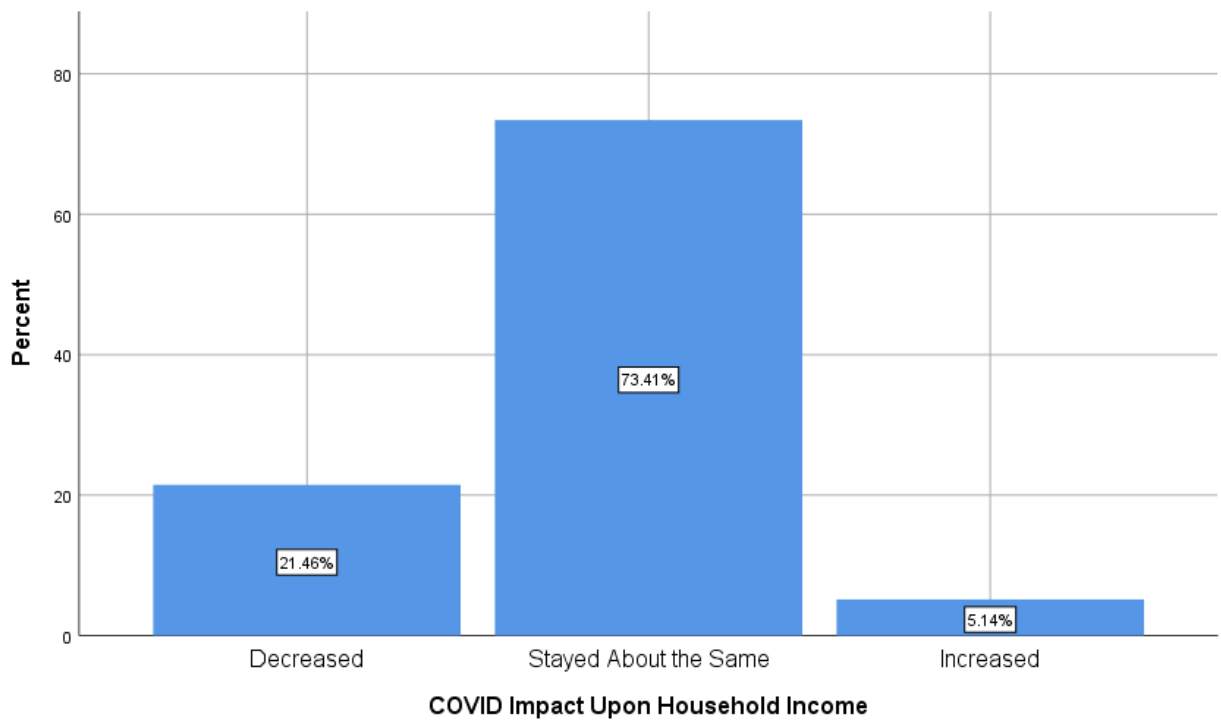
This chart illustrates, among all households, the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across Suffered Injury (yes, no).

There is no clear pattern across geographies among proportions reporting suffered injury from past storm events. Approximately 2.4 percent of households living in Zone A, about 4.5 percent of households living in Zone B, about 3.2 percent of households living in Zone C, and about 2.6 percent of households living in Zone D report having suffered injury.



## COVID Impact Upon Household Income

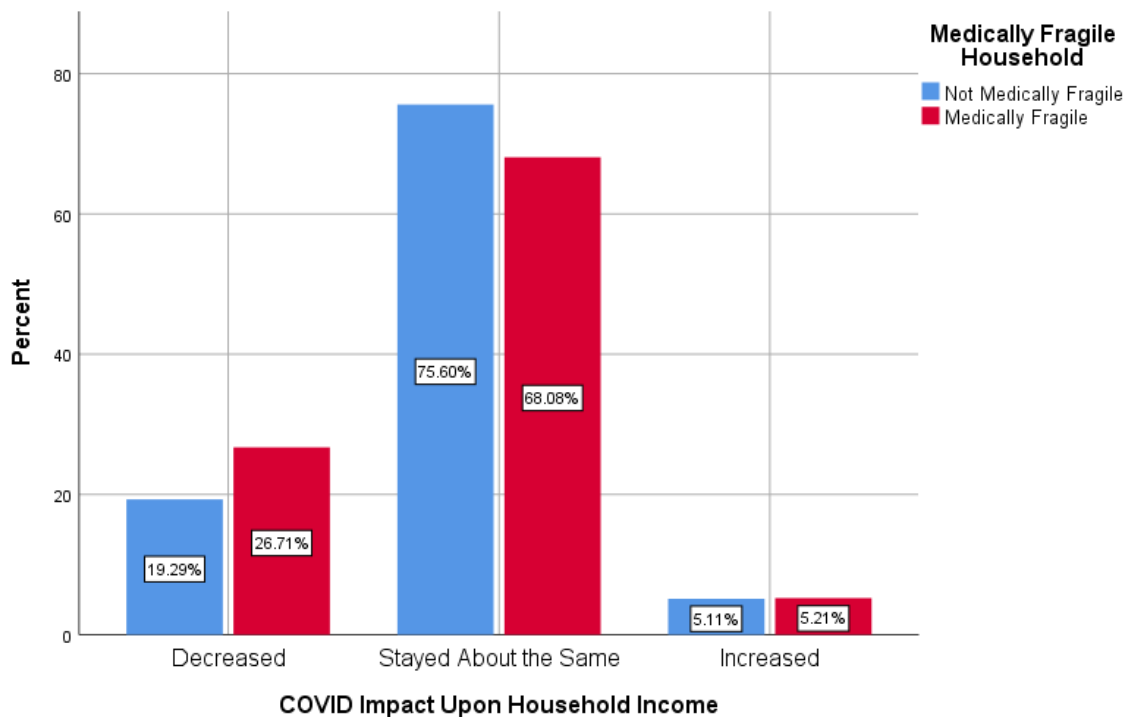
The chart below illustrates, among all households, the COVID pandemic has had economic impacts on households. More than 21.4 percent of all households report that their household income was decreased by the pandemic, more than 73.4 percent report their household income stayed the same during this time of COVID, and more than 5.1 percent note an increase in their household income. The eight charts on the following pages will examine this controlling for household characteristics.



..by..Medically Fragile Household

The chart below illustrates, among all households, the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across the categories within COVID Impact Upon Household Income (decreased, stayed about the same, and increased).

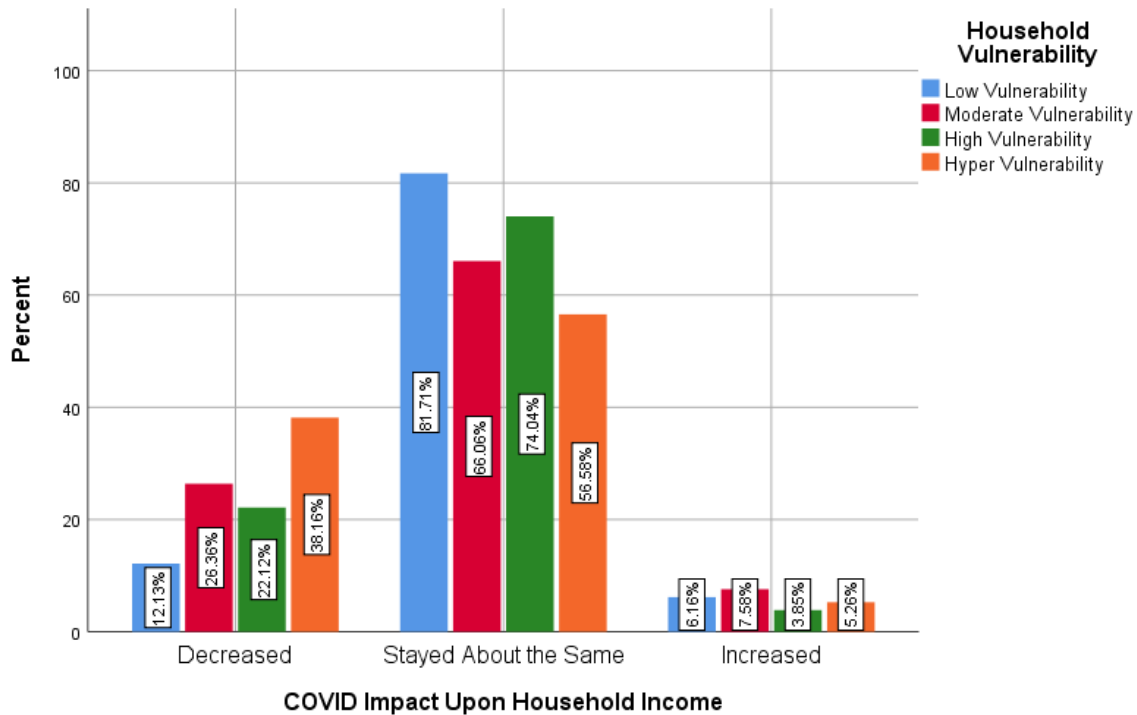
Medically fragile households, relative to not medically fragile households, are more likely to report decreased income, 26.7 percent and 19.3 percent, respectively. In addition, for medically fragile households, about 68.1 percent report their household income stayed the same while about 5.2 percent report their household income increased.



..by..Household Vulnerability

The chart below illustrates, among all households, the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across the categories within COVID Impact Upon Household Income (decreased, stayed about the same, and increased).

Hyper vulnerability households, relative to other vulnerability households, report the greatest proportion of households suffering a decrease in income. As shown, 12.1 percent of low vulnerability households, 26.4 percent of moderate vulnerability households, 22.1 percent of high vulnerability households, and 38.2 percent of hyper vulnerability households reported household income decreases due to COVID.

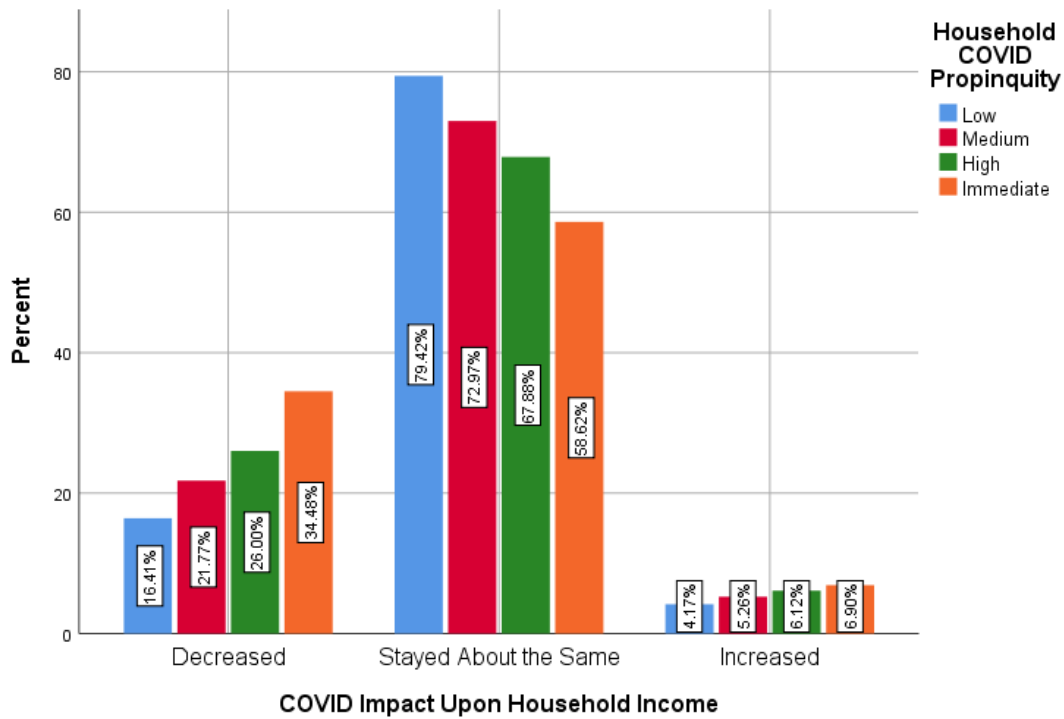




..by..Household COVID Propinquity

The chart below illustrates, among all households, the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across the categories within COVID Impact Upon Household Income (decreased, stayed about the same, and increased).

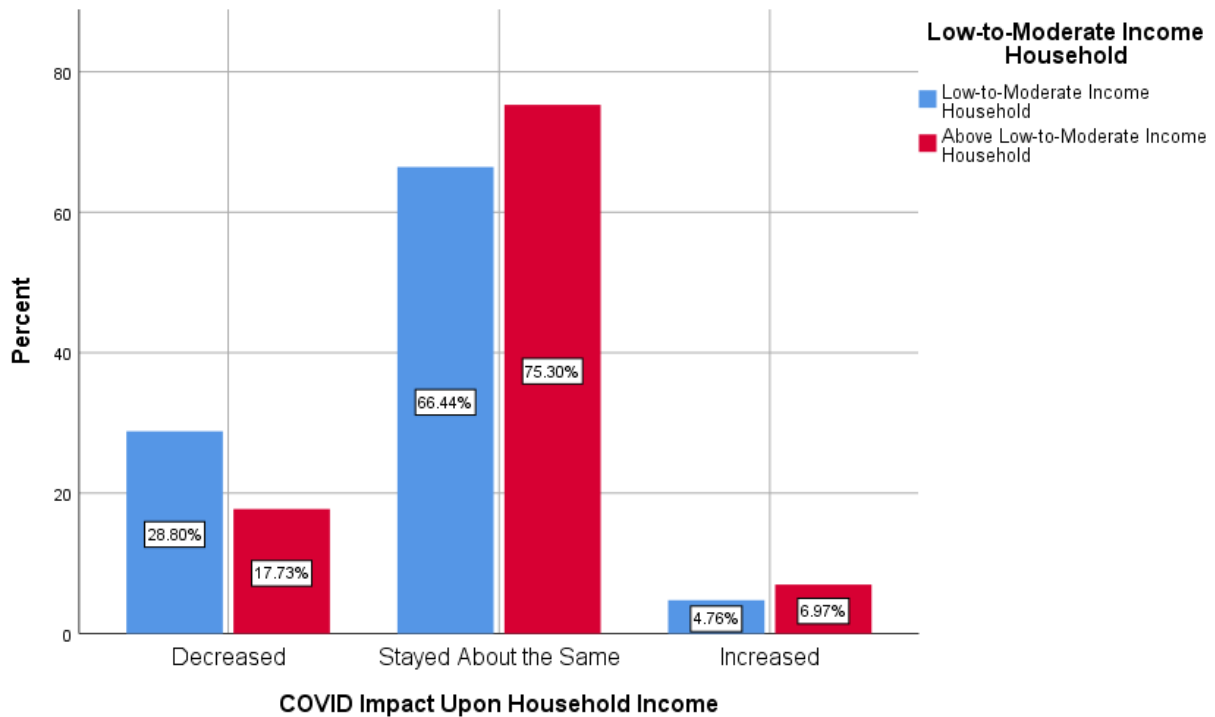
There is a clear relationship between COVID propinquity and suffering income loss during COVID. Immediate COVID propinquity households, relative to other COVID propinquity households, report the greatest proportion of households suffering a decrease in income, 34.5 percent. For low COVID propinquity households about 16.4 percent had a decrease in household income, for medium COVID propinquity households about 21.8 percent had a decrease in household income, and for high COVID propinquity households about 26.0 percent had a decrease in household income.



..by..Low-to-Moderate Income Household

The chart below illustrates, among all households, the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across the categories within COVID Impact Upon Household Income (decreased, stayed about the same, and increased).

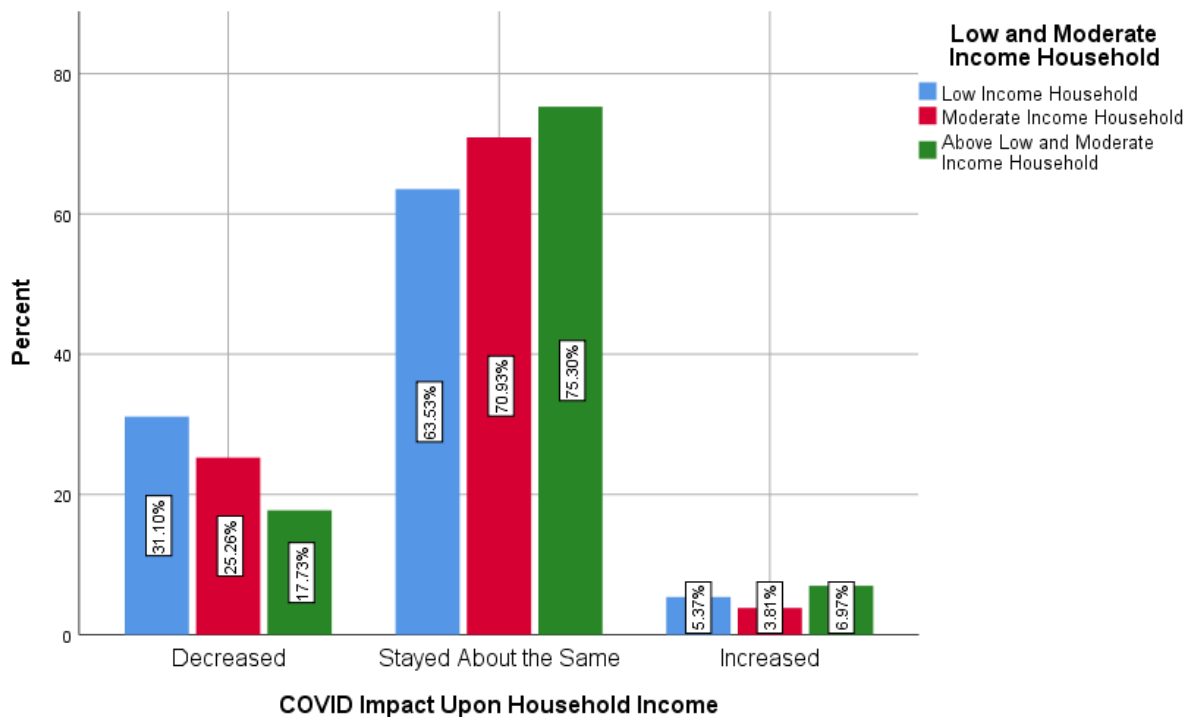
Low-to-moderate income households, relative to above low-to-moderate income households, are more likely to report suffering decreased income stemming from COVID, 28.8 percent and 17.3 percent, respectively.



..by..Low and Moderate Income Household

The chart below illustrates, among all households, the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across the categories within COVID Impact Upon Household Income (decreased, stayed about the same, and increased).

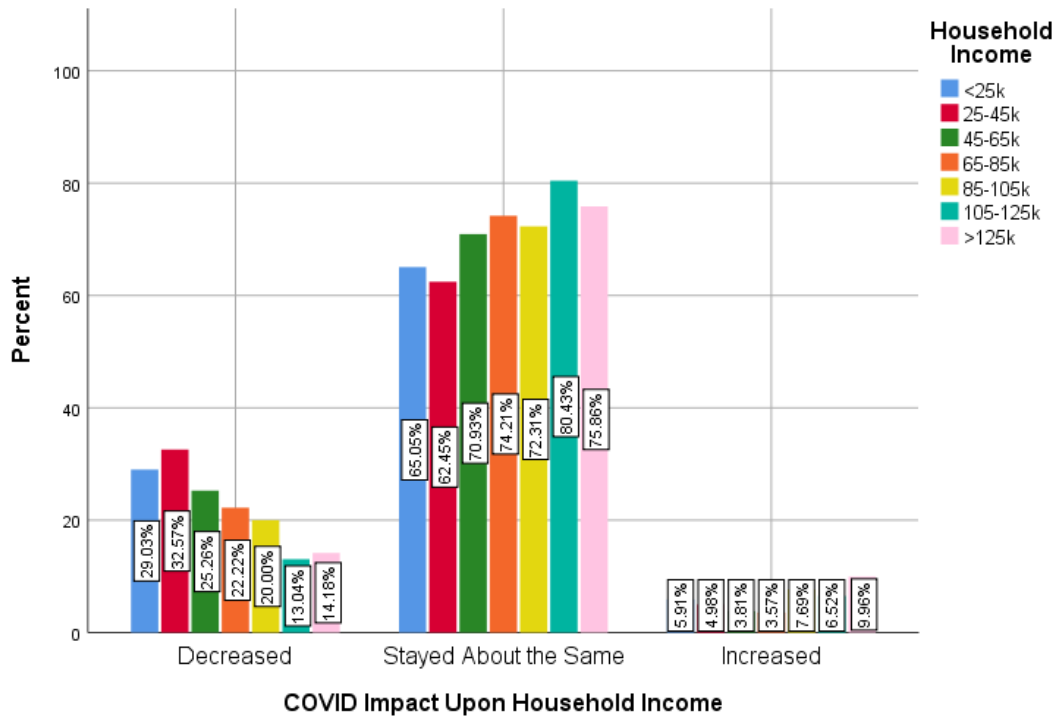
There is a clear relationship between household income and suffering income loss during COVID. Among low income households, about 31 percent report decreased income, among moderate income households 25.3 percent, and above low and moderate income households 17.7 percent.



..by..Granulated Household Income

This chart illustrates, among all households, the proportions within Household Income (disaggregated into seven household income gradients) across the categories within COVID Impact Upon Household Income (decreased, stayed about the same, and increased).

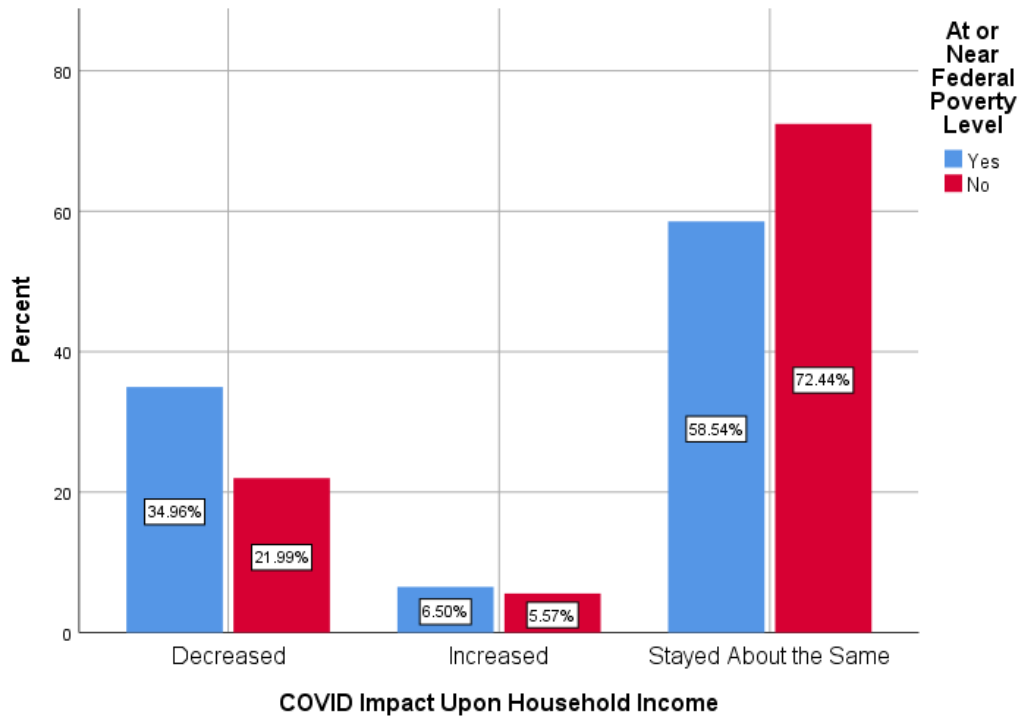
There is a general relationship between household income and suffering income loss during COVID, with greater portions of lower income households experiencing decreased incomes relative to higher income households.



..by..At or Near Federal Poverty Level

The chart below illustrates, among all households, the proportions of households within At or Near Poverty Level (yes, no) across the categories within COVID Impact Upon Household Income (decreased, stayed about the same, and increased).

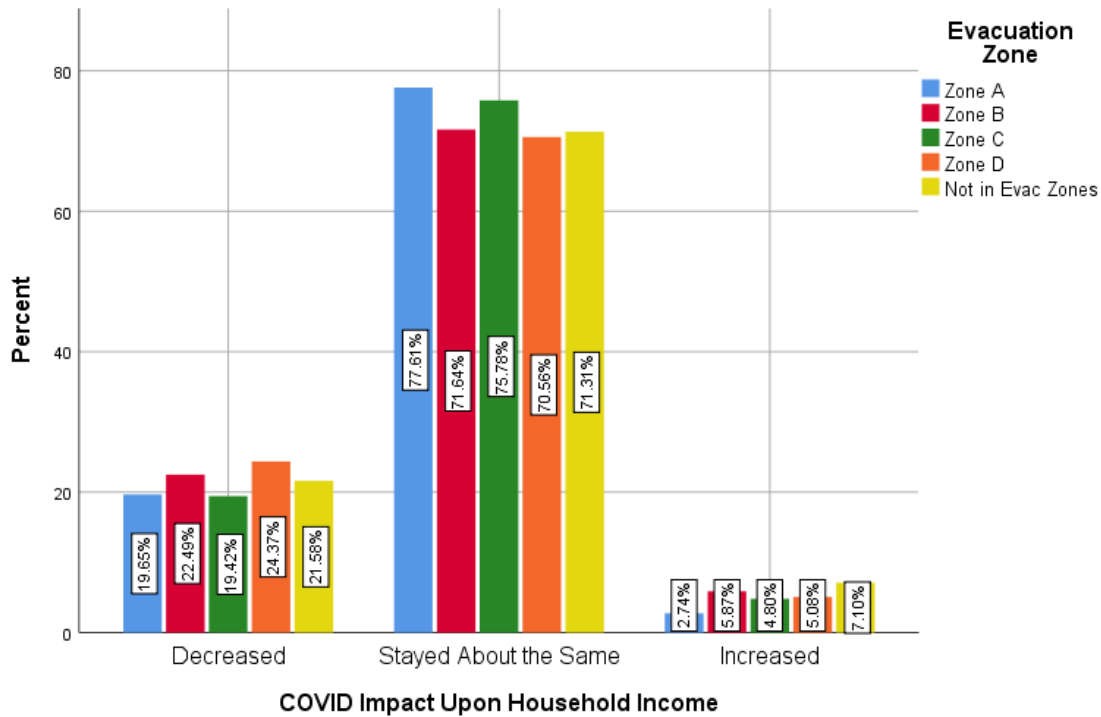
Households at or near federal poverty level, relative to households above this level, are more likely to report decreased household income stemming from COVID, approximately 35.0 percent and 22.0 percent, respectively.



..by..Evacuation Zone

The chart below illustrates, among all households, the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across the categories within COVID Impact Upon Household Income (decreased, stayed about the same, and increased).

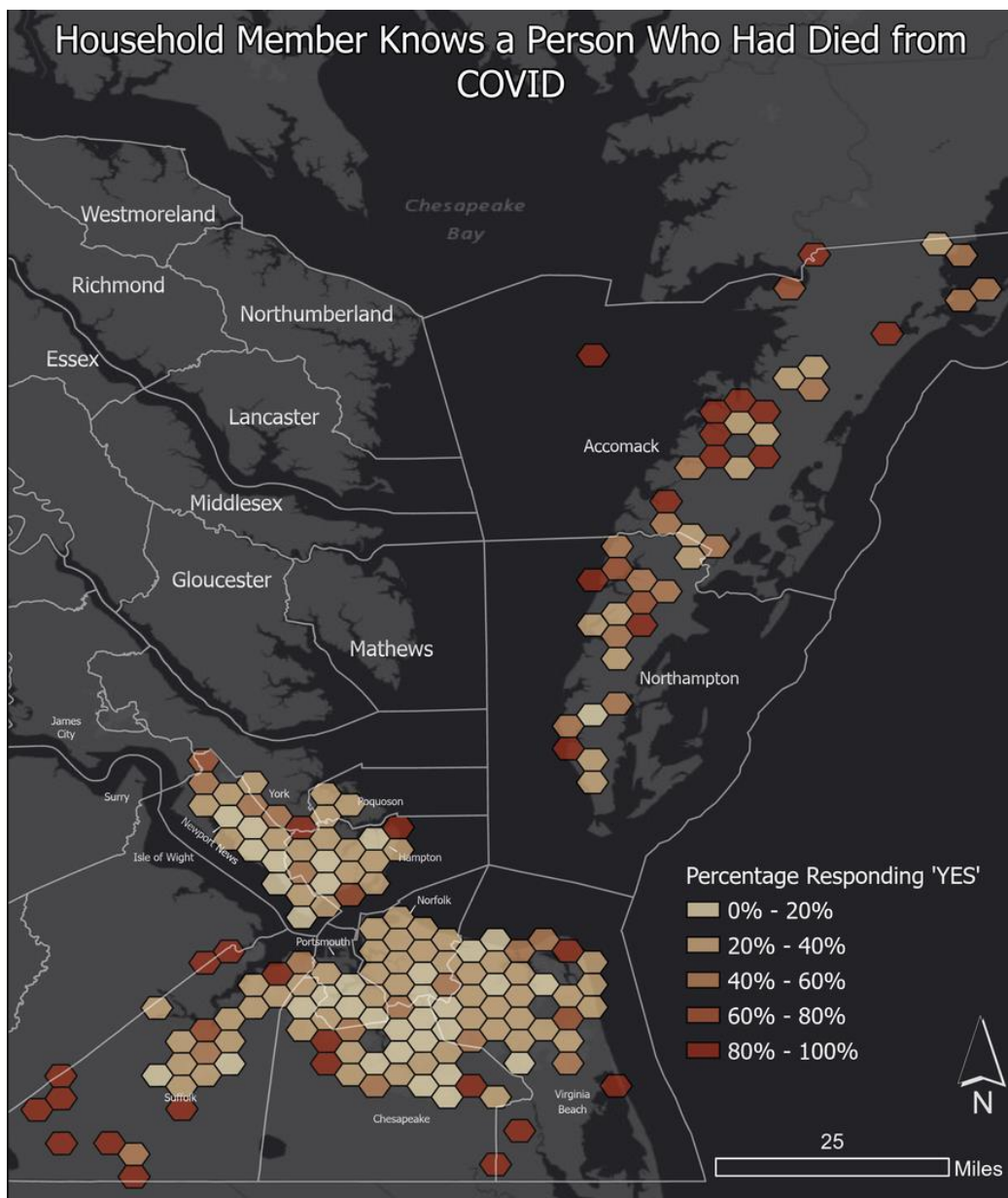
There does not appear to be a relationship between COVID impact upon household income and the evacuation zone the household resides in. Approximately 20 percent of households living in Zone A, about 22 percent of households living in Zone B, about 19 percent of households living in Zone C, and about 24 percent of households living in Zone D report having overall household income decreased due to COVID.



## Know a Person who has Died from COVID Map

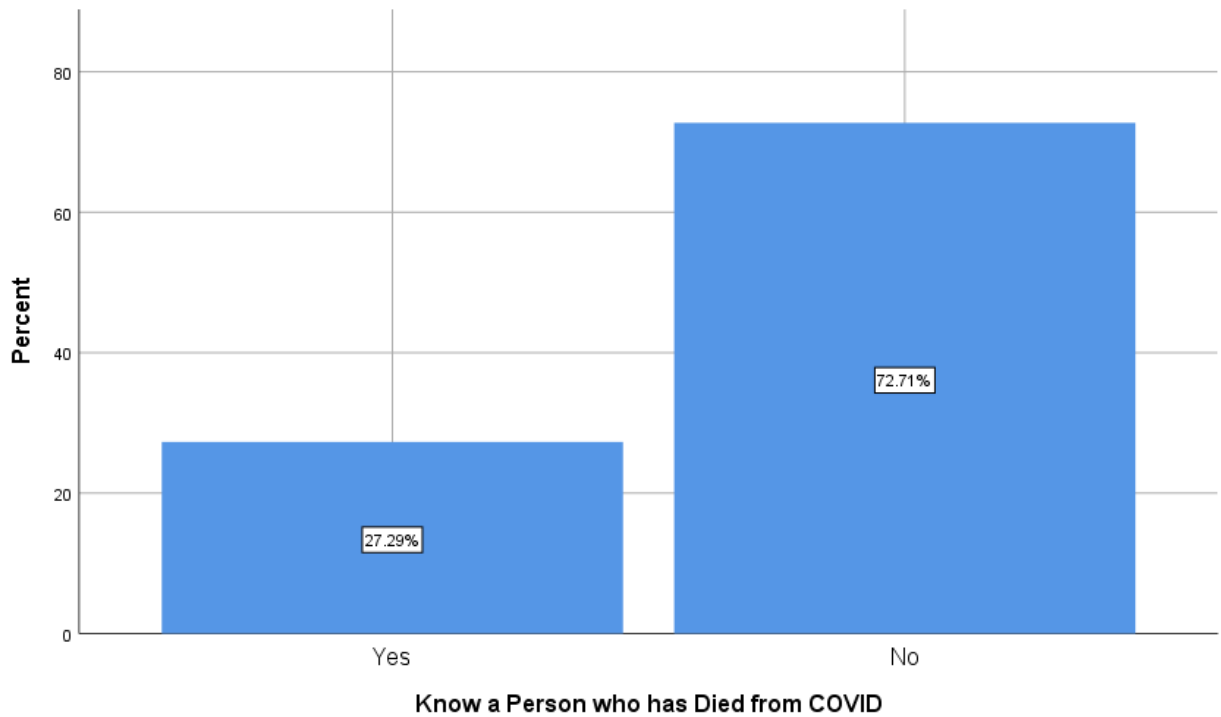
The below hexagonal cluster map illustrates the percent of households within hexagonal areas that report 'yes,' a knowledge of COVID death.

Each polygon contains geolocated study cases. A household's yes score is associated with a particular polygon within which it falls. The number of yes responses within a polygon is associated with a particular color coding; more yes responses are associated with darker colors representing the intensity of knowledge of COVID death. As illustrated, neighborhoods in Poquoson, Hampton, southern Suffolk, southern Chesapeake, north end Virginia Beach, Accomack and Northampton.



## Know a Person who has Died from COVID

The chart below illustrates, among all households, 27.3 percent report knowing at least a single person that has died from COVID. The six charts on the following pages will examine this controlling for household characteristics.

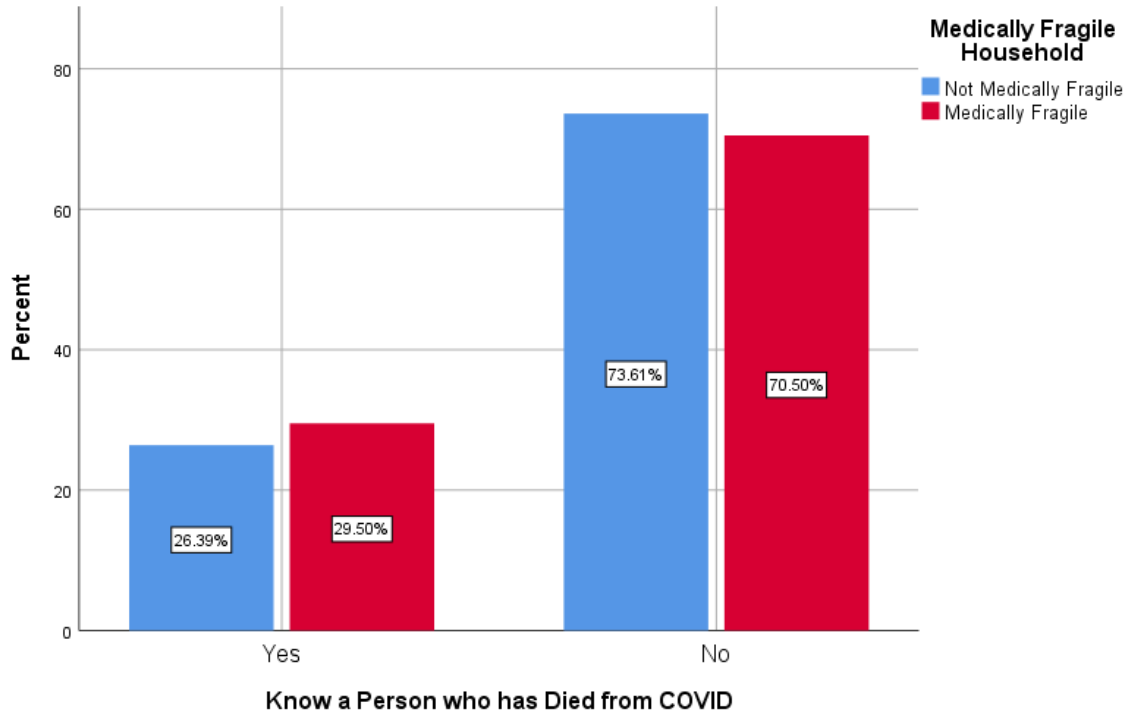




..by..Medically Fragile Household

The chart below illustrates the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across the categories within Know a person who has Died from COVID (yes, no).

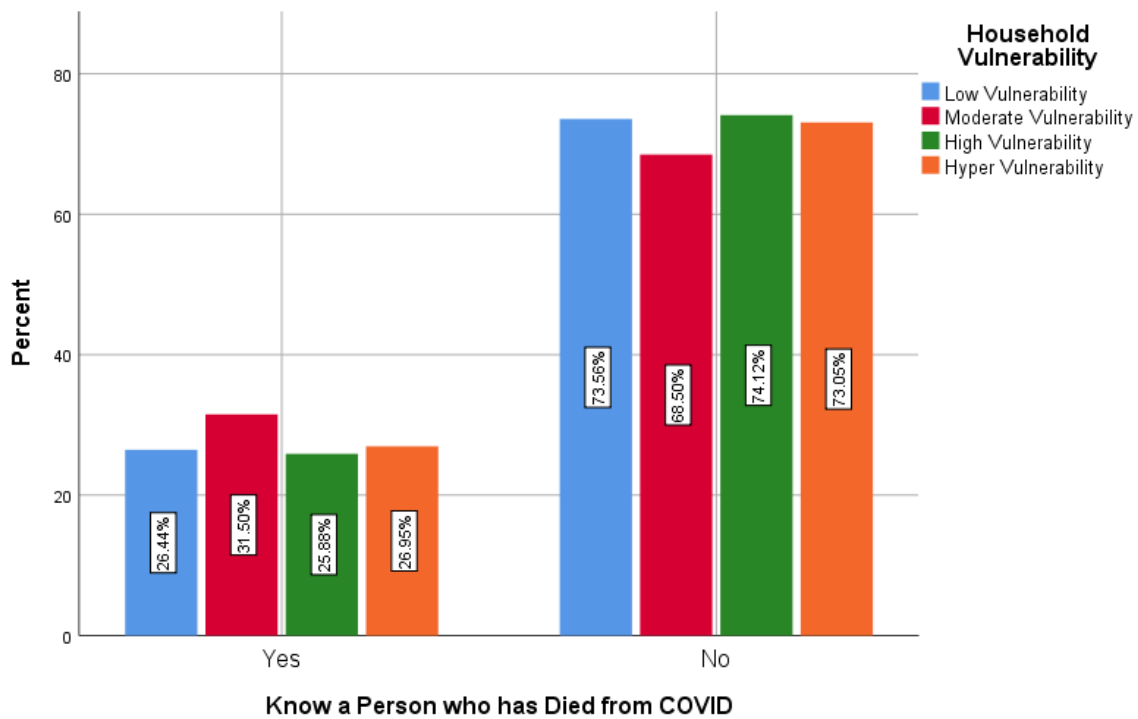
Medically fragile households, relative to not medically fragile households, are more likely to report knowing a person who has died from COVID, about 29.5 percent and 26.4 percent, respectively.



..by..Household Vulnerability

The chart below illustrates the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across the categories within Know a person who has Died from COVID (yes, no).

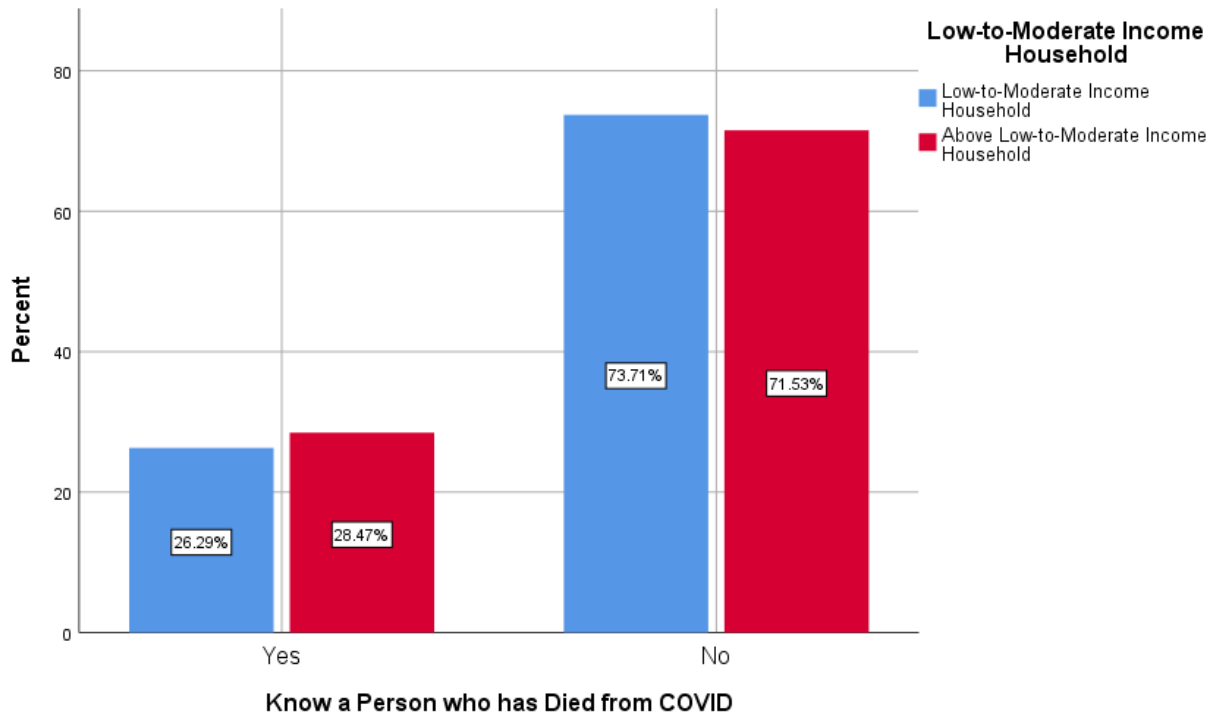
There does not appear to be a clear relationship between household vulnerability and knowing a person who has died from COVID.



..by..Low-to-Moderate Income Household

The chart below illustrates the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across the categories within Know a person who has Died from COVID (yes, no).

Above low-to-moderate income households, relative to low-to-moderate income households, are more likely to report knowing a person who has died from COVID, about 28.5 percent and 26.3 percent, respectively.



..by..Low and Moderate Income Household

The chart below illustrates the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across the categories within Know a person who has Died from COVID (yes, no).

There is a general relationship between income and knowing a person who has died from COVID. Above low and moderate income households, relative to the other income households, are more likely to report knowing a person who has died from COVID. Specifically: about 28.5 of above low and moderate income households, 27.9 percent of moderate income households, and 25.3 percent of low income households report knowing a person who has died from COVID.



..by..Granulated Household Income

This chart illustrates the proportions within Household Income (disaggregated into seven household income gradients) across the categories within Know a person who has Died from COVID (yes, no).

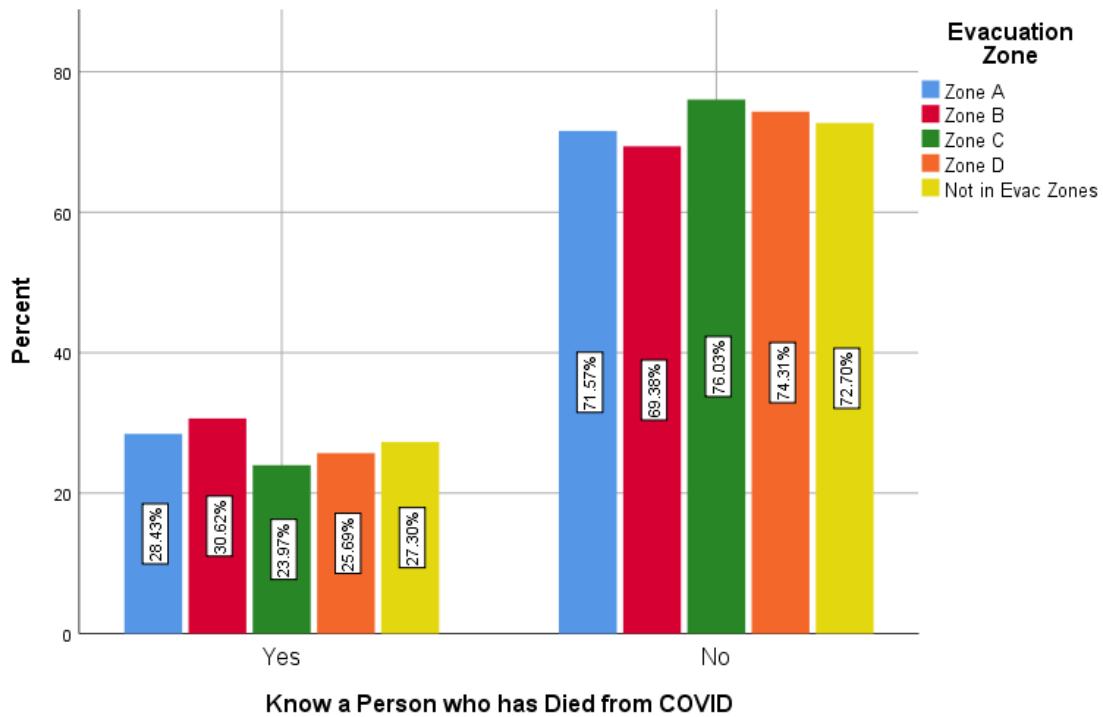
There is a general relationship across income gradients and knowing a person who has died from COVID with lower income households less likely to know a person who has died relative to higher income households.



..by..Evacuation Zone

This chart illustrates the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across the categories within Know a person who has Died from COVID (yes, no).

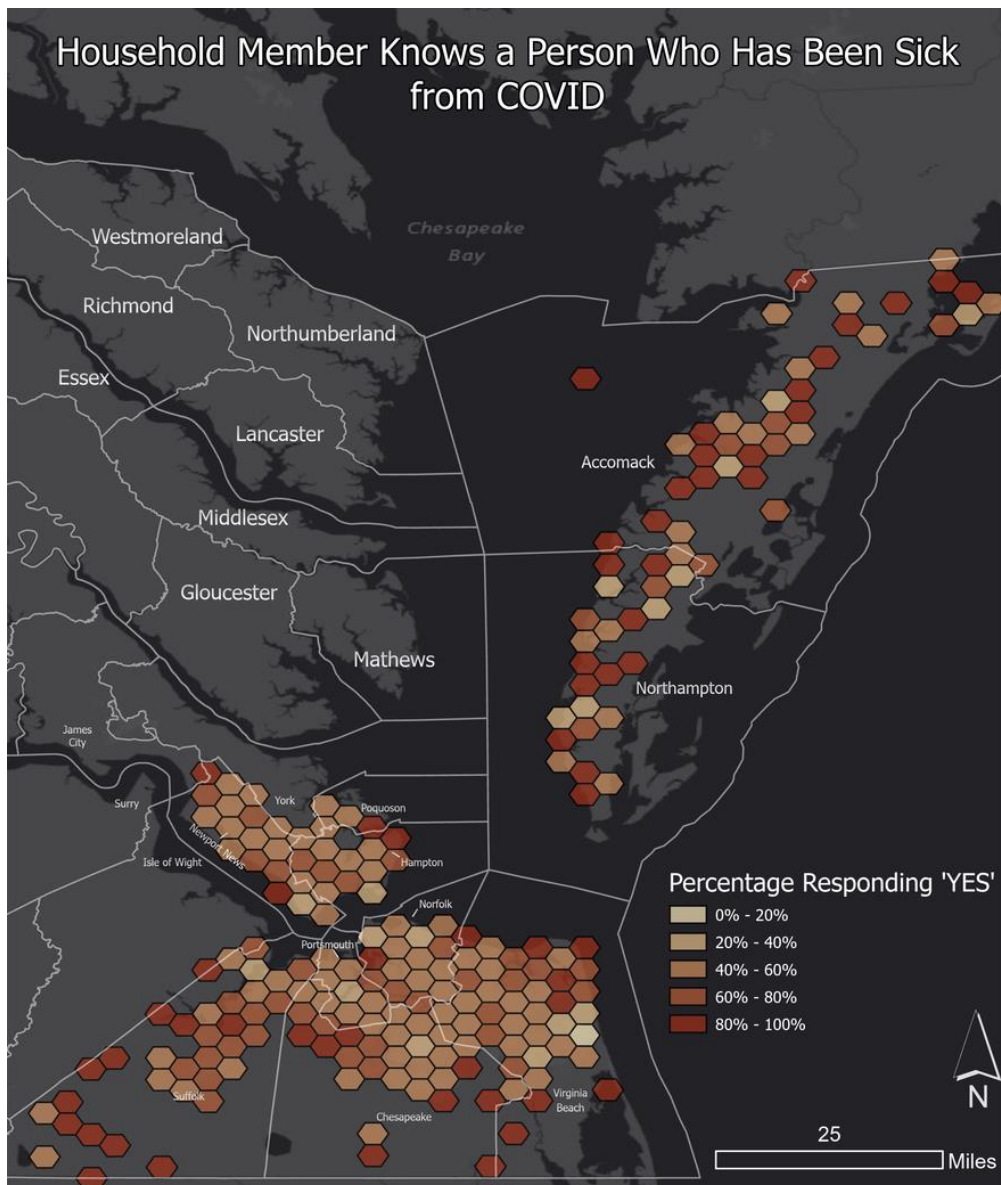
There does not appear a general relationship between geography and knowing a person who has died from COVID.



## Know a Person who has been Sick from COVID Map

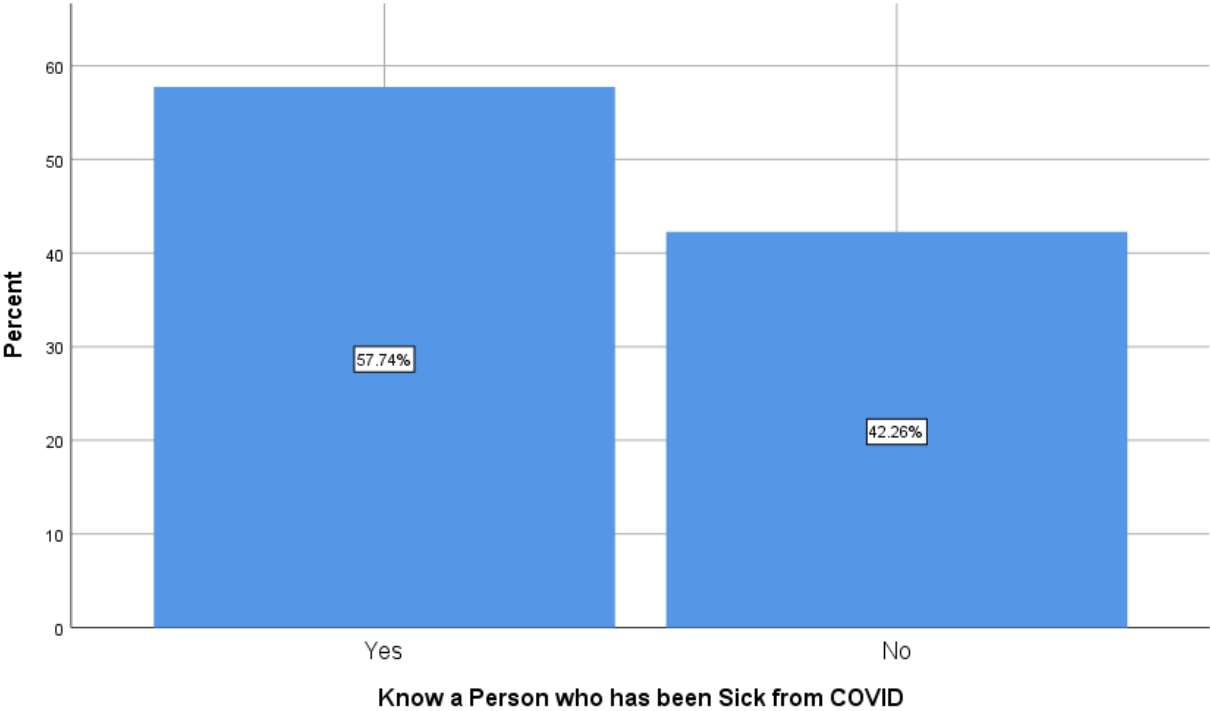
The below hexagonal cluster map illustrates the percent of households within hexagonal areas that report 'yes,' a knowledge of person sick with COVID.

Each polygon contains geolocated study cases. A household's yes score is associated with a particular polygon within which it falls. The number of yes responses within a polygon is associated with a particular color coding; more yes responses are associated with darker colors representing the intensity knowledge of person who has been sick from COVID. As illustrated, knowledge of person sick with COVID is common within many localities. Notable, is the range within localities. For example, within Virginia Beach fairly proximate neighborhoods may have a 0-20 percent score while other may have an 8-100 percent score.



Know a Person who has been Sick from COVID

The chart below illustrates, among all households, 57.7 percent report knowing at least a single person who has been sick from COVID. The six charts on the following pages will examine this controlling for household characteristics.





..by..Medically Fragile Household

The chart below illustrates the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across the categories within Know a person who has been Sick from COVID (yes, no).

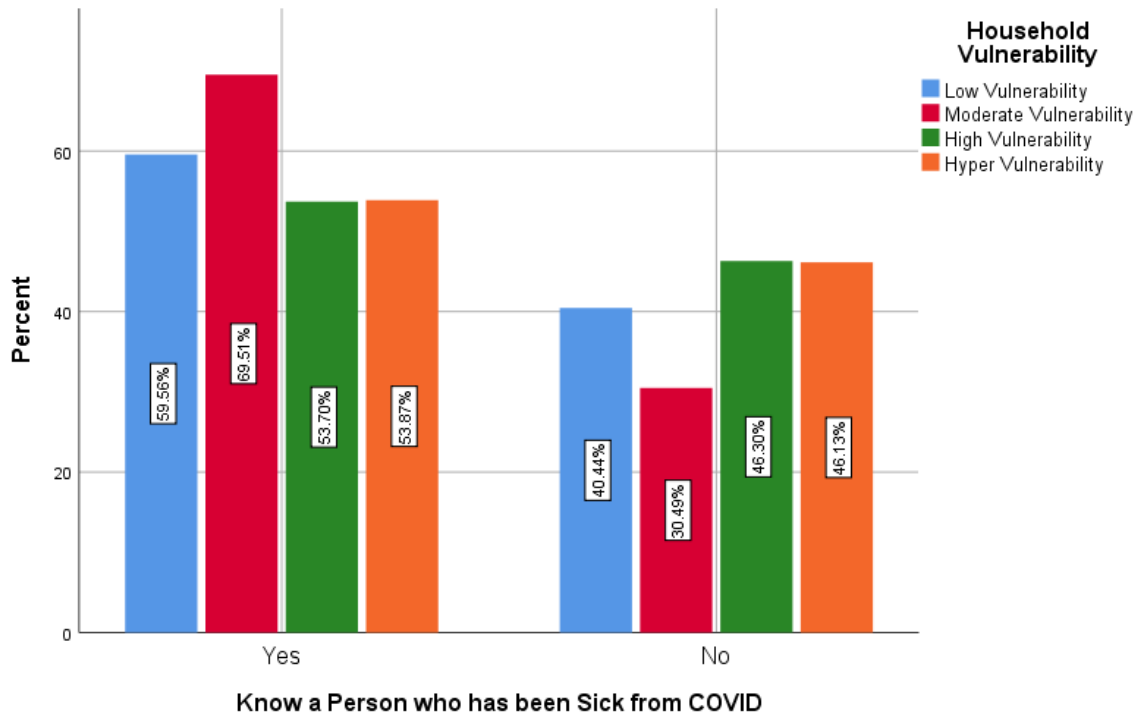
Not medically fragile households, relative to medically fragile households, are more likely to report knowing a person who has been sick from COVID, about 59.1 percent and 54.4 percent, respectively.



..by..Household Vulnerability

The chart below illustrates the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across the categories within Know a person who has been Sick from COVID (yes, no).

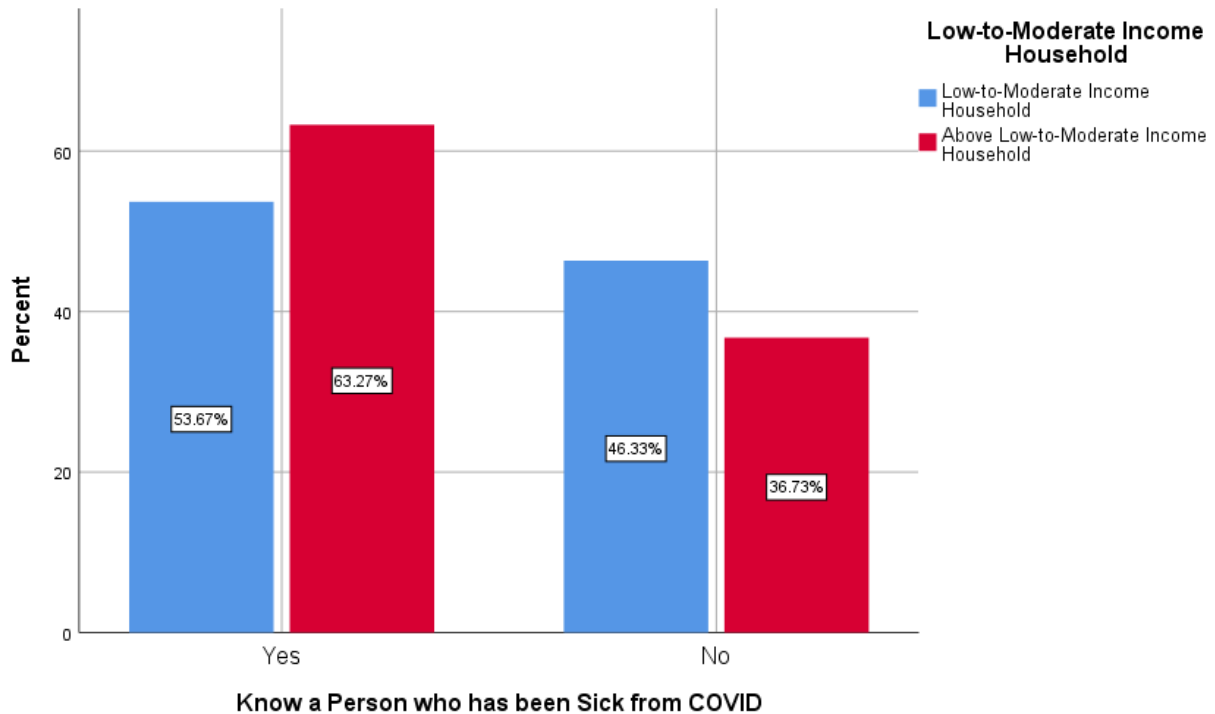
There does not appear to be a clear relationship between household vulnerability and knowing a person who has been sick from COVID, although high vulnerability households exhibit the greatest proportion (69.1 percent) reporting knowing a COVID person.



..by..Low-to-Moderate Income Household

This chart illustrates the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across the categories within Know a person who has been Sick from COVID (yes, no).

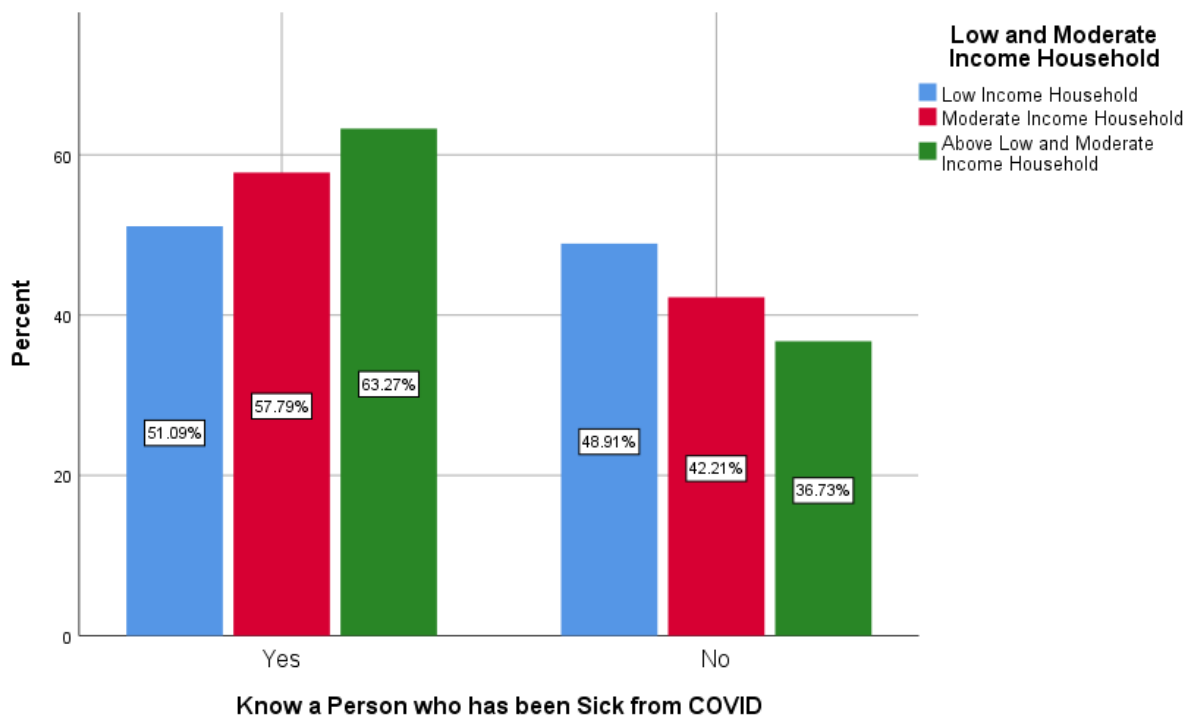
Above low-to-moderate income households, relative to low-to-moderate income households, are more likely to report knowing a person who has been sick from COVID, about 63.3 percent and 53.7 percent, respectively.



..by..Low and Moderate Income Household

This chart illustrates the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across the categories within Know a person who has been Sick from COVID (yes, no).

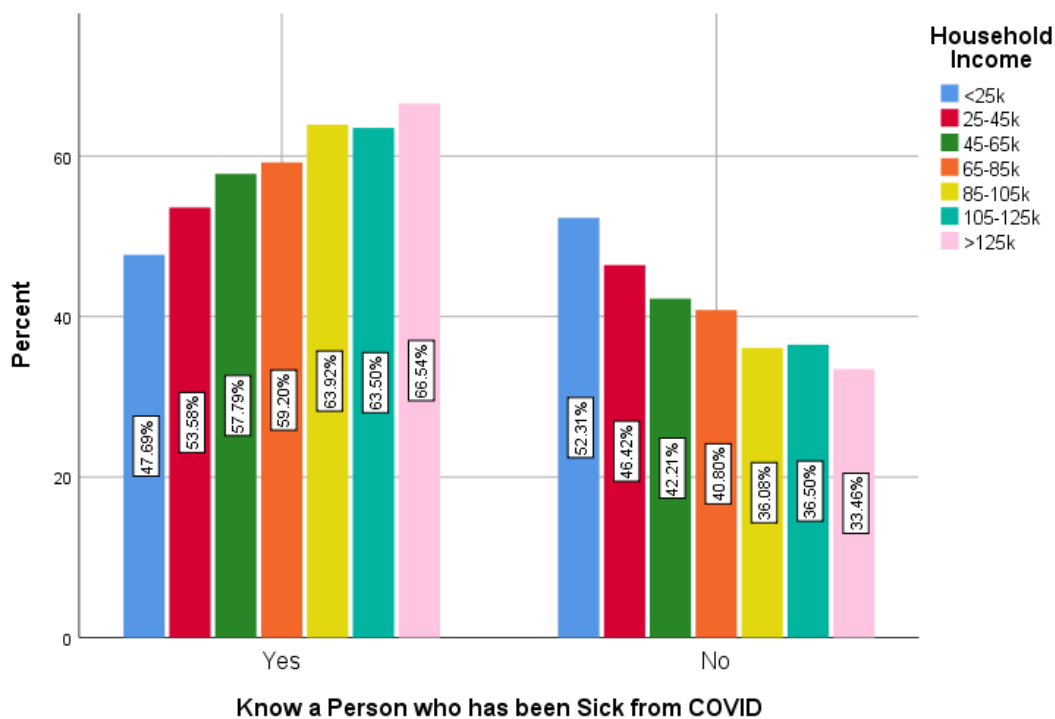
There is a clear relationship between income and knowing a person who has been sick from COVID. Above low and moderate income households, relative to the other income households, are more likely to report knowing a person who has been sick from COVID. Specifically: about 51.1 percent of low income households, 57.8 percent of moderate income households, and 63.3 percent of above low and moderate income households.



..by..Granulated Household Income

The chart below illustrates the proportions within Household Income (disaggregated into seven household income gradients) across the categories within Know a person who has been Sick from COVID (yes, no).

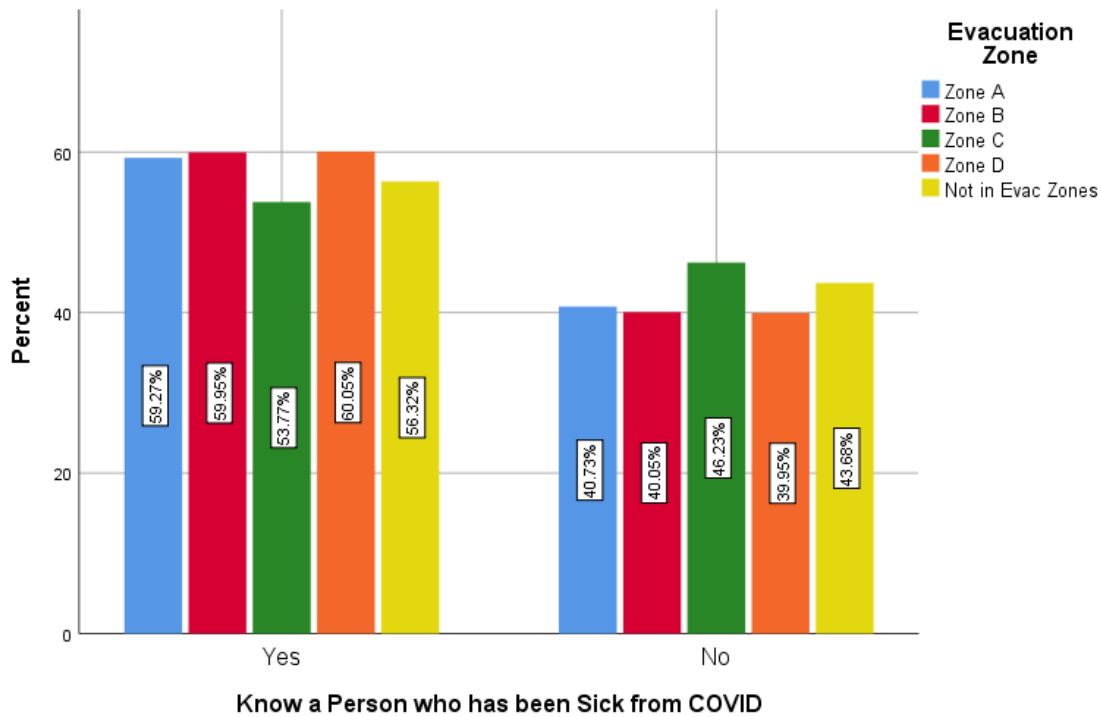
There is a clear relationship across income gradients and knowing a person who has been sick from COVID with lower income households less likely to know a person who has been sick relative to higher income households.



..by..Evacuation Zone

The chart below illustrates the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across the categories within Know a person who has been Sick from COVID (yes, no).

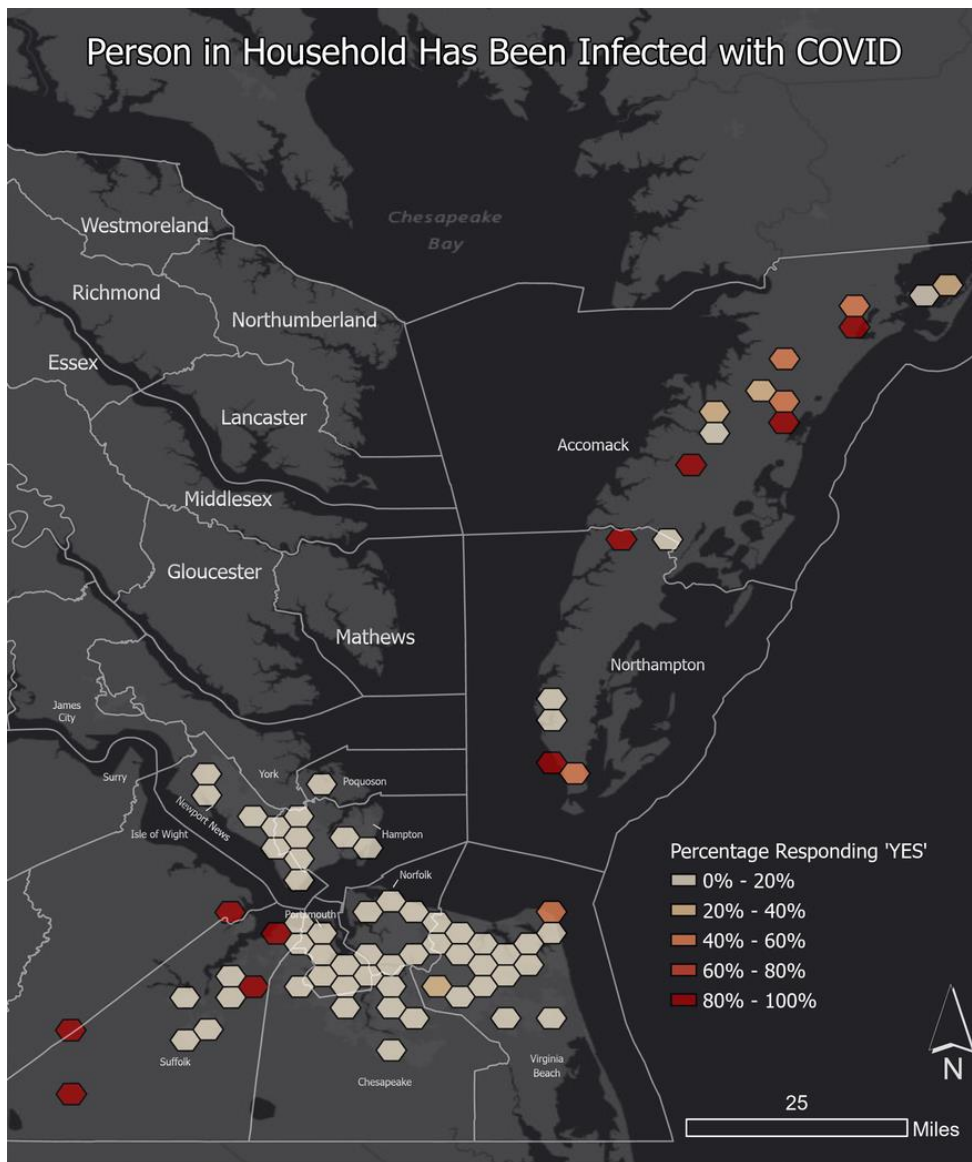
There does not appear a general relationship between geography and knowing a person who has been sick from COVID.



## Person in Household has been Infected with COVID Map

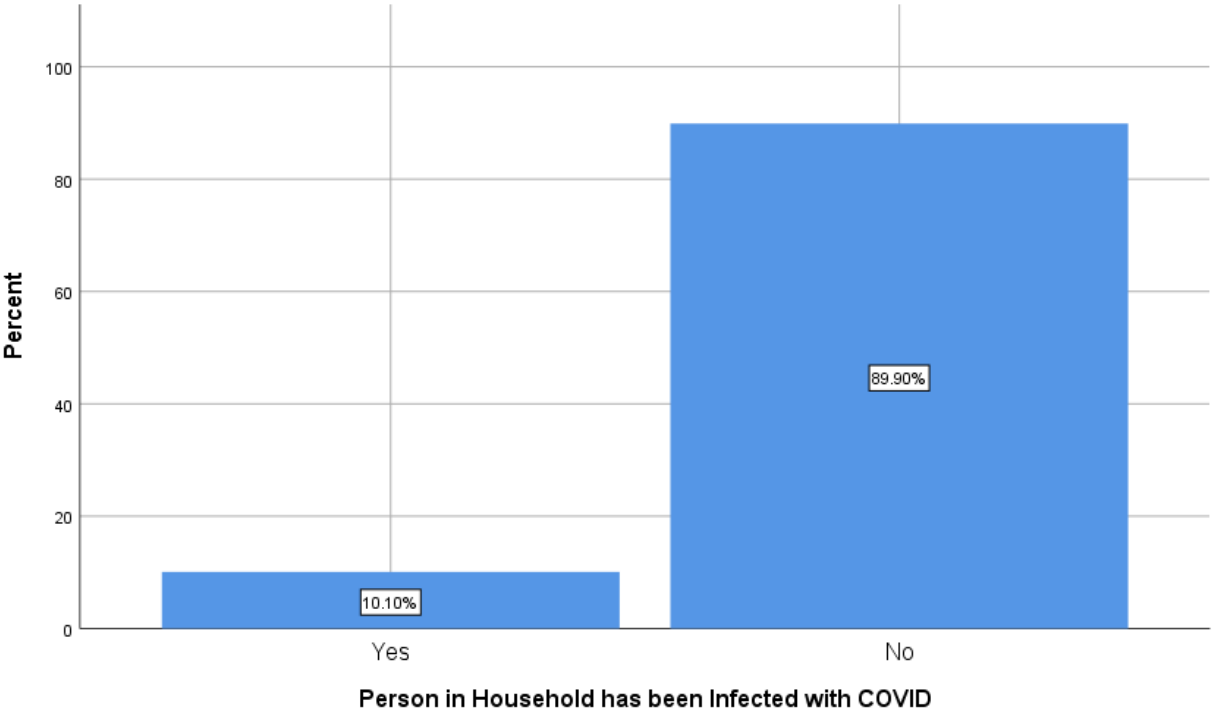
The below hexagonal cluster map illustrates the percent of households within hexagonal areas that report 'yes,' person in household infected with COVID.

Each polygon contains geolocated study cases. A household's yes score is associated with a particular polygon within which it falls. The number of yes responses within a polygon is associated with a particular color coding; more yes responses are associated with darker colors representing the intensity of person in households been infected with COVID. As illustrated, neighborhoods in Accomack, Northampton, and central and southern Suffolk report high percentage of households with person in household infected with COVID.



Person in Household has been Infected with COVID

The chart below illustrates, among all households, 10.1 percent report that at least a single person within the household has been infected with COVID. The six charts on the following pages will examine this controlling for household characteristics.

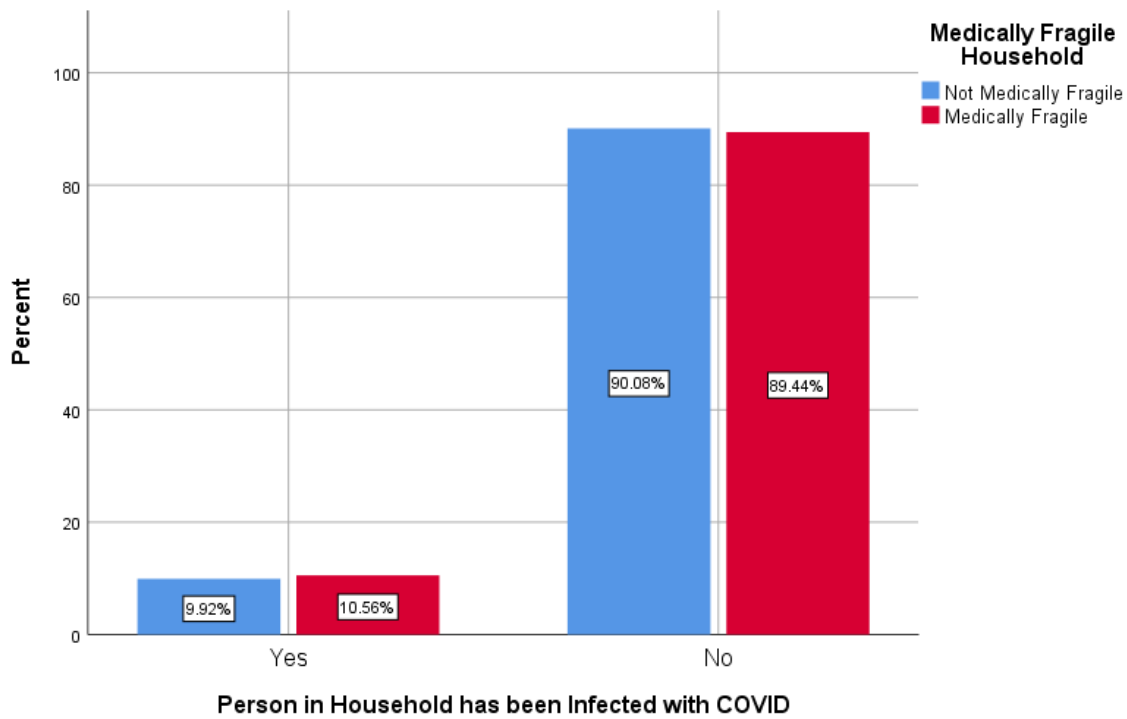




..by..Medically Fragile Household

This chart illustrates, among all households, the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across the categories within Person in Household has been Infected with COVID (yes, no).

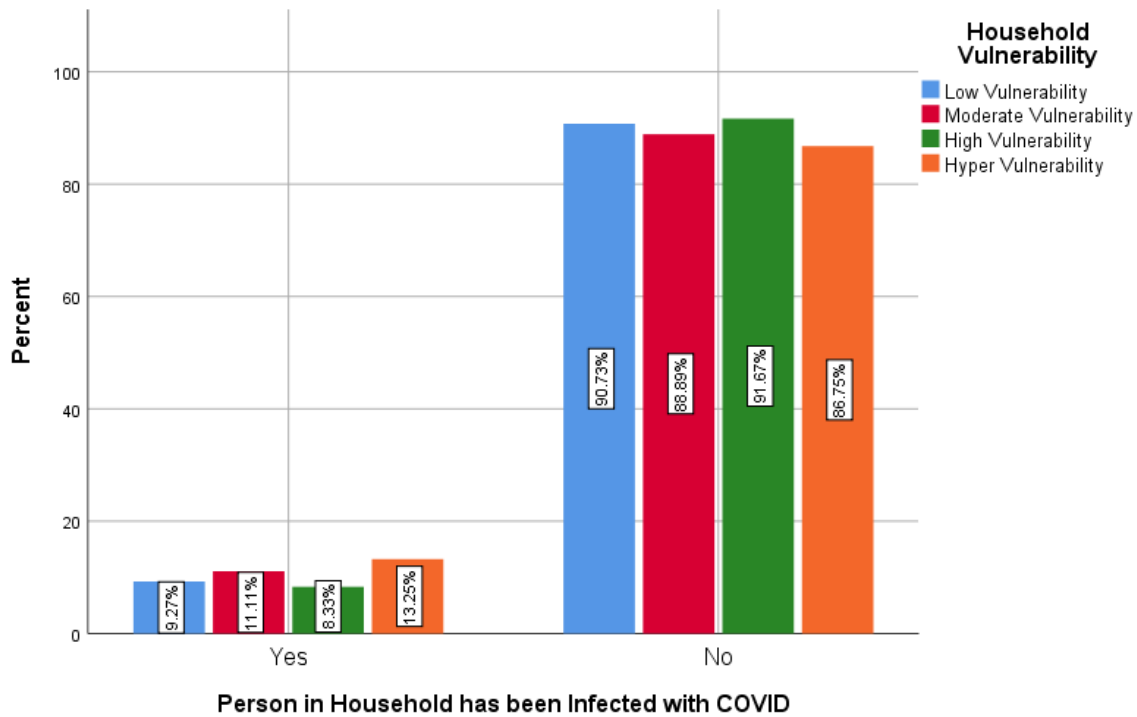
There is no statistical difference between medically fragile households and not medically fragile households relative to having a family member that has been infected with COVID, roughly within the range of 9.9-10.6 percent.



..by..Household Vulnerability

The chart below illustrates, among all households, the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) Person in Household has been Infected with COVID (yes, no).

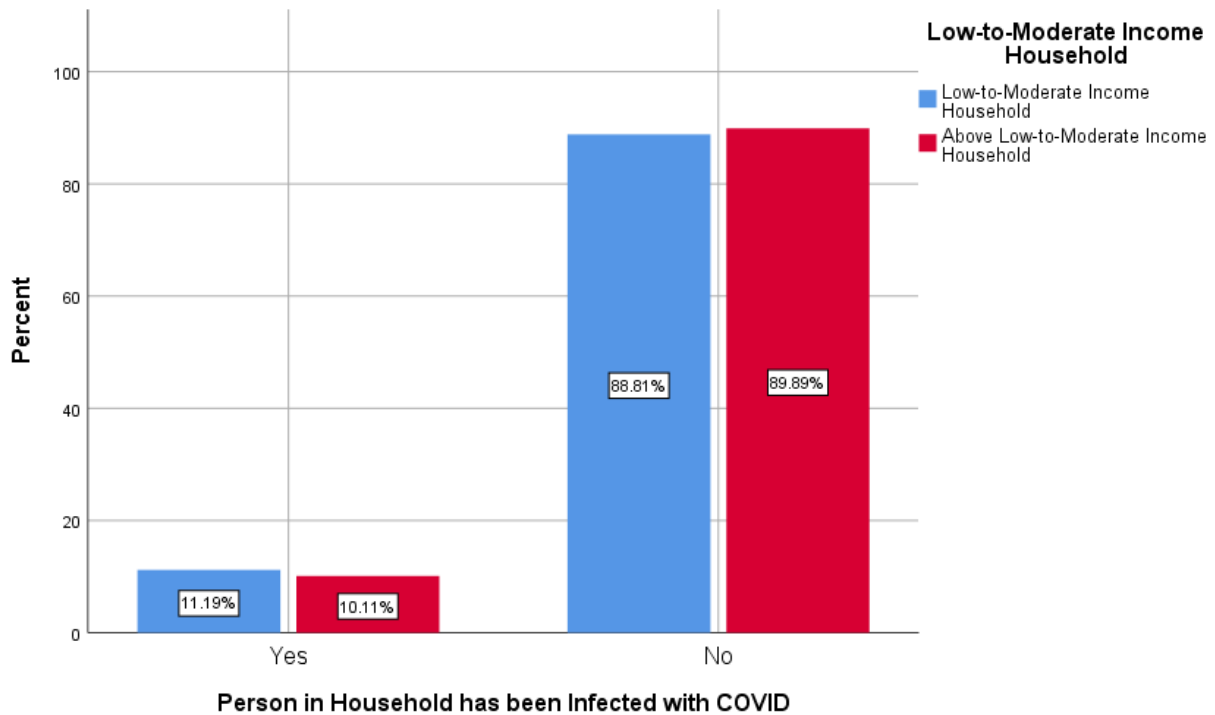
There does not appear to be a clear relationship between household vulnerability and having a family member that has been infected with COVID, although hyper vulnerability households exhibit the greatest proportion (13.3 percent) reporting having an infected family member.



..by..Low-to-Moderate Income Household

The chart below illustrates, among all households, the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) Person in Household has been Infected with COVID (yes, no).

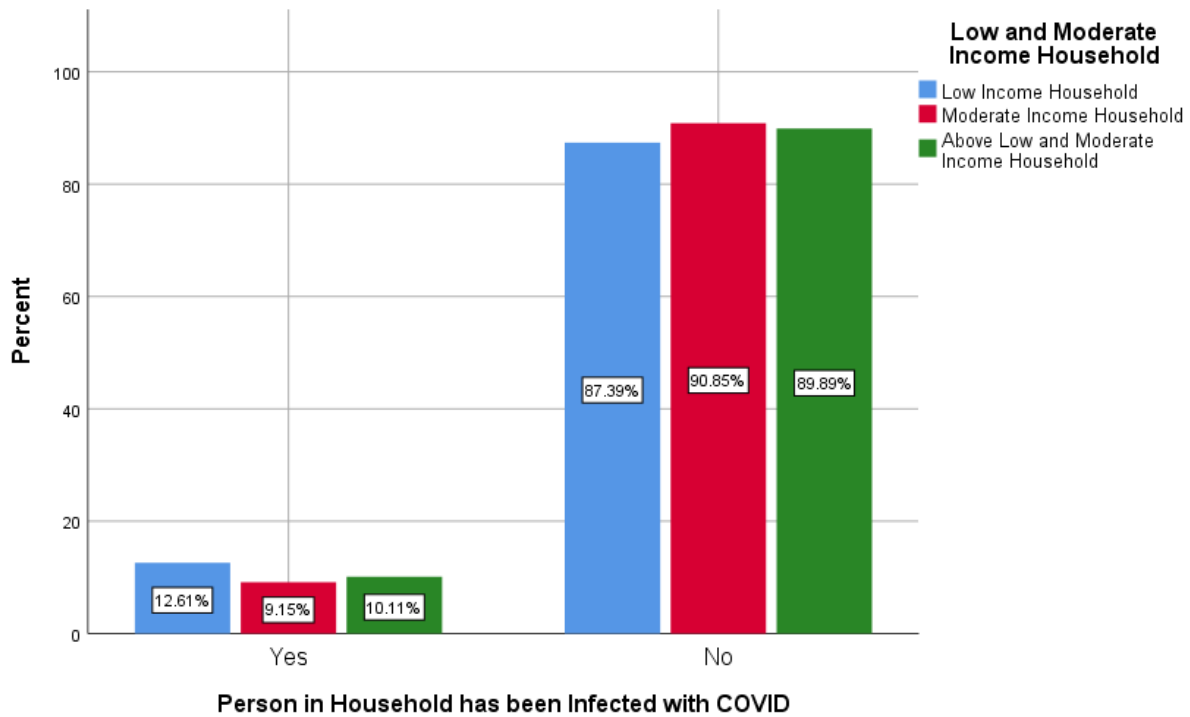
There is no statistical difference between low-to-moderate income households and above low-to-moderate income households relative to having a family member that has been infected with COVID, roughly within the range of 10.1-11.2 percent.



..by..Low and Moderate Income Household

The chart below illustrates, among all households, the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) Person in Household has been Infected with COVID (yes, no).

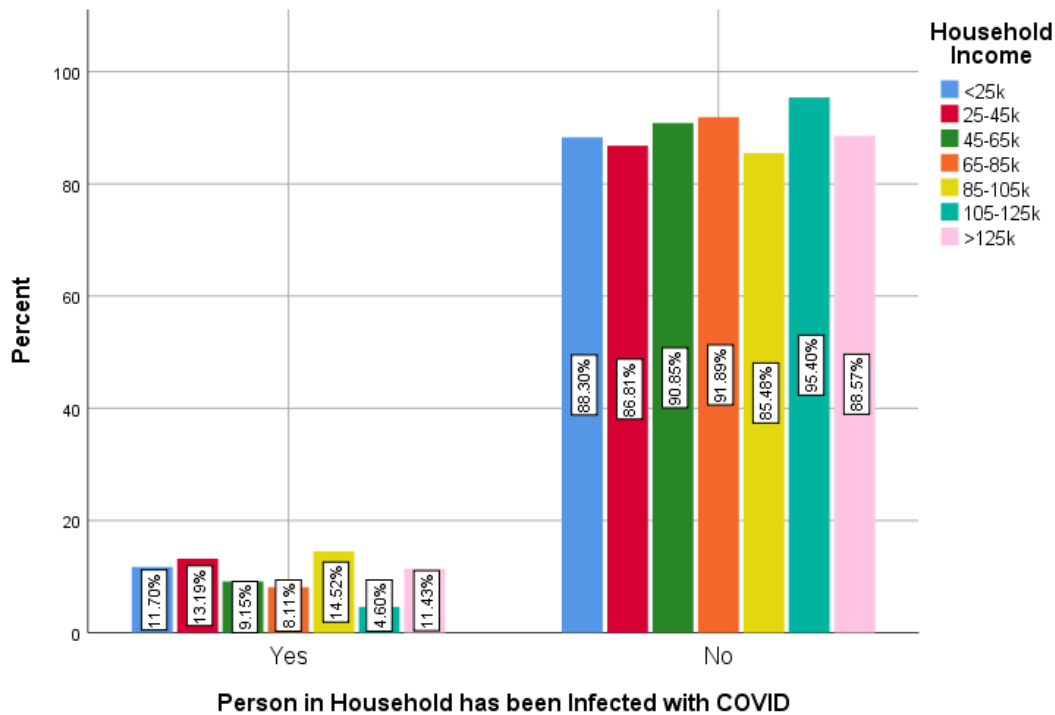
There is no statistical difference between moderate income households and above low and moderate income households relative to having a family member that has been infected with COVID, roughly within the range of 9.2-10.1 percent. However, Low income households are slightly more likely, relative tot the other income households, to have a household member who has been infected with COVID.



..by..Granulated Household Income

This chart illustrates, among all households, the proportions within Household Income (disaggregated into seven household income gradients) Person in Household has been Infected with COVID (yes, no).

Low-to-moderate income households experience greater frequency of flooding, relative to above low-to-moderate income households, although the differences are pronounced only for more than once a month (5.9 and 3.7 percent respectively). Overall, low-to-moderate income households, relative to above low-to-moderate income households, are less likely to report flooding rarely if ever (51.0 and 54.8 percent respectively).



..by..Evacuation Zone

The chart below illustrates, among all households, the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) Person in Household has been Infected with COVID (yes, no).

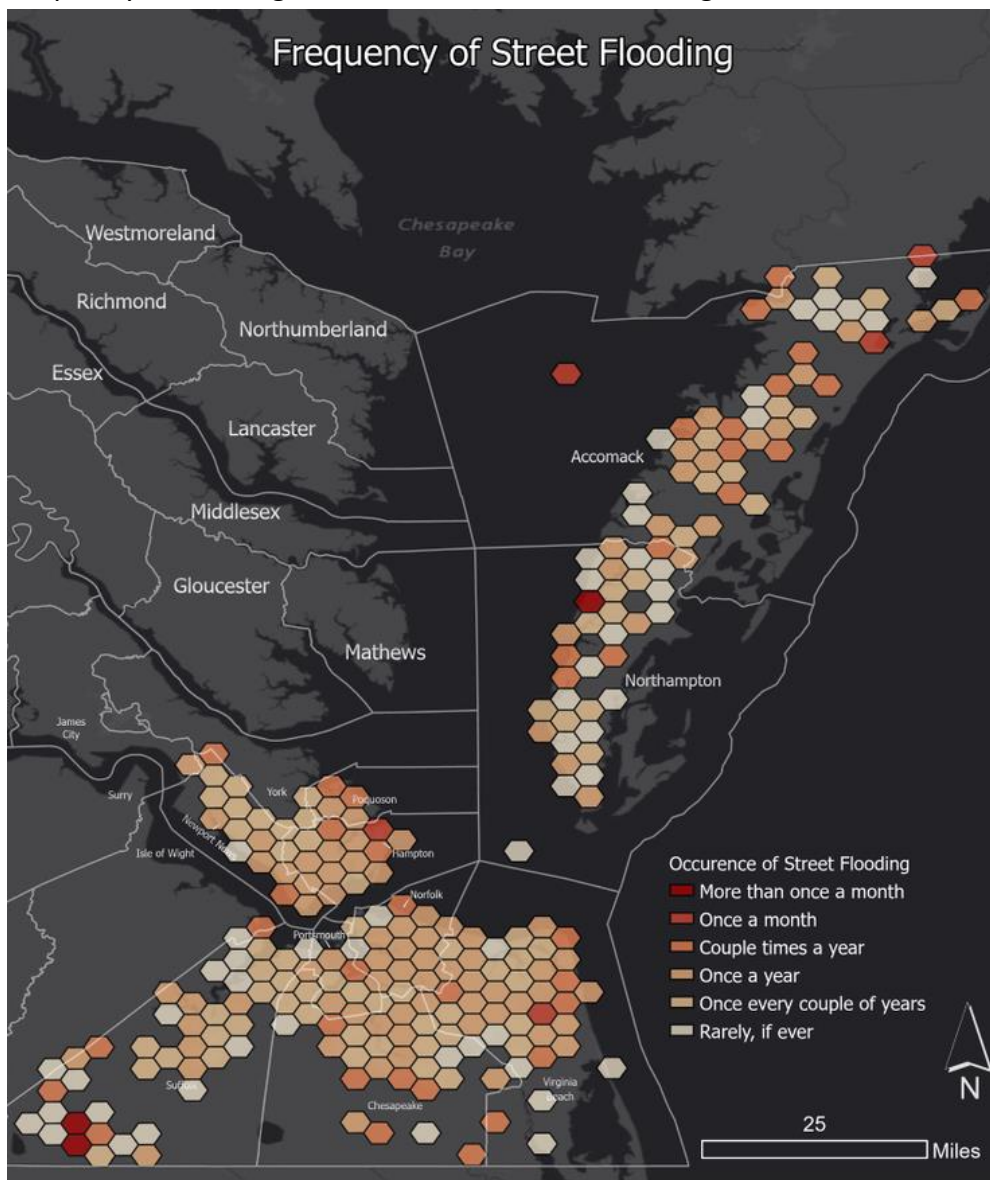
There tends to be a general relationship across geographies and having a household member infected with COVID, with areas more proximate to shoreline more likely reporting a member that is infected with COVID relative, relative areas less proximate shoreline.



## Frequency of Street Flooding Map

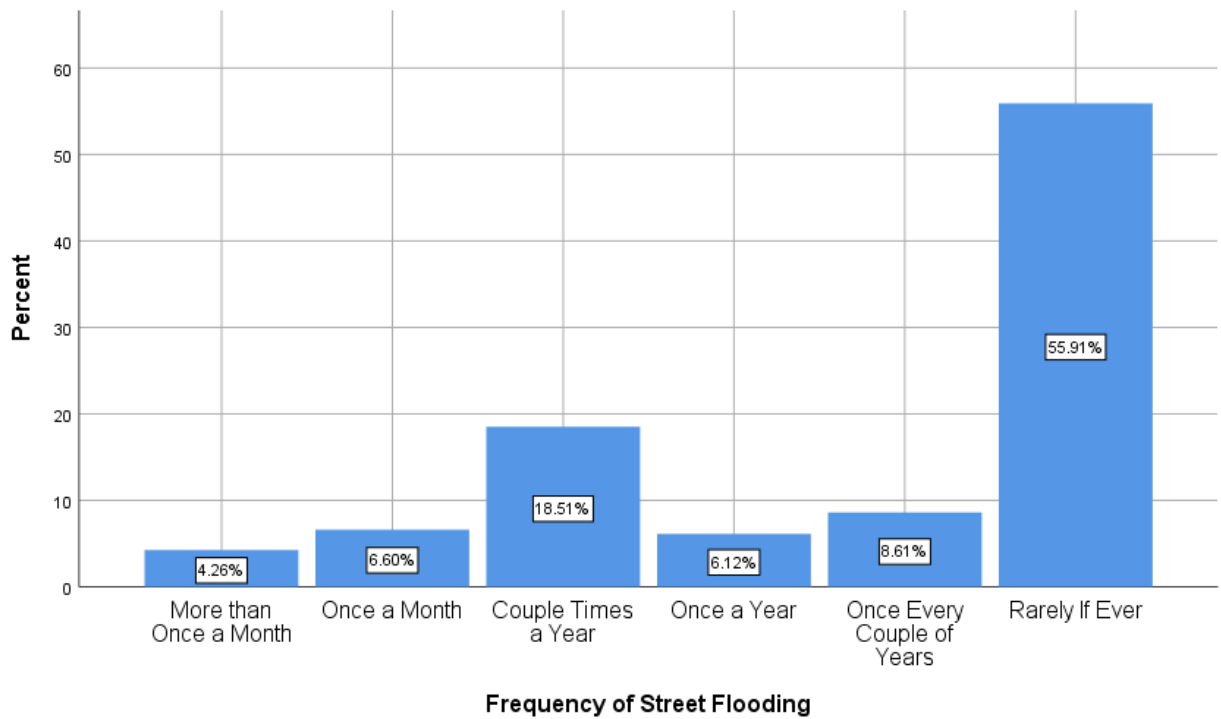
The below hexagonal cluster map illustrates the average score of households within hexagonal areas that report the frequency of street flooding.

Each polygon contains geolocated study cases. The attributes for street flooding, shown in the map legend, are coded with a score ranging from low to high. An average household street flooding score is assigned, which is associated with a particular color coding. The higher street flooding scores are associated with darker colors representing the intensity of street flooding in a spatial sense. As illustrated, several neighborhoods in Suffolk, Virginia Beach, Hampton, area near Whitehouse Woods in Northampton and area near Mappsville in Accomack report high frequency of flooding relative to other areas in the region.



## Frequency Street Flooding

The chart below illustrates, among all households, reporting of frequency of flooding on the streets in front or near their homes. While about 55.9 percent of household indicate that the street in front of their home or very near their home rarely floods, if ever, roughly 44.1 percent report some frequency of flooding. Notably, 18.5 percent report flooding a couple times a year, 6.6 percent once a month, and 4.3 percent more than once a month. The nine charts on the following pages will examine this controlling for household characteristics.

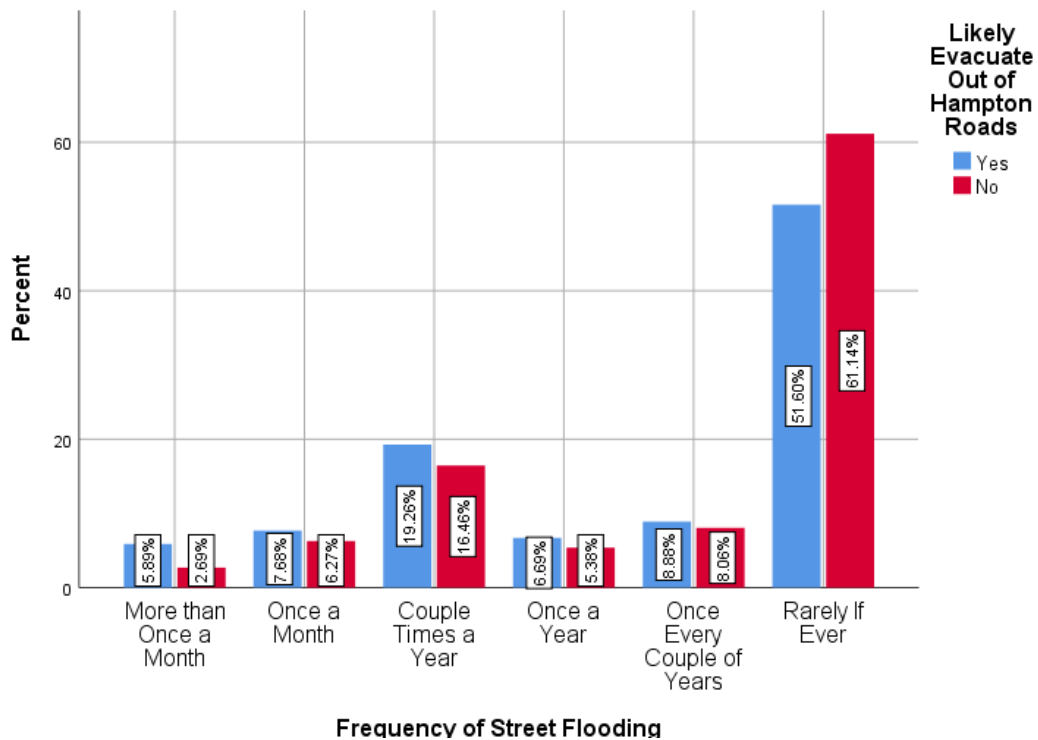




..by..Likely Evacuate Out of Hampton Roads

The chart below illustrates, among all households, the proportions within Likely Evacuate Out of Hampton Roads (yes, no) across the categories of Frequency of Street Flooding (more than once a month, once a month, couple times a year, once a year, once every couple of years, and rarely if ever).

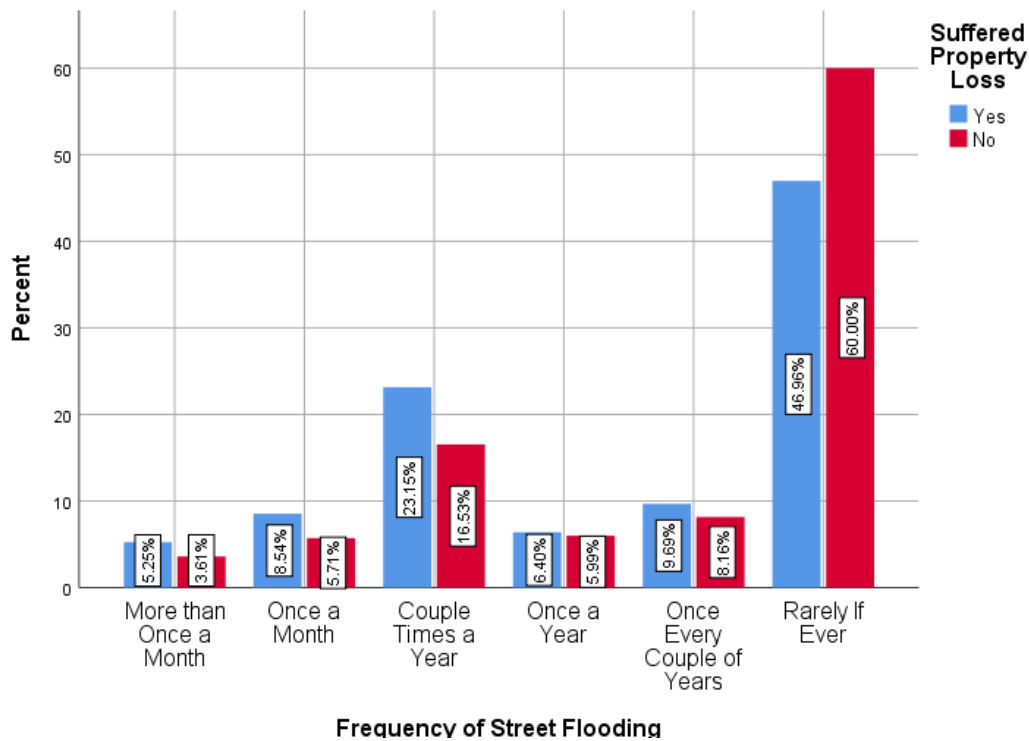
Households that report they will evacuate outside of the region also experience greater frequency of flooding, relative to households that are not likely to evacuate out to the region. For more than once a month (5.9 and 2.7 percent respectively), once a month (7.7 and 6.3 percent respectively), couple times a year (19.2 and 16.5 percent respectively), and once a year (6.7 and 5.3 percent respectively).



..by..Suffered Property Loss

The chart below illustrates, among all households, the proportions within Suffered Property Loss (yes, no) across the categories of Frequency of Street Flooding (more than once a month, once a month, couple times a year, once a year, once every couple of years, and rarely if ever).

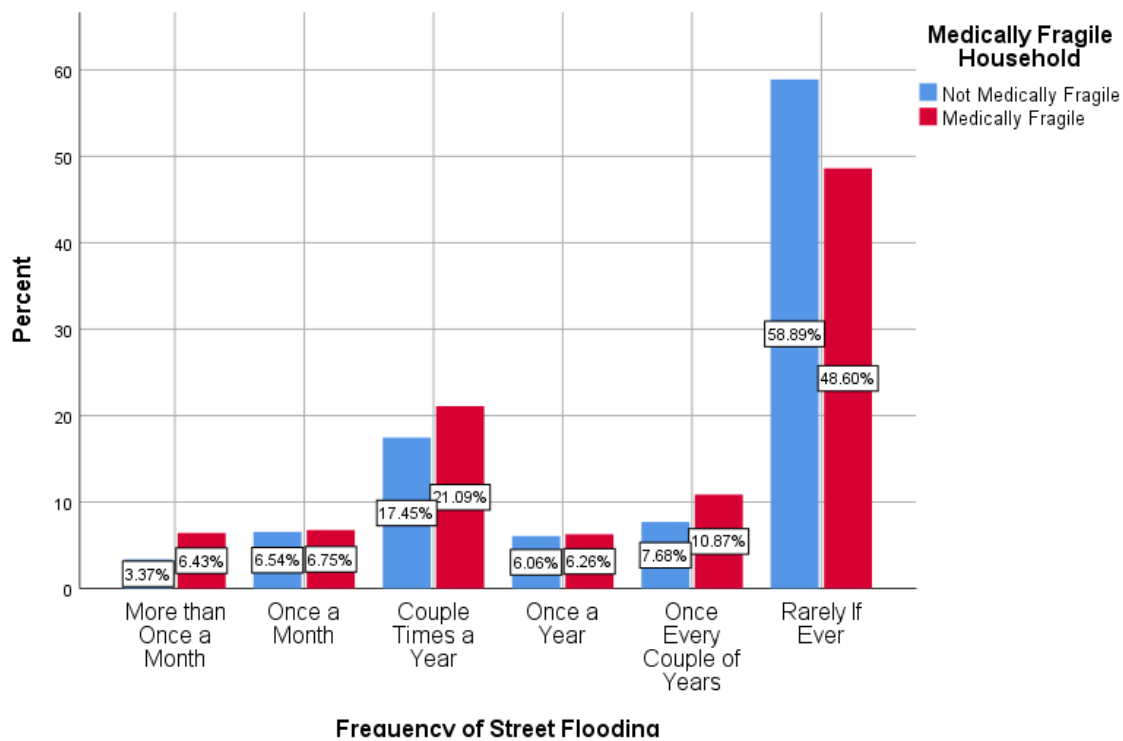
Households that report they have suffered property loss due to a storm in the past also experience greater frequency of flooding, relative to households that have not suffered past loss. For more than once a month (5.3 and 3.6 percent respectively), once a month (8.5 and 5.7 percent respectively), and couple times a year (23.2 and 16.5 percent respectively).



..by..Medically Fragile Household

The chart below illustrates, among all households, the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across the categories of Frequency of Street Flooding (more than once a month, once a month, couple times a year, once a year, once every couple of years, and rarely if ever).

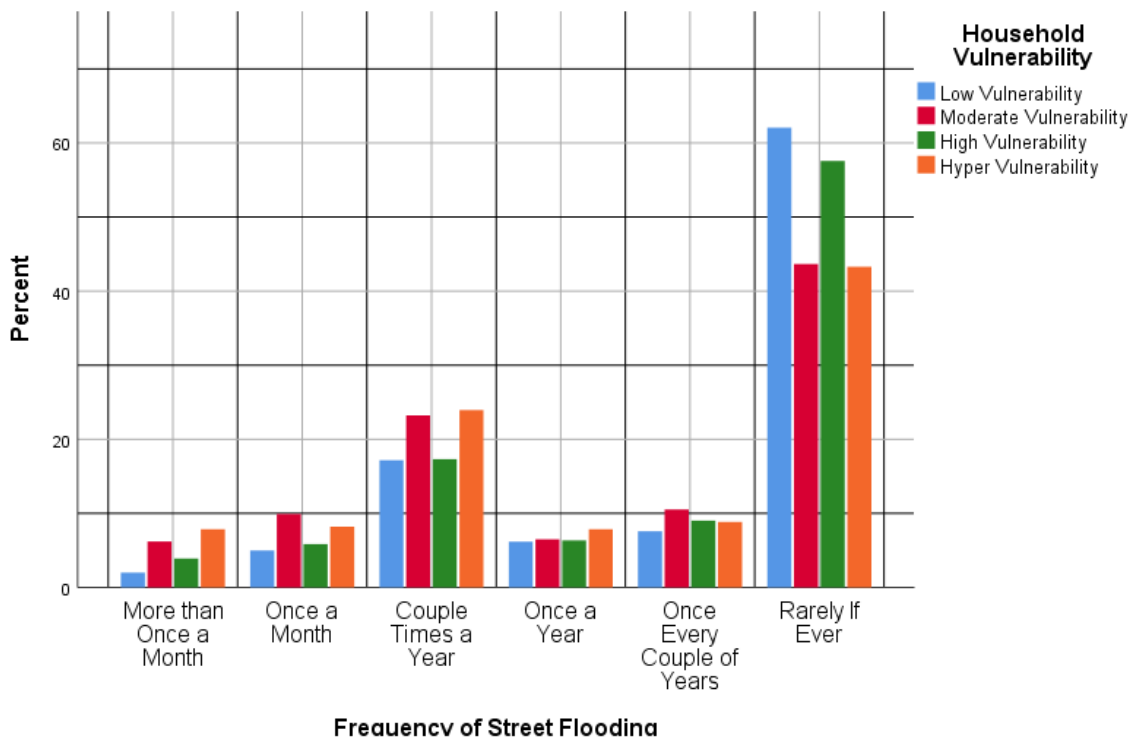
Overall, a larger share of not medically fragile households, relative to medically fragile households, rarely, if ever, experience proximate flooding (58.9 and 46.6 percent respectively). This suggests, inversely, that a proportion of medically fragile households witness proximate flooding.



..by..Household Vulnerability

This chart illustrates, among all households, the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across the categories of Frequency of Street Flooding (more than once a month, once a month, couple times a year, once a year, once every couple of years, and rarely if ever).

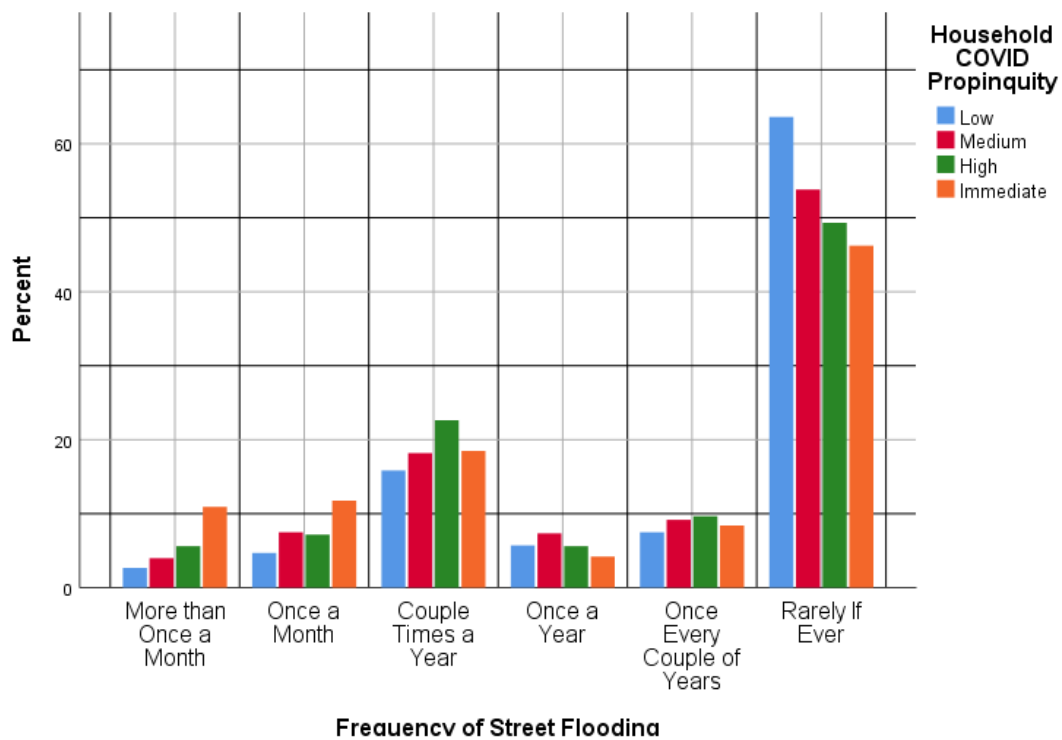
Overall, hyper and moderate vulnerability households, relative to other vulnerability households, rarely, if ever, experience proximate flooding (58.9 and 46.6 percent respectively). This suggests, inversely, that hyper and moderate vulnerability households witness more proximate flooding.



..by..Household COVID Propinquity

This chart illustrates, among all households, the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across the categories of Frequency of Street Flooding (more than once a month, once a month, couple times a year, once a year, once every couple of years, and rarely if ever).

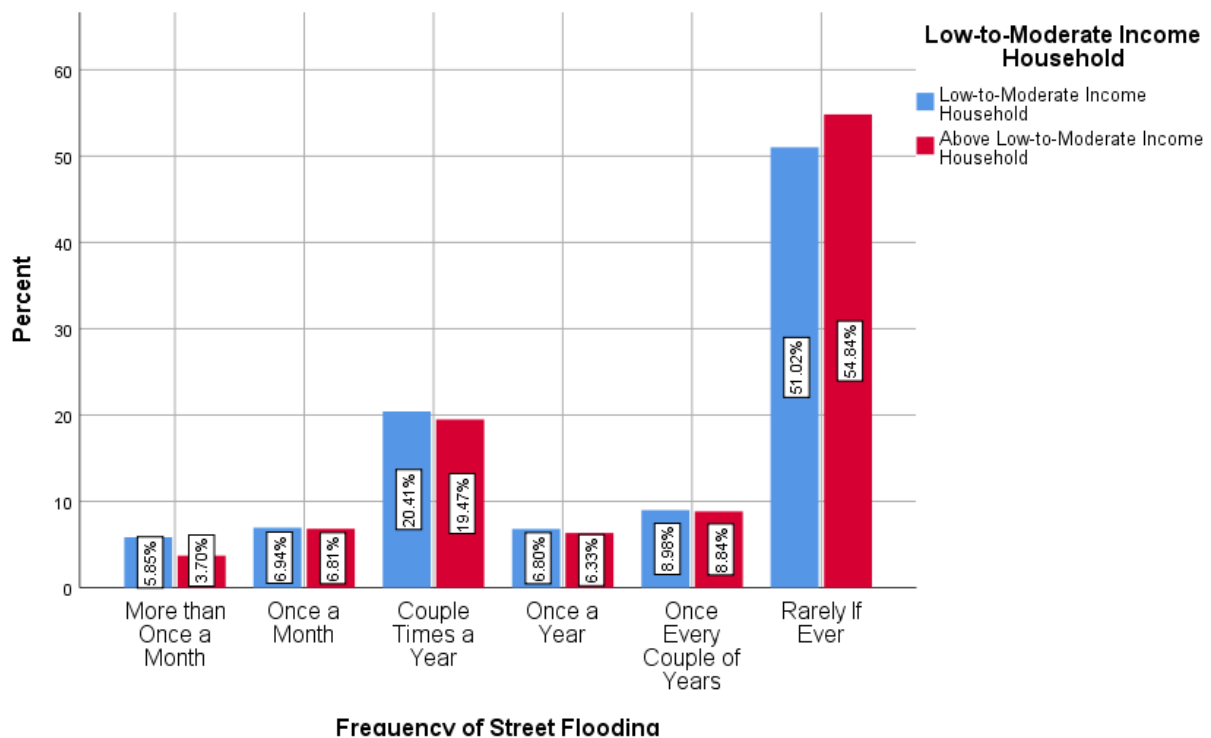
There is a clear relationship between household COVID propinquity and frequency of flooding. Households with more immediate COVID propinquity experience flooding more frequently relative to households with lesser COVID propinquities.



..by..Low-to-Moderate Income Household

The chart below illustrates, among all households, the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across the categories of Frequency of Street Flooding (more than once a month, once a month, couple times a year, once a year, once every couple of years, and rarely if ever).

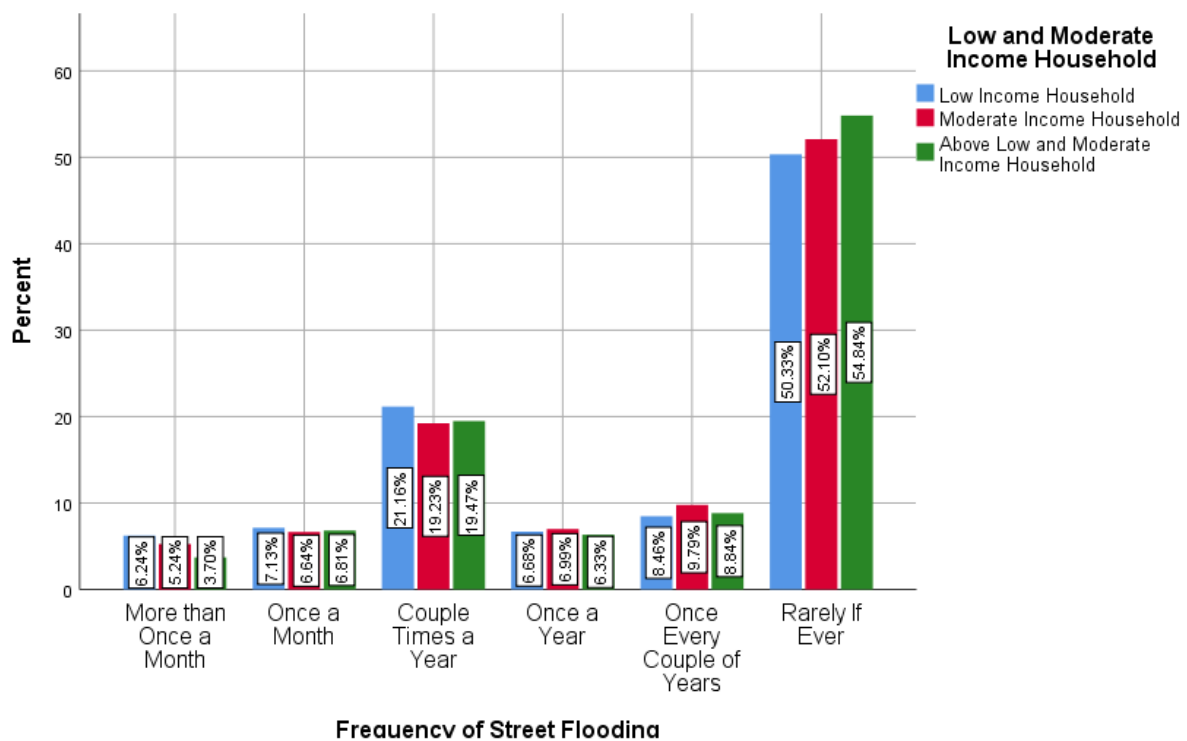
Low-to-moderate income households experience greater frequency of flooding, relative to above low-to-moderate income households, although the differences are pronounced only for more than once a month (5.9 and 3.7 percent respectively). Overall, low-to-moderate income households, relative to above low-to-moderate income households, are less likely to report flooding rarely if ever (51.0 and 54.8 percent respectively).



..by..Low and Moderate Income Household

This chart illustrates, among all households, the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across the categories of Frequency of Street Flooding (more than once a month, once a month, couple times a year, once a year, once every couple of years, and rarely if ever).

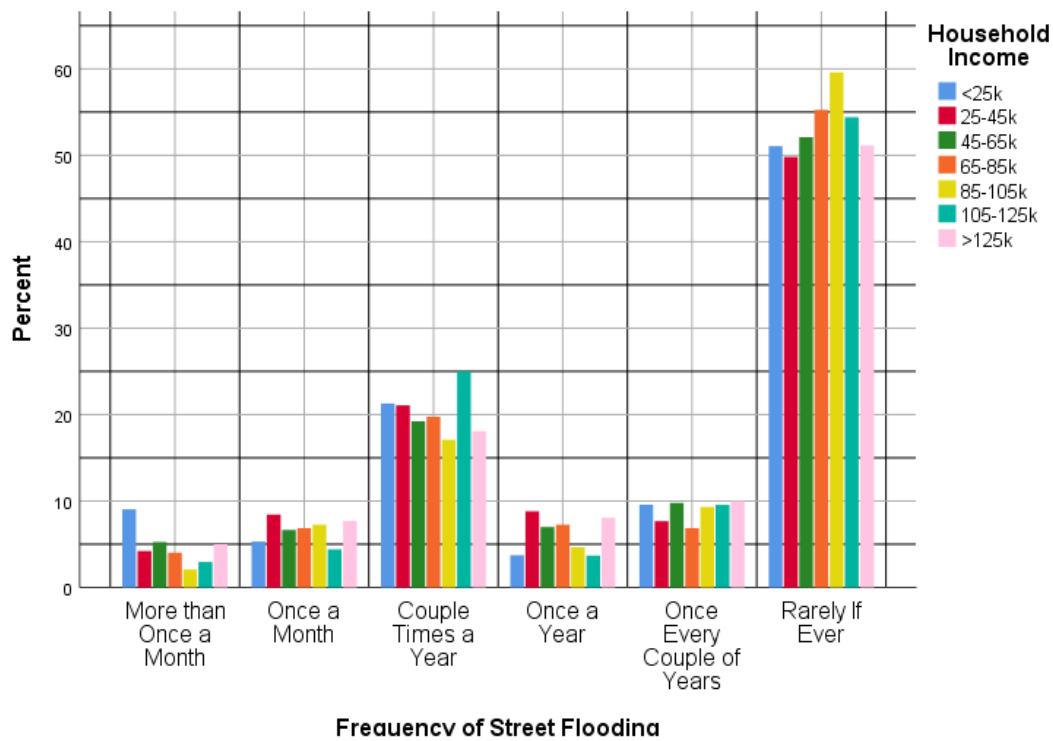
Low income and moderate income households experience greater frequency of flooding, relative to above low and moderate income households, although the differences are pronounced only for more than once a month (6.2, 5.2, and 3.7 percent respectively). Overall, low income households and moderate income households, relative to above low and moderate income households, are less likely to report flooding rarely if ever (50.3, 52.1, and 54.8 percent respectively).



..by..Granulated Household Income

This chart illustrates, among all households, the proportions within Household Income (disaggregated into seven household income gradients) across the categories of Frequency of Street Flooding (more than once a month, once a month, couple times a year, once a year, once every couple of years, and rarely if ever).

There is not a clear relationship across income gradients and frequency of street flooding. However, for flooding more than once a month, households with incomes of <25k suffer this frequency roughly twice any other income gradient.

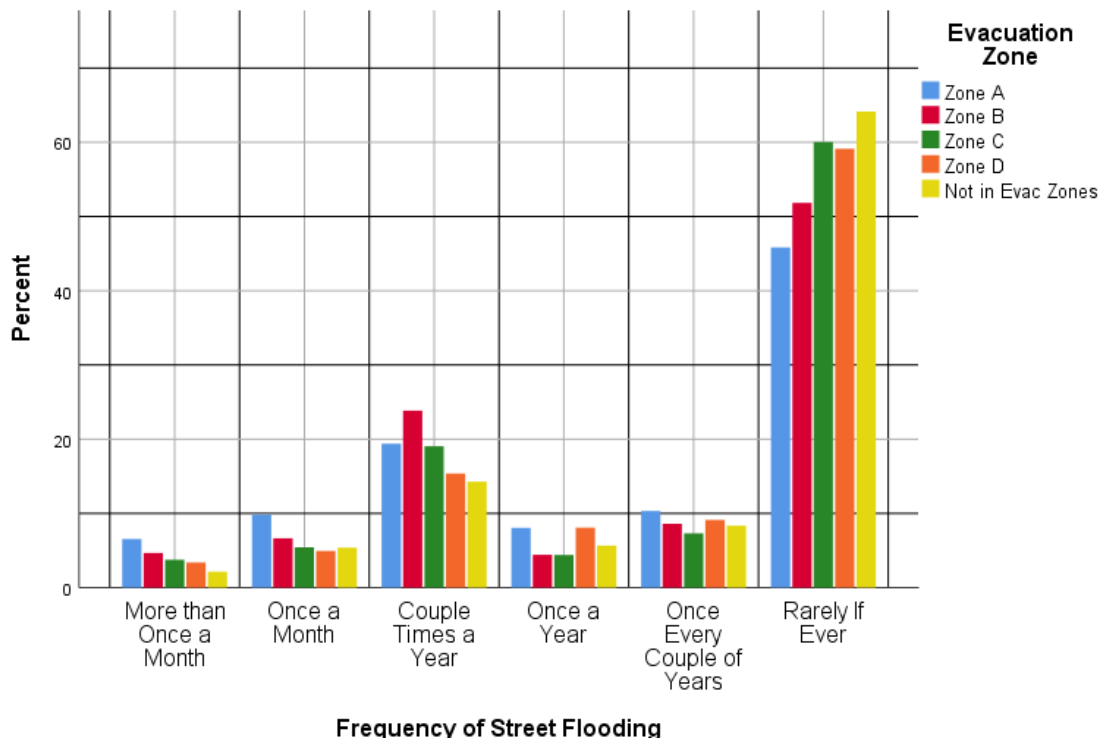




..by..Evacuation Zone

The chart below illustrates, among all households, the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across the categories of Frequency of Street Flooding (more than once a month, once a month, couple times a year, once a year, once every couple of years, and rarely if ever).

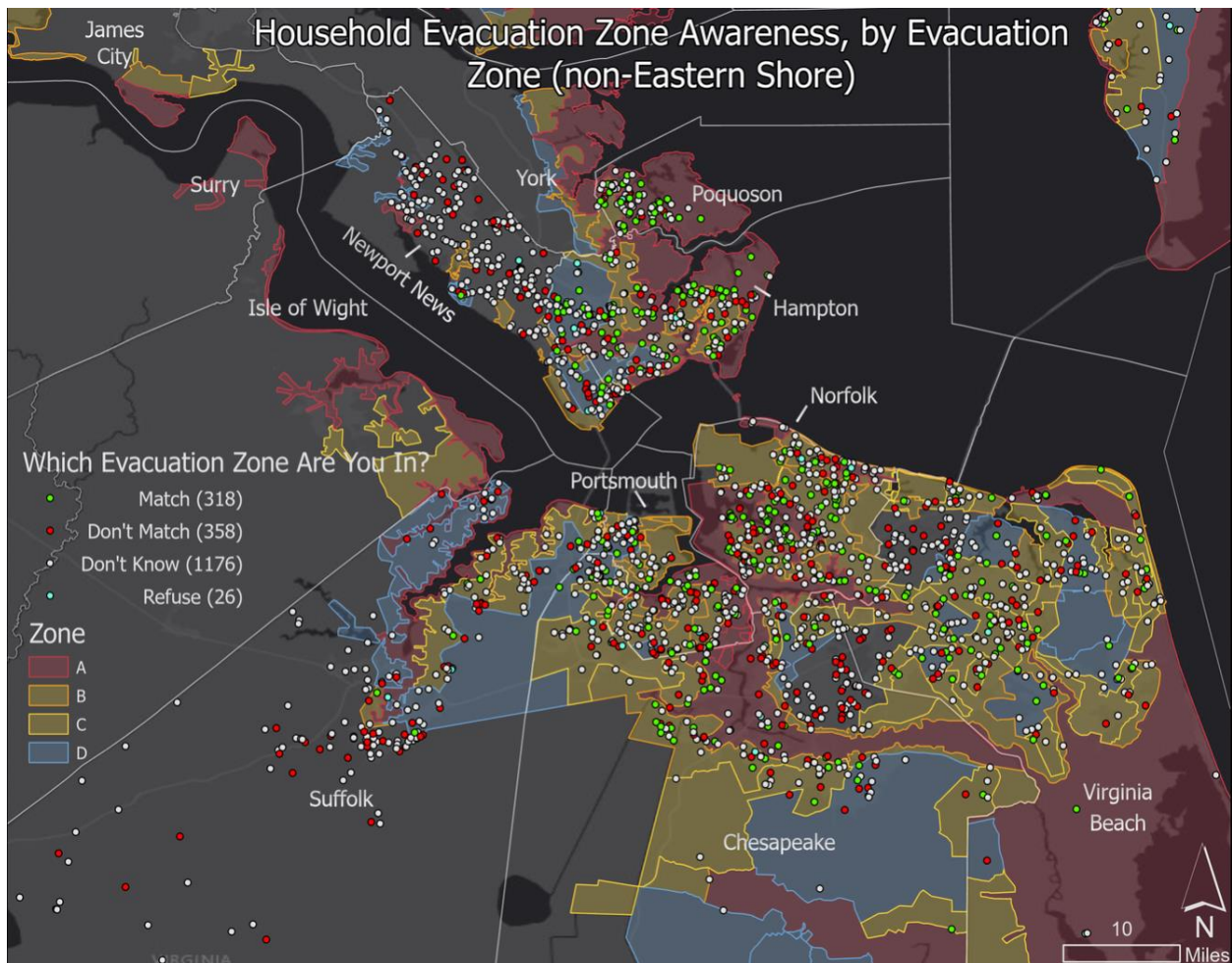
There is a clear relationship across geographies and frequency of street flooding, with a larger proportion of households in evacuation Zone A experiencing flooding more than once a month and experiencing flooding once a month. The proportions of households within rarely if ever are largest for households least proximate shorelines.



## Evacuation Zone Awareness Map (Non Eastern Shore)

The below map illustrates the southern portion of the study area and illustrates the variation in household evacuation zone awareness. Green represent the correct identification of the evacuation zone in which the households reside, red represent misidentified the evacuation zone, and white represent not knowing the evacuation zone.

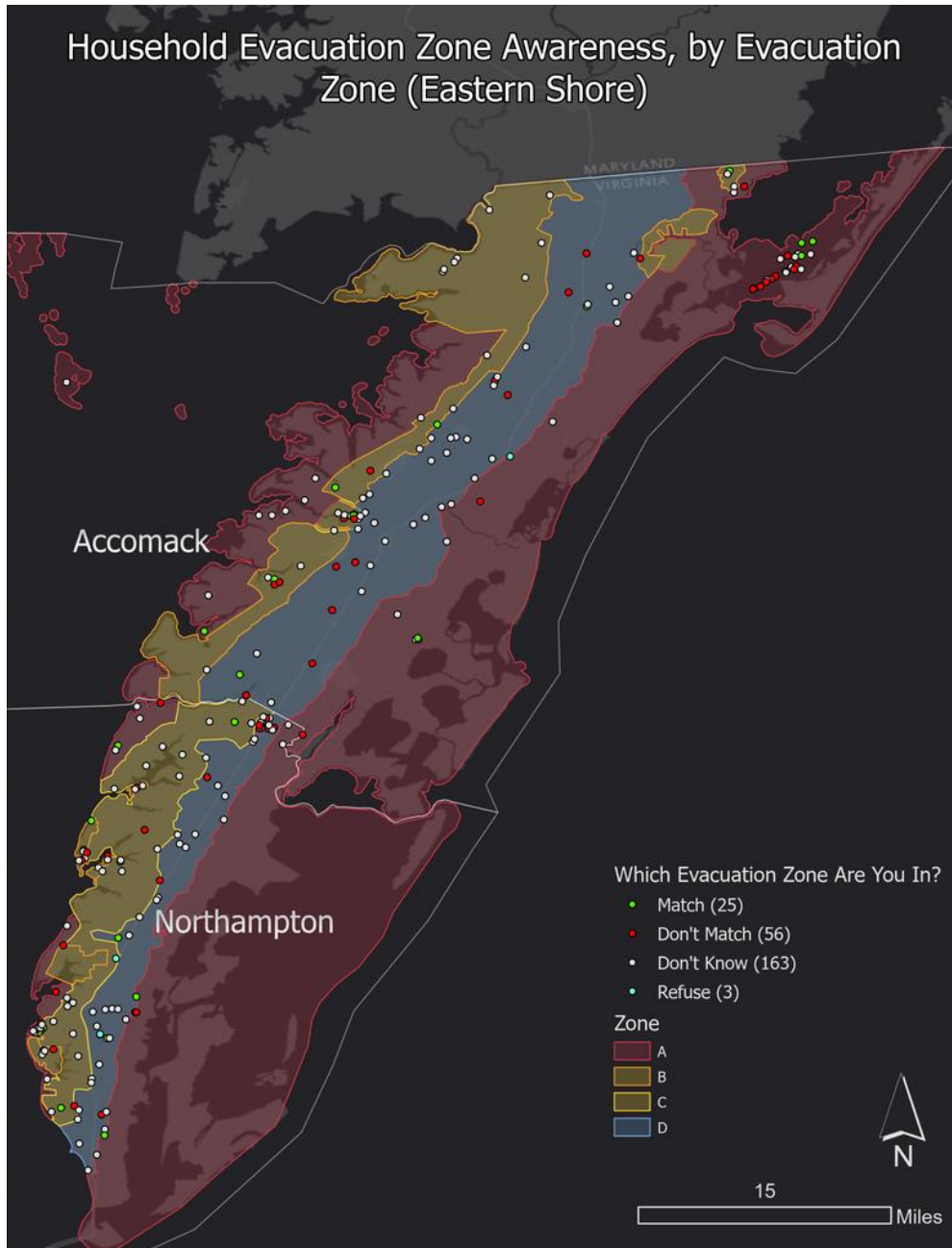
Shown is the general location of sampled households (precise location of geocoded dots is masked to assure anonymity).



## Evacuation Zone Awareness Map (Eastern Shore)

The below map illustrates the Eastern Shore portion of the study area and illustrates the variation in household evacuation zone awareness. Green represent the correct identification of the evacuation zone in which the households reside, red represent misidentified the evacuation zone, and white represent not knowing the evacuation zone.

Shown is the general location of sampled households (precise location of geocoded dots is masked to assure anonymity).



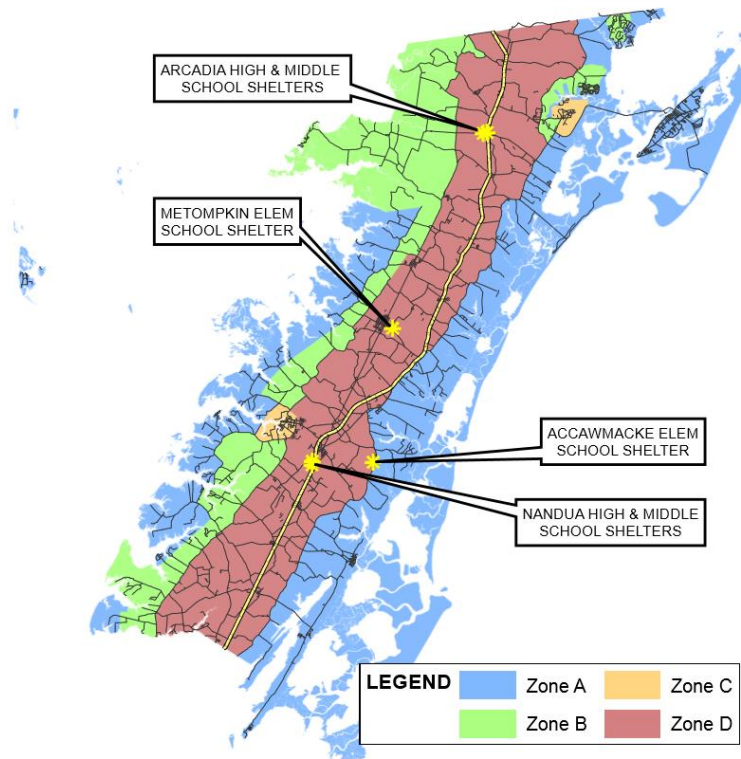
## Evacuation Zone Awareness Overview Zones A-D

The State and localities have invested in raising awareness among citizens about recently adopted the evacuation zone system, encouraging citizens to identify the location of their primary residence and to “know your zone.” This study’s approach includes informing respondents that the region is divided into evacuation zones A through D and asking the household respondent to identify their evacuation zone. This study’s approach then contrasts the stated evacuation zone with the true evacuation zone stemming from geolocated addresses.



The below table reports the finding for respondents known to reside in evacuation zones A through D (there are geographies within many of the localities that are not located within these evacuation zones). As reported below, a majority in each zone report not knowing the evacuation zone in which they reside. This ranges from a low of 51.7 percent (Zone A) to nearly 63 percent

### Know Your Accomack Evacuation Zone



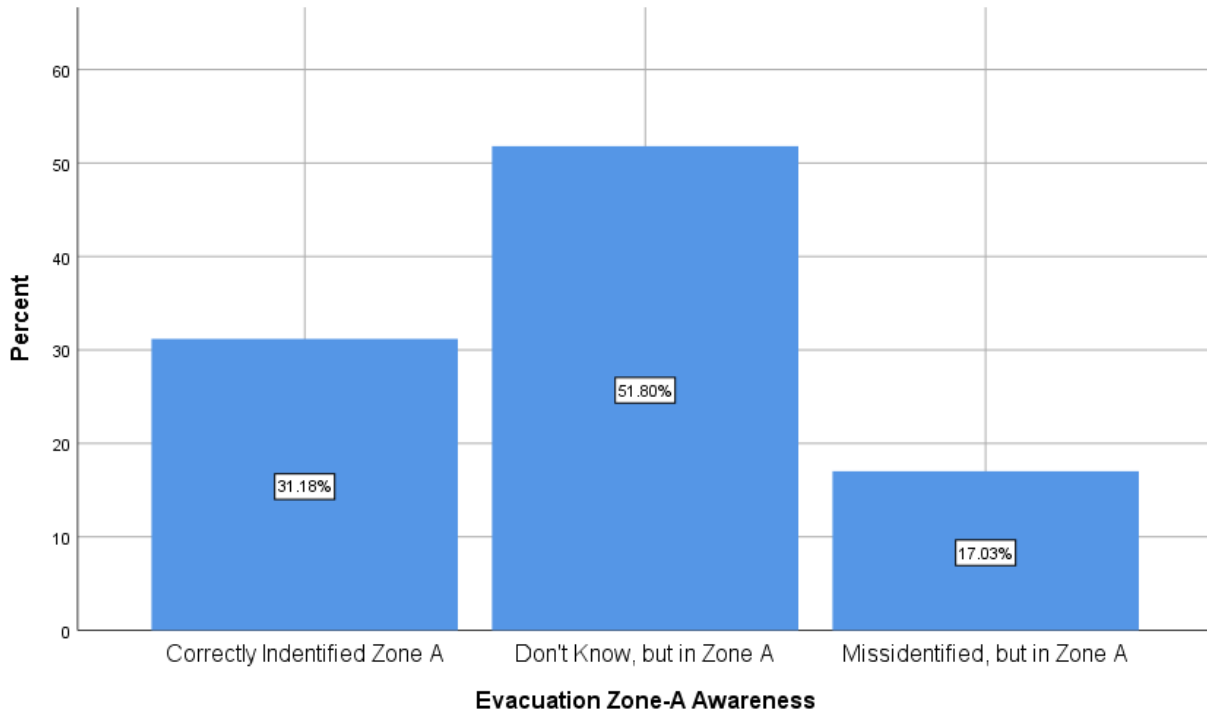
(in both Zones C and D). Correct identification of the evacuation zone in which the resident resides ranges from a low of roughly 16 percent (Zone D) to a high of 31 percent (Zone A). While Zone A is generally most proximate shoreline, less than a third of all residents within Zone A were able to correctly identify the zone. Notice also that, roughly, on average, just under one in five households incorrectly identified the evacuation zone.

The below table provides insight to variation in evacuation zone awareness across zones. Among all households, those residing in evacuation Zone A are most likely to correctly identify the zone in which they reside (31.1 percent). It is notable, though this is the highest percent among the four zones, still roughly 69 percent of Zone A residents were unable to correctly identify the zone in which they reside. The next zone closest to Zone A in the proportion of households to correctly identify the zone in which they reside is Zone C at 21.1 percent, a full 10 percentage points less than Zone A. It is again notable that nearly 79 percent of Zone C resident incorrectly identify the zone in which they reside. Zone B and Zone D have even smaller proportions of their households correctly identifying the zone (19.8 and 16.5 percent, respectively). Across all evacuation zones, there are sizable proportions of households that do not know the zone in which they reside (ranging from 51.7 to 62.7 percent) and roughly up to one in five households across all evacuation zones misidentified the zone in which they reside (ranging from 16.2 to 20.8 percent).

<b>Evacuation Zone Awareness</b>		
	Valid Percent	Within-Zone Percent
Correctly Identified Zone A	7.4	31.1
Don't Know, but in Zone A	12.3	51.7
Missidentified, but in Zone A	4.1	17.2
Totals	23.8	100.0
Correctly Identified Zone B	4.9	19.8
Don't Know, but in Zone B	14.9	60.5
Missidentified, but in Zone B	4.9	19.8
Totals	24.6	100.0
Correctly Identified Zone C	6.0	21.1
Don't Know, but in Zone C	17.8	62.7
Missidentified, but in Zone C	4.6	16.2
Totals	28.4	100.0
Correctly Identified Zone D	3.8	16.5
Don't Know, but in Zone D	14.5	62.7
Missidentified, but in Zone D	4.8	20.8
Totals	23.1	100.0
Totaled Totals	100.0	

## Evacuation Zone-A Awareness

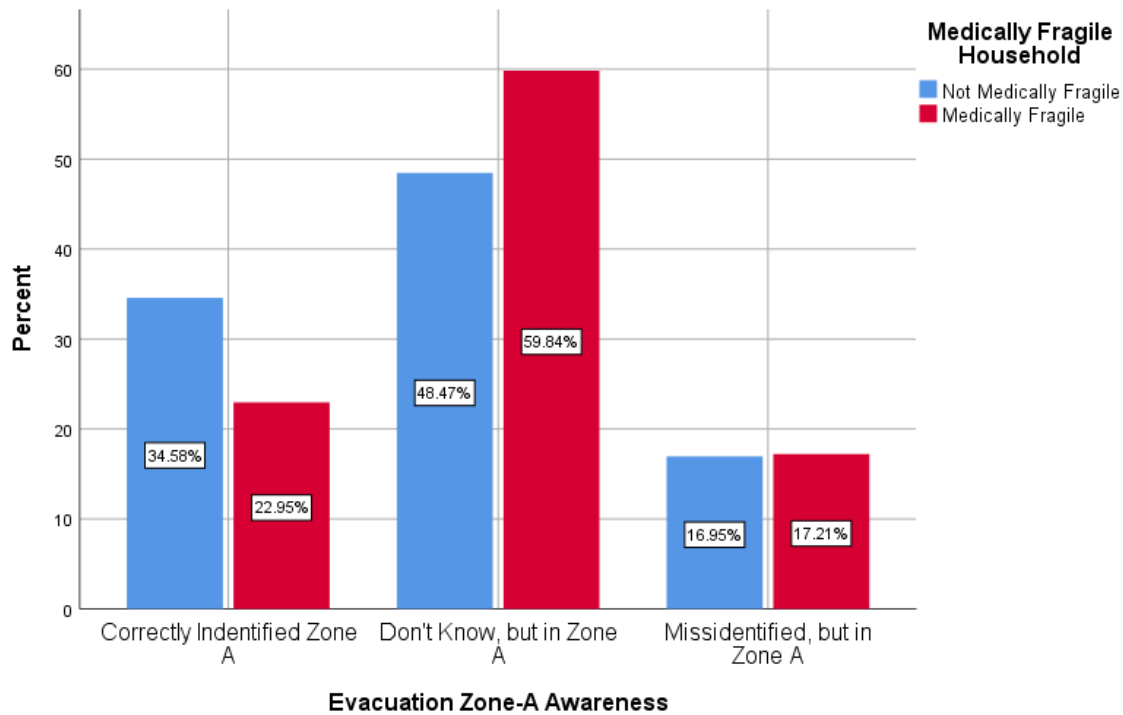
The chart below illustrates evacuation zone awareness for households that reside in evacuation Zone A. Among these households, about 31.2 percent correctly identified the evacuation zone in which they reside, 51.8 don't know, and 17.0 percent misidentified their evacuation zone. The six charts on the following pages will examine this controlling for household characteristics.



..by..Medically Fragile Household

The chart below illustrates the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across the categories within Evacuation Zone-A Awareness (correctly identified zone, don't know zone, and misidentified zone).

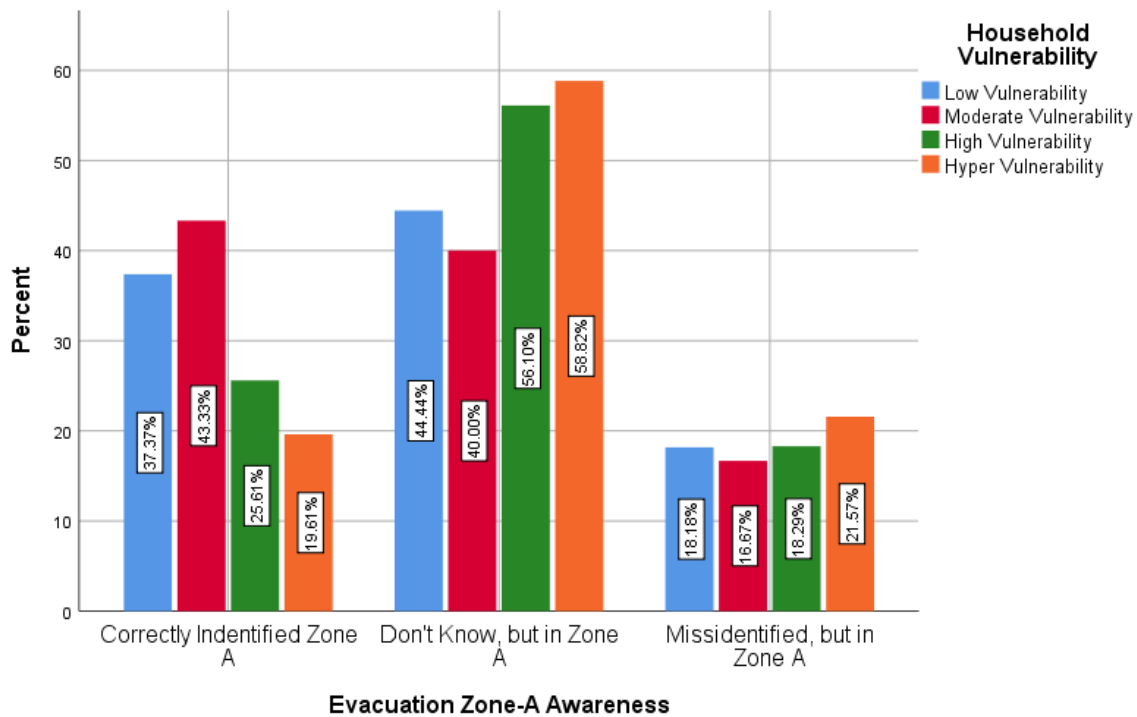
Medically fragile households, relative to not medically fragile households, are more likely not to know the zone in which they reside, about 59.8 and 48.8 percent, respectively.



..by..Household Vulnerability

The chart below illustrates the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across the categories within Evacuation Zone-A Awareness (correctly identified zone, don't know zone, and misidentified zone).

Hyper vulnerability and high vulnerability households, relative to other vulnerability households, are more likely not to know the zone in which they reside, about 59.8 and 48.8 percent, respectively.

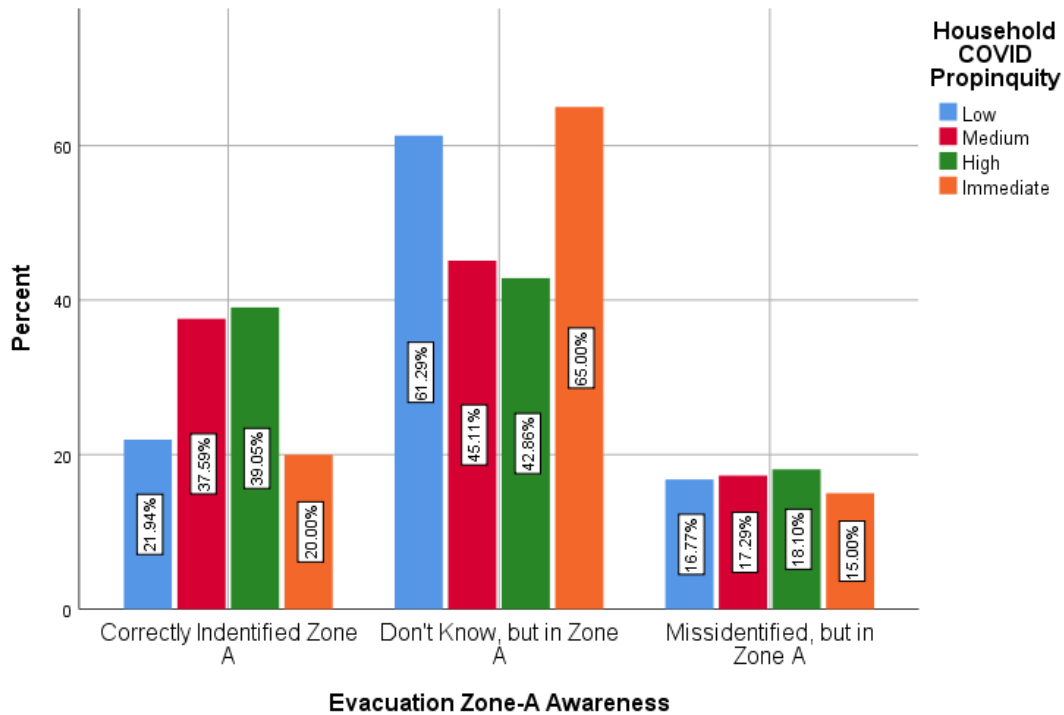




..by..Household COVID Propinquity

The chart below illustrates the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across the categories within Evacuation Zone-A Awareness (correctly identified zone, don't know zone, and misidentified zone).

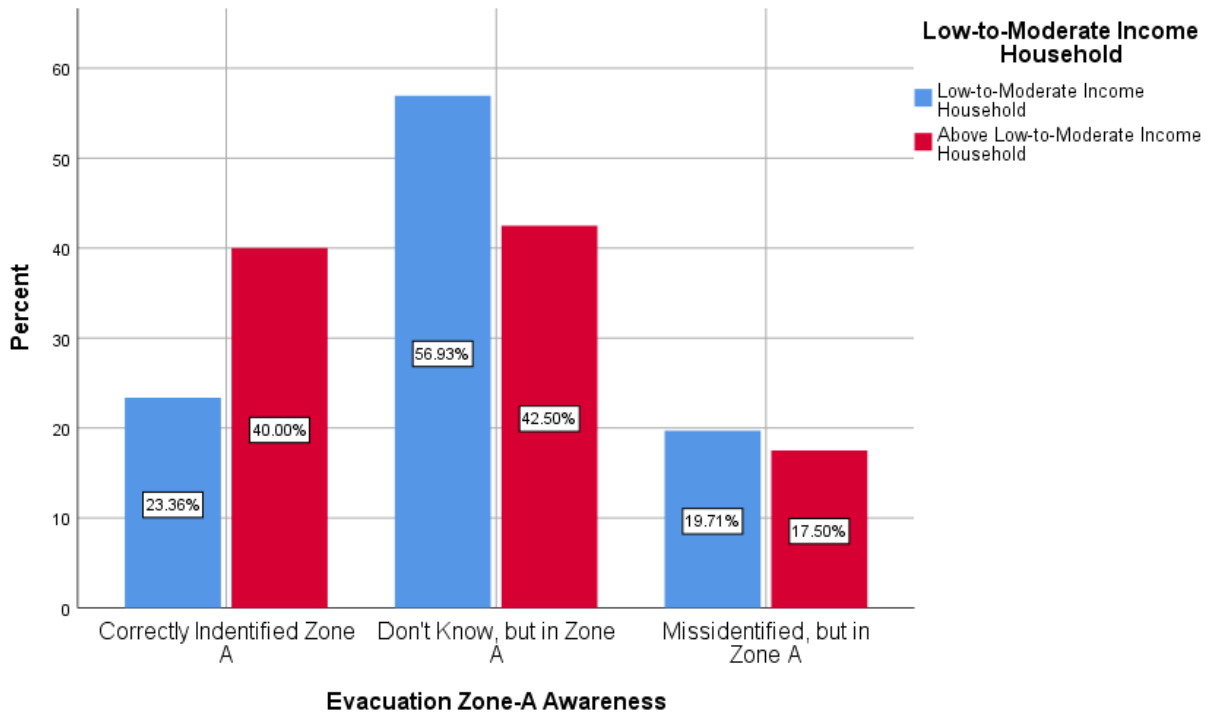
There does not appear a clear relationship between evacuation Zone A awareness and household COVID propinquity.



..by..Low-to-Moderate Income Household

The chart below illustrates the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across the categories within Evacuation Zone-A Awareness (correctly identified zone, don't know zone, and misidentified zone).

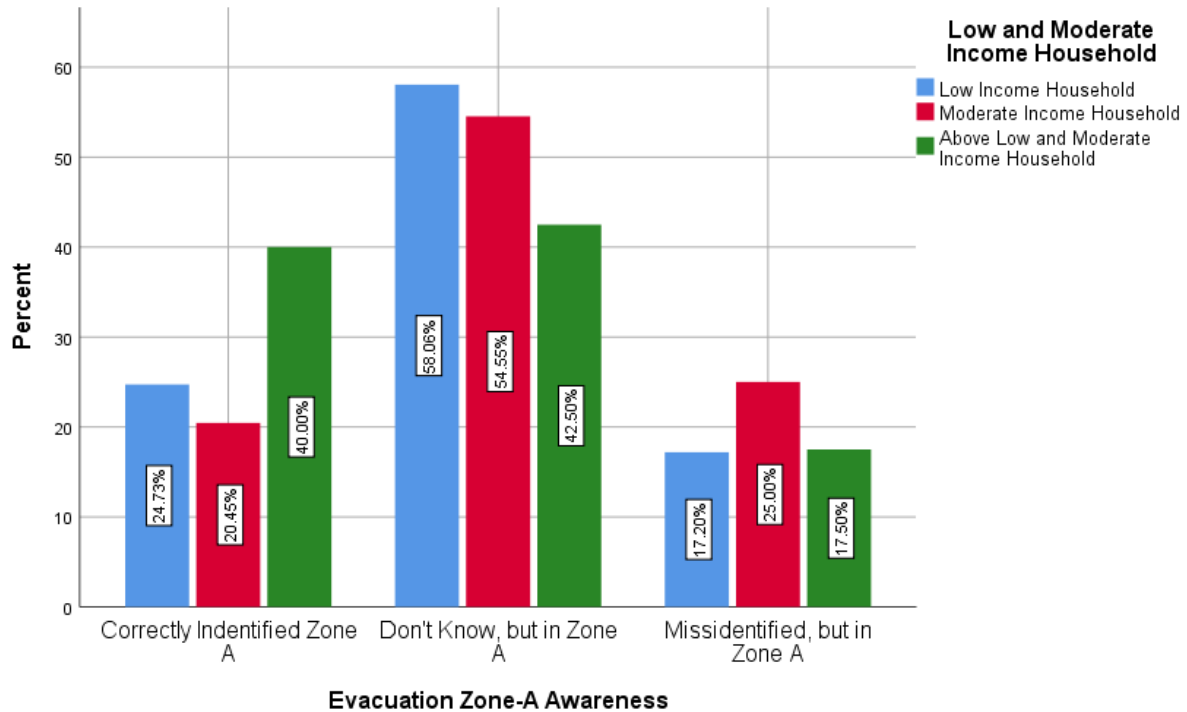
Low-to-moderate income households, relative to not low-to-moderate income households, are more likely not to know the zone in which they reside, about 56.9 and 42.5 percent, respectively.



..by..Low and Moderate Income Household

This chart illustrates the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across the categories within Evacuation Zone-A Awareness (correctly identified zone, don't know zone, and misidentified zone).

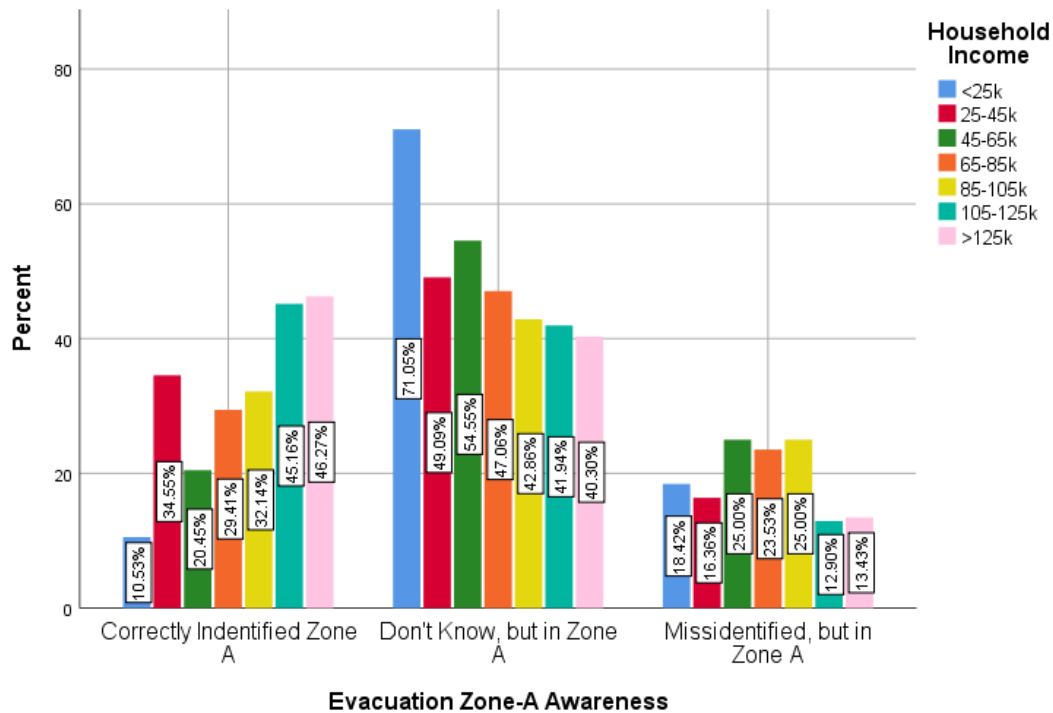
Low income households, relative to moderate income households and above low and moderate income households, are more likely not to know the zone in which they reside, about 58.1, and 54.6, and 42.5 percent, respectively.



..by..Granulated Household Income

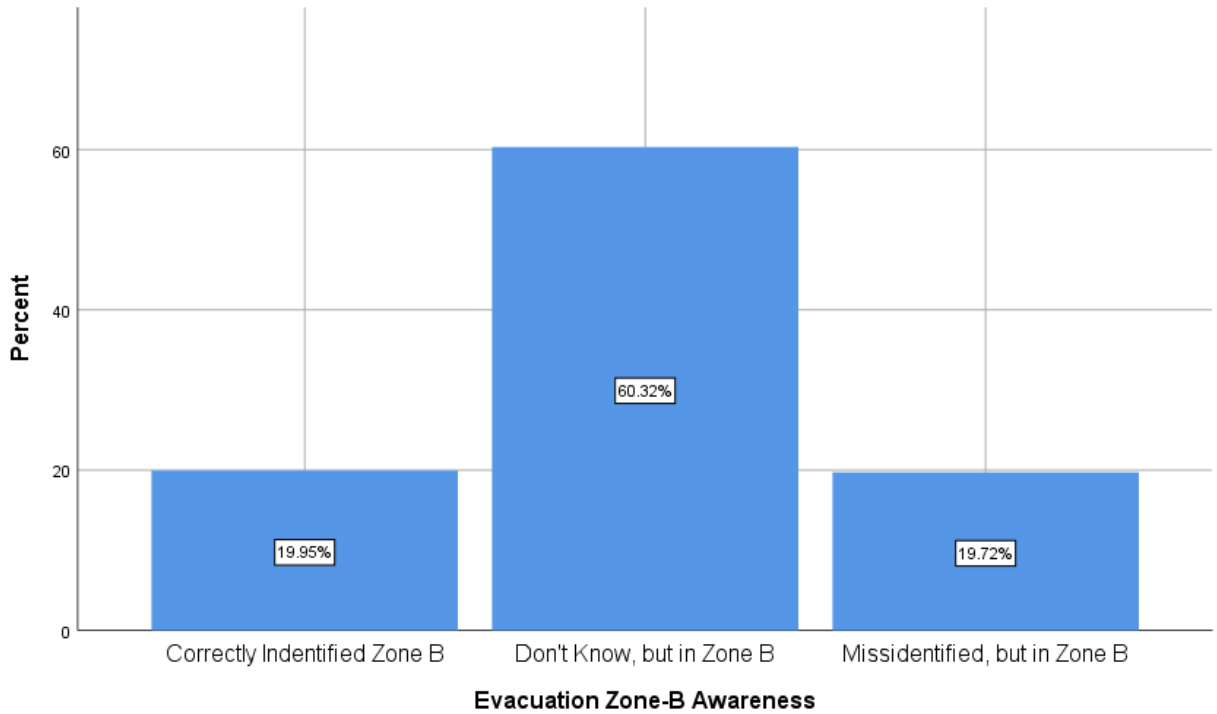
The chart below illustrates the proportions within Household Income (disaggregated into seven household income gradients) across the categories within Evacuation Zone-A Awareness (correctly identified zone, don't know zone, and misidentified zone).

There is a general relationship between household income gradients and not knowing the correct evacuation zone in which the households resides, with lower income households exhibiting high lack of awareness relative to higher income households.



## Evacuation Zone-B Awareness

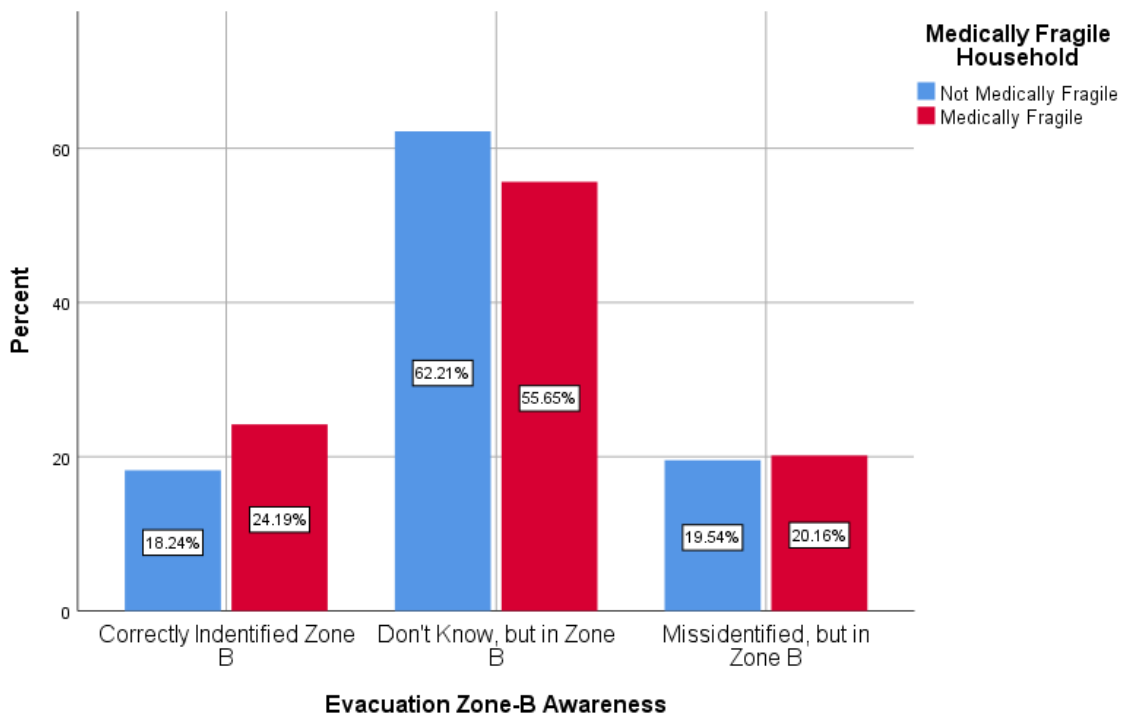
The chart below illustrates evacuation zone awareness for households that reside in evacuation Zone B. Among these households, about 20.0 percent correctly identified the evacuation zone in which they reside, 60.3 don't know, and 19.7 percent misidentified their evacuation zone. The six charts on the following pages will examine this controlling for household characteristics.



..by..Medically Fragile Household

The chart below illustrates the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across the categories within Evacuation Zone-B Awareness (correctly identified zone, don't know zone, and misidentified zone).

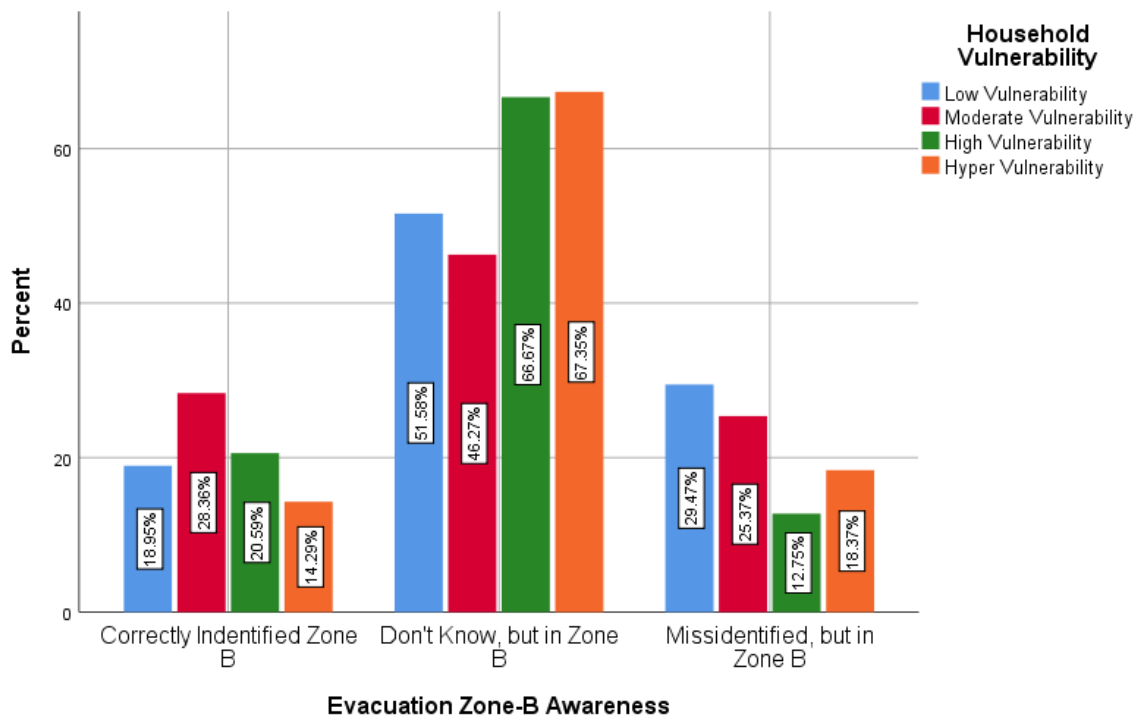
Medically fragile households, relative to not medically fragile households, are more likely to know the zone in which they reside, about 24.2 and 16.2 percent, respectively.



..by..Household Vulnerability

The chart below illustrates the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across the categories within Evacuation Zone-B Awareness (correctly identified zone, don't know zone, and misidentified zone).

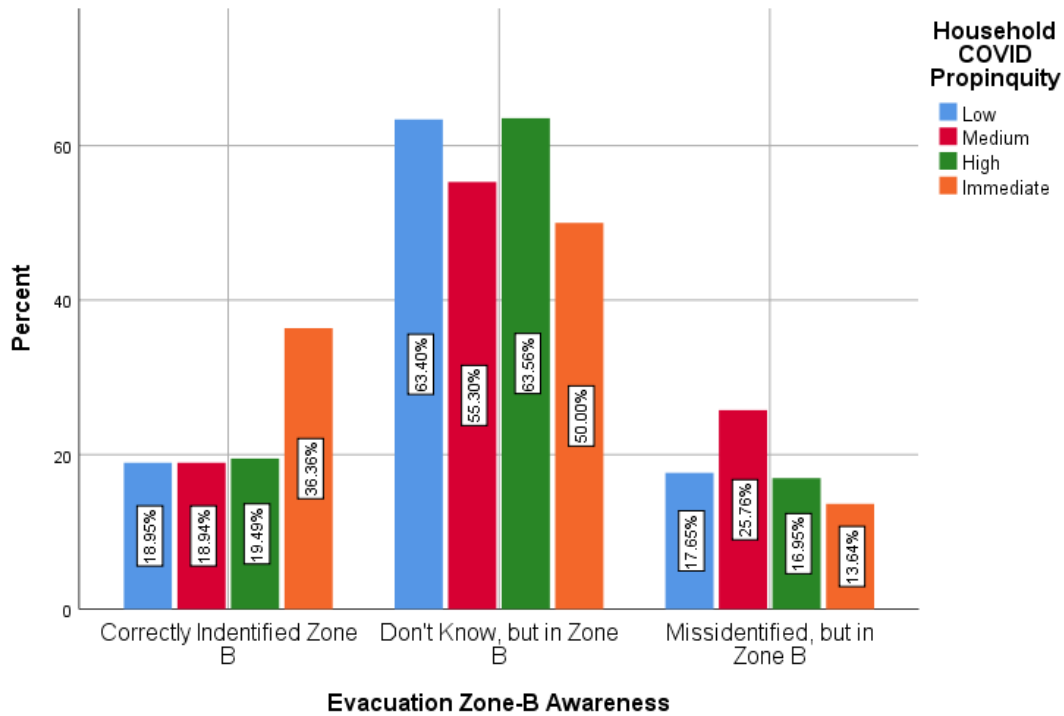
Hyper vulnerability and high vulnerability households, relative to other vulnerability households, are more likely not to know the zone in which they reside, about 67.4 and 66.7 percent, respectively.



..by..Household COVID Propinquity

This chart illustrates the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across the categories within Evacuation Zone-B Awareness (correctly identified zone, don't know zone, and misidentified zone).

There does not appear a clear relationship between evacuation Zone B awareness and household COVID propinquity.

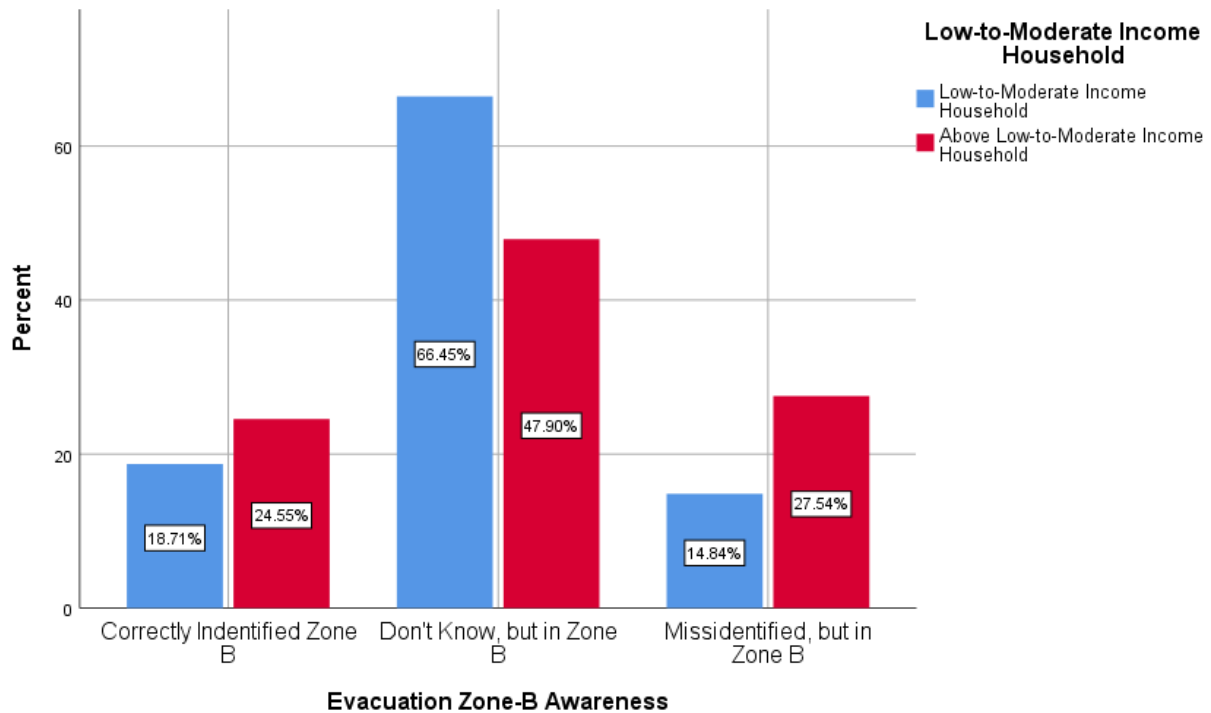




..by..Low-to-Moderate Income Household

The chart below illustrates the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across the categories within Evacuation Zone-B Awareness (correctly identified zone, don't know zone, and misidentified zone).

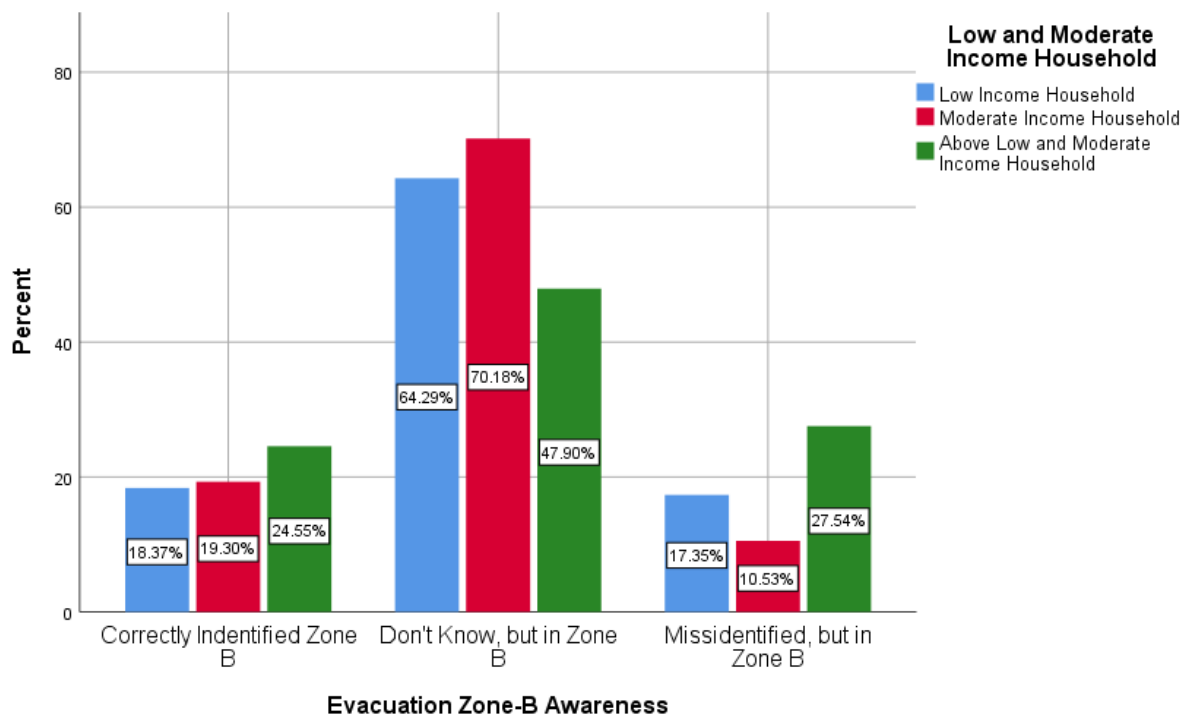
Low-to-moderate income households, relative to not low-to-moderate income households, are more likely not to know the zone in which they reside, about 66.4 and 47.9 percent, respectively.



..by..Low and Moderate Income Household

The chart below illustrates the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across the categories within Evacuation Zone-B Awareness (correctly identified zone, don't know zone, and misidentified zone).

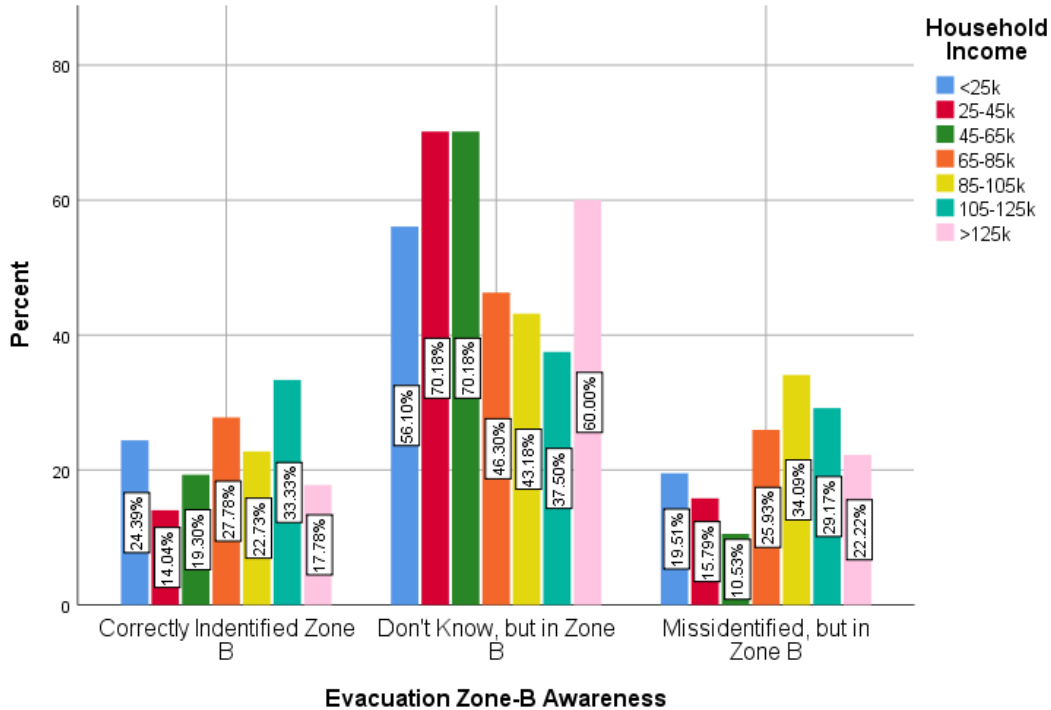
Above low and moderate income households, relative to moderate income households and low income households, are more likely to know the zone in which they reside, about 24.6, 19.3 and, and 18.4 percent, respectively.



..by..Granulated Household Income

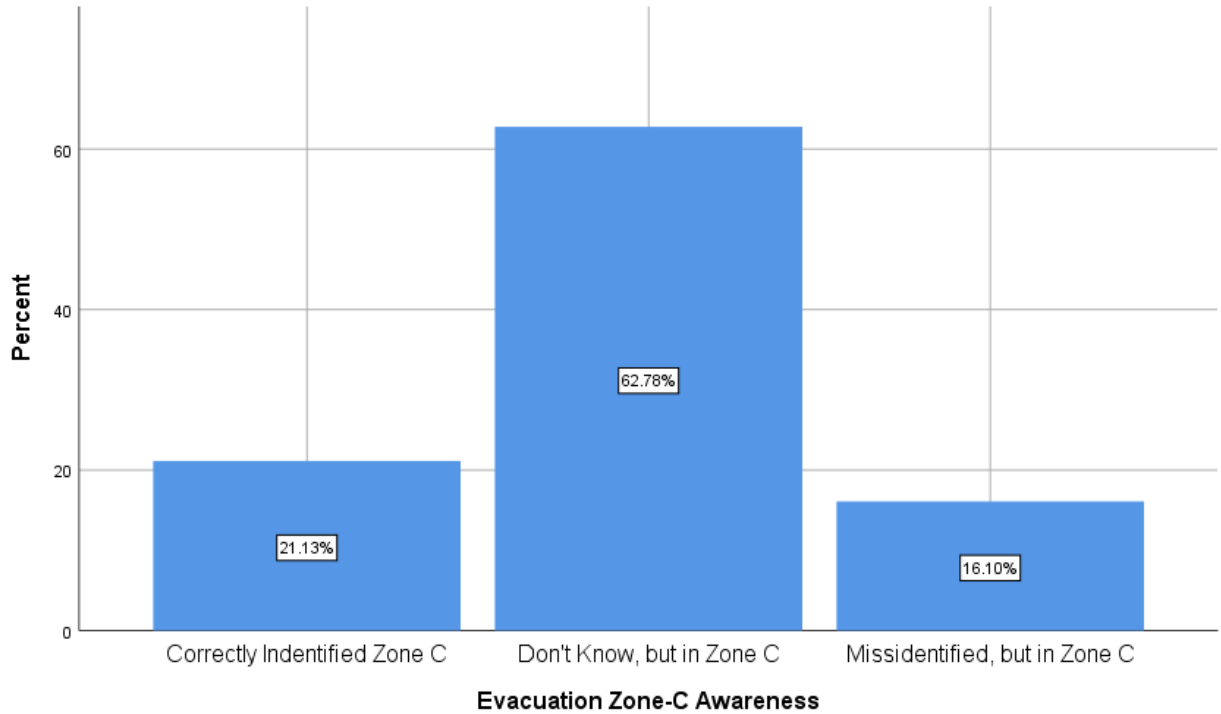
The chart below illustrates the proportions within Household Income (disaggregated into seven household income gradients) across the categories within Evacuation Zone-B Awareness (correctly identified zone, don't know zone, and misidentified zone).

There are not general relationships between household income gradients and the three attributes for evacuation zone awareness.



## Evacuation Zone-C Awareness

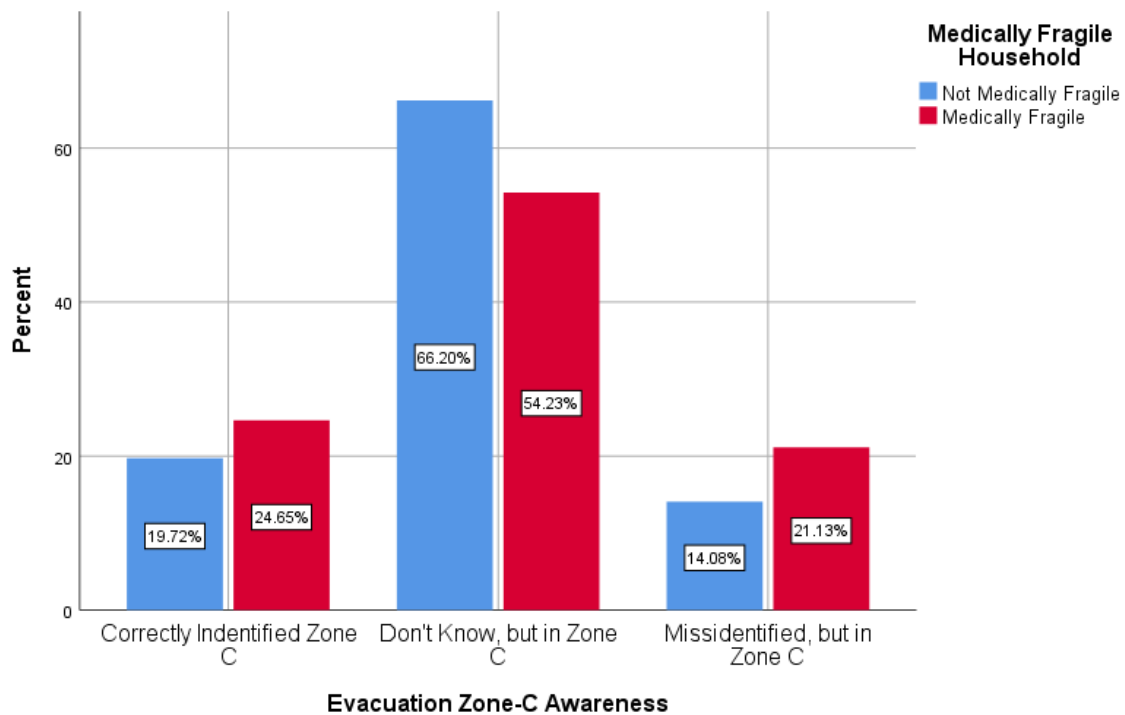
The chart below illustrates evacuation zone awareness for households that reside in evacuation Zone A. Among these households, about 21.3 percent correctly identified the evacuation zone in which they reside, 62.8 don't know, and 16.1 percent misidentified their evacuation zone. The six charts on the following pages will examine this controlling for household characteristics.



..by..Medically Fragile Household

This chart illustrates the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across the categories within Evacuation Zone-C Awareness (correctly identified zone, don't know zone, and misidentified zone).

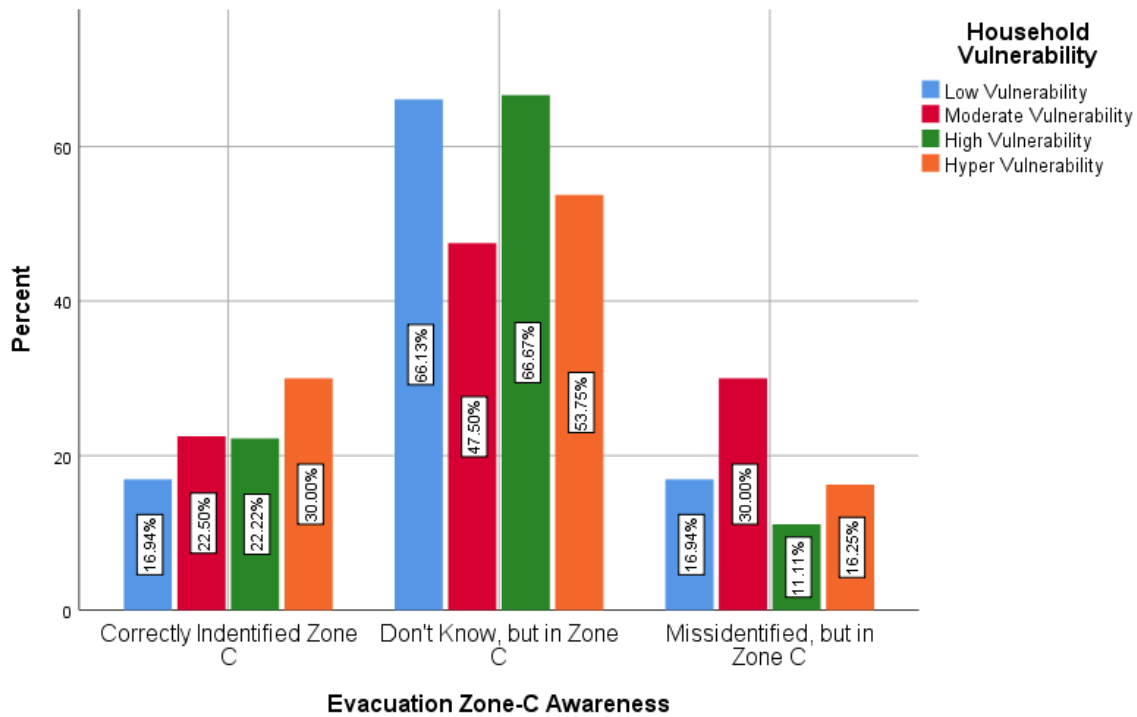
Medically fragile households, relative to not medically fragile households, are more likely to know the zone in which they reside, about 24.7 and 19.7 percent, respectively



..by..Household Vulnerability

The chart below illustrates the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across the categories within Evacuation Zone-C Awareness (correctly identified zone, don't know zone, and misidentified zone).

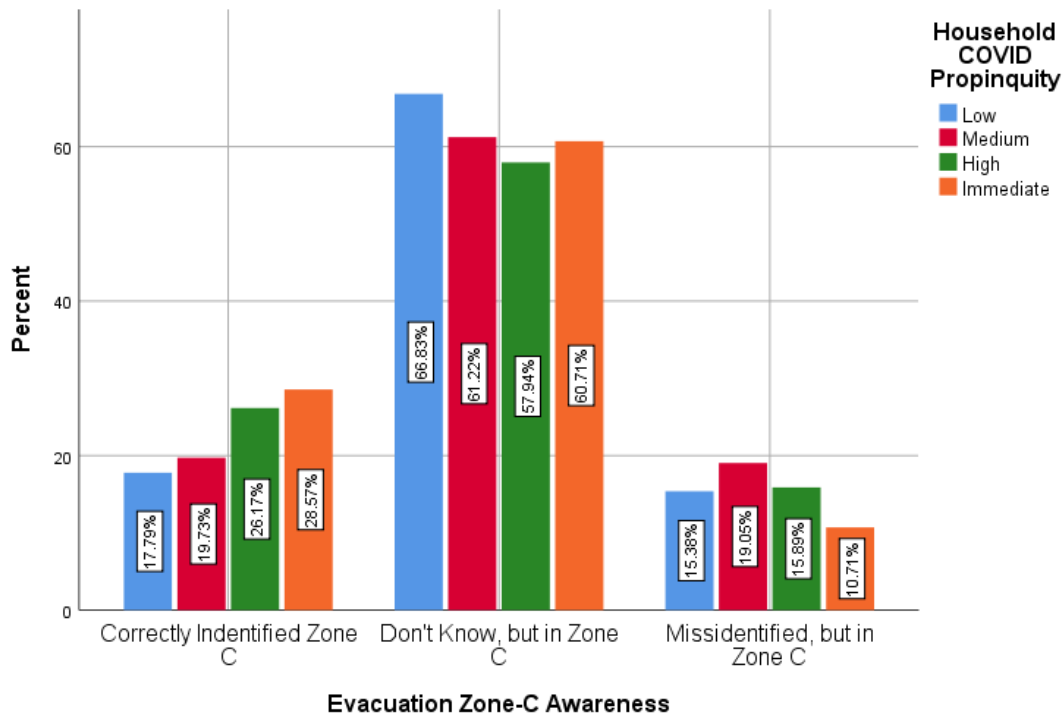
Hyper vulnerability households, relative to other vulnerability households, are more likely not to know the zone in which they reside, about 30.0 percent.



..by..Household COVID Propinquity

The chart below illustrates the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across the categories within Evacuation Zone-C Awareness (correctly identified zone, don't know zone, and misidentified zone).

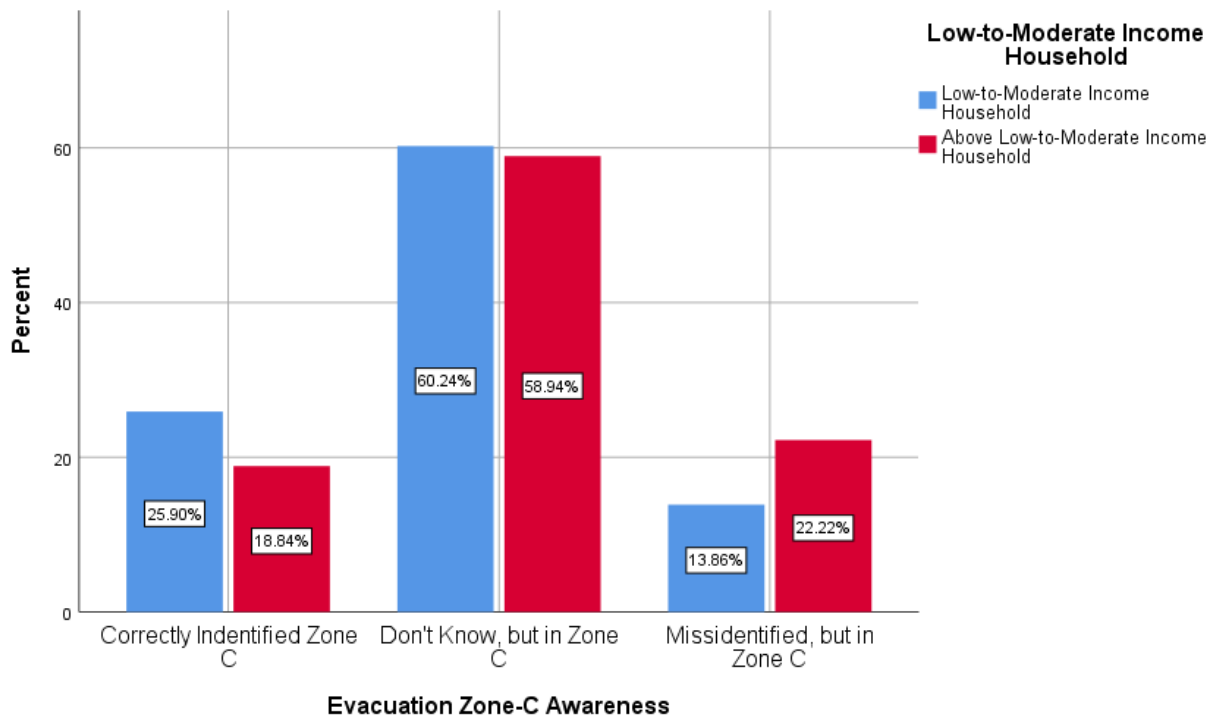
There is a clear relationship between correct identification of the evacuation zone and household COVID propinquity. That is, larger portions of households with greater COVID propinquity correctly identify the evacuation zone.



..by..Low-to-Moderate Income Household

The chart below illustrates the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across the categories within Evacuation Zone-C Awareness (correctly identified zone, don't know zone, and misidentified zone).

Low-to-moderate income households, relative to not low-to-moderate income households, are more likely to know the zone in which they reside, about 25.9 and 18.8 percent, respectively. Inversely, above low-to-moderate income households, relative to low-to-moderate income households, are more likely to misidentify the zone in which they reside.

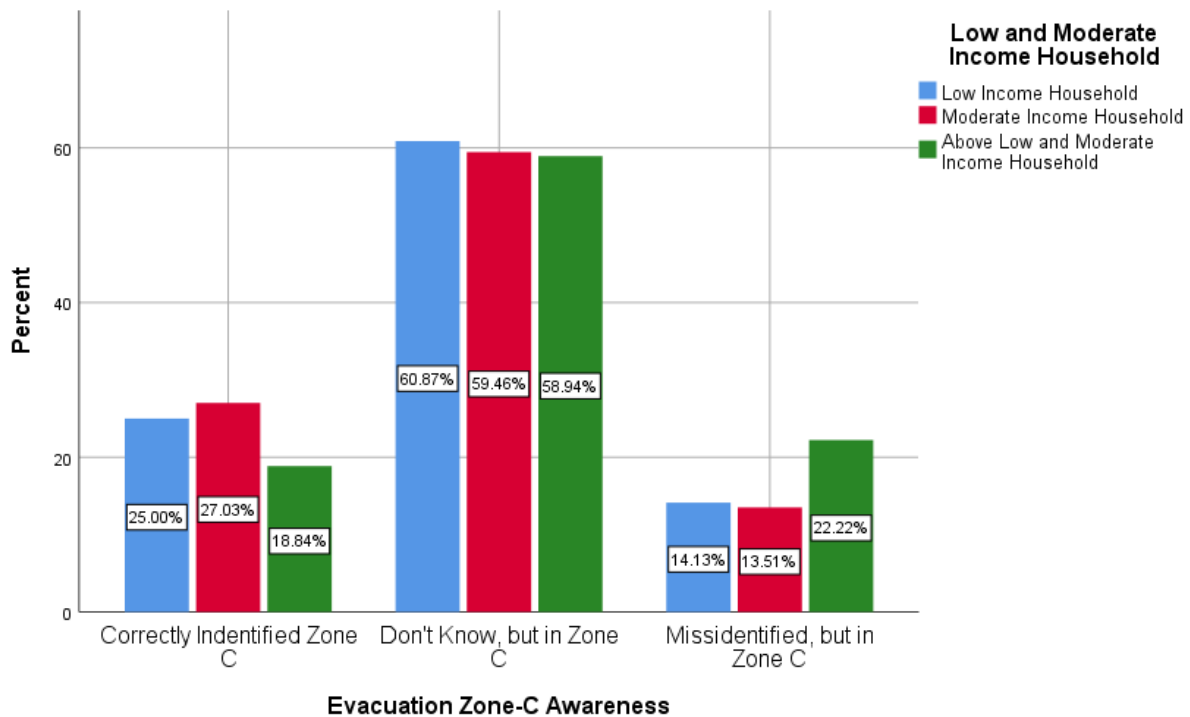




..by..Low and Moderate Income Household

The chart below illustrates the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across the categories within Evacuation Zone-C Awareness (correctly identified zone, don't know zone, and misidentified zone).

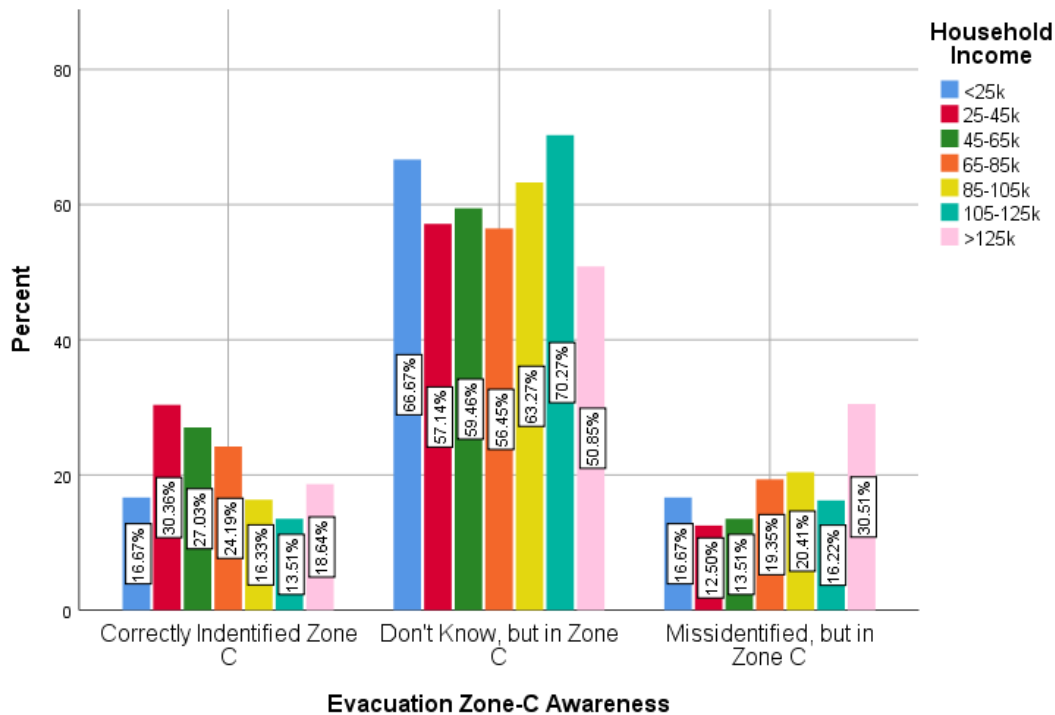
There does not appear a clear relationship between evacuation Zone C awareness and household income when disaggregated into the three attributes low, moderate, and above low and moderate.



..by..Granulated Household Income

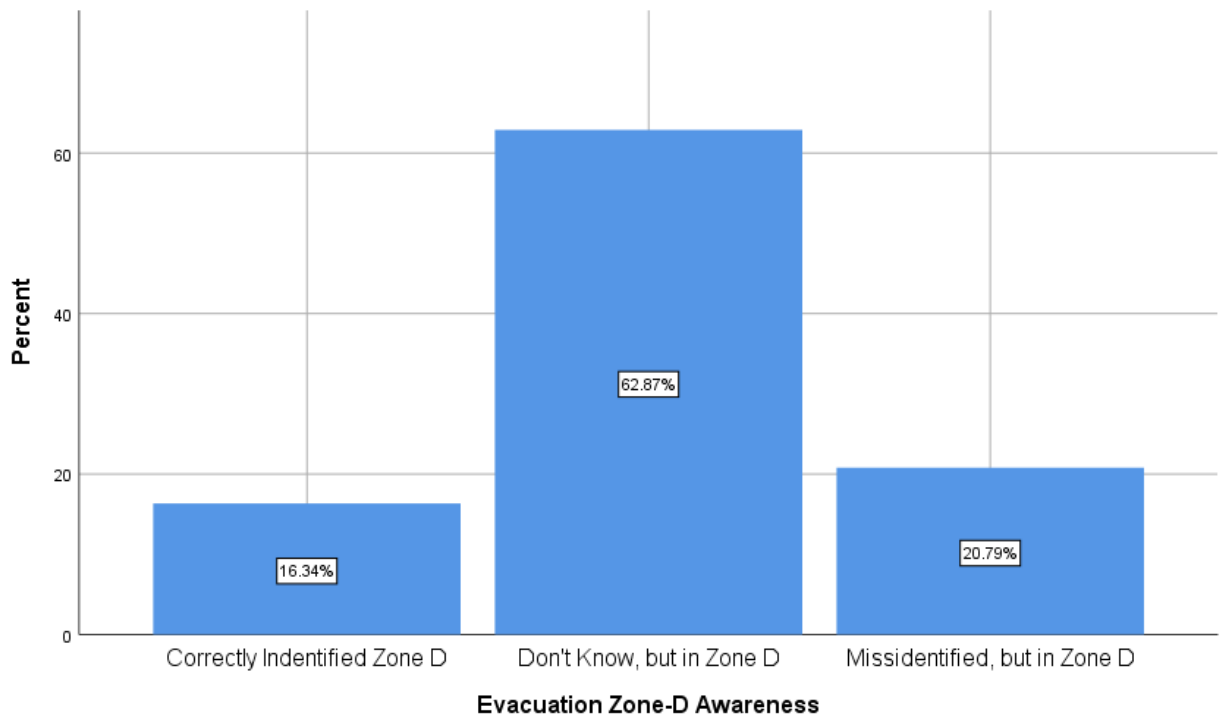
This chart illustrates the proportions within Household Income (disaggregated into seven household income gradients) across the categories within Evacuation Zone-C Awareness (correctly identified zone, don't know zone, and misidentified zone).

There are not general relationships between household income gradients and the three attributes for evacuation zone awareness.



## Evacuation Zone-D Awareness

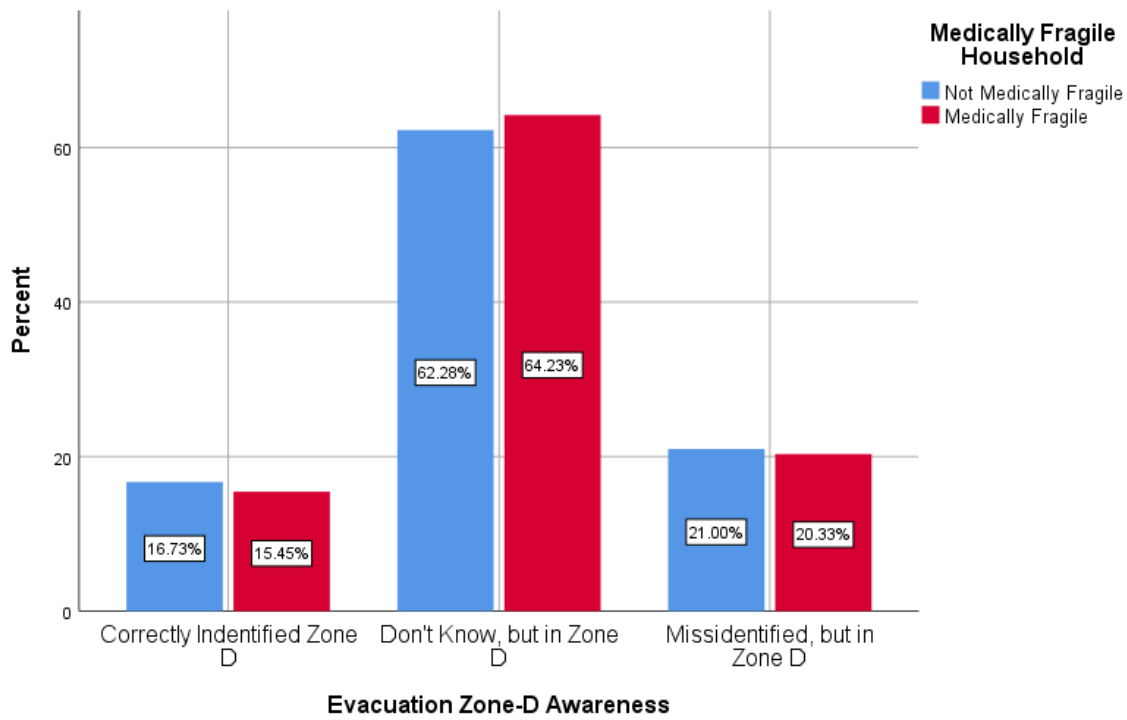
This chart illustrates evacuation zone awareness for households that reside in evacuation Zone A. Among these households, about 16.3 percent correctly identified the evacuation zone in which they reside, 62.9 don't know, and 20.8 percent misidentified their evacuation zone. The six charts on the following pages will examine this controlling for household characteristics.



..by..Medically Fragile Household

The chart below illustrates the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across the categories within Evacuation Zone-D Awareness (correctly identified zone, don't know zone, and misidentified zone).

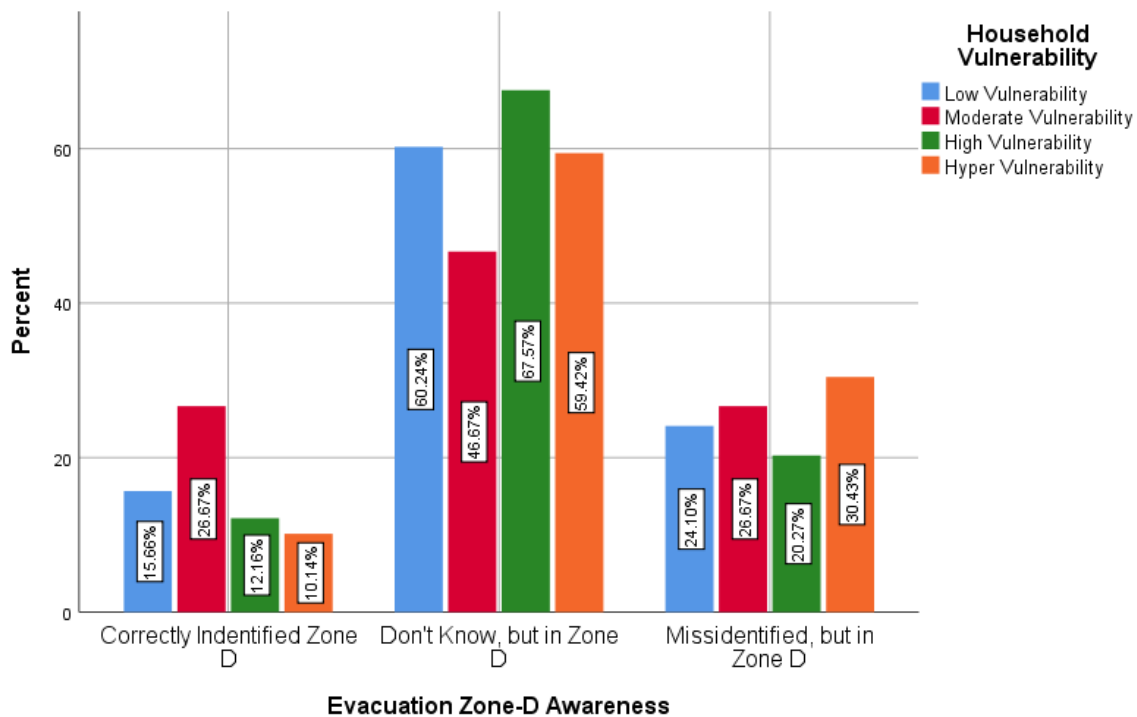
Statistically there is no difference in evacuation zone awareness between medically fragile households and not medically fragile households.



..by..Household Vulnerability

The chart below illustrates the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across the categories within Evacuation Zone-D Awareness (correctly identified zone, don't know zone, and misidentified zone).

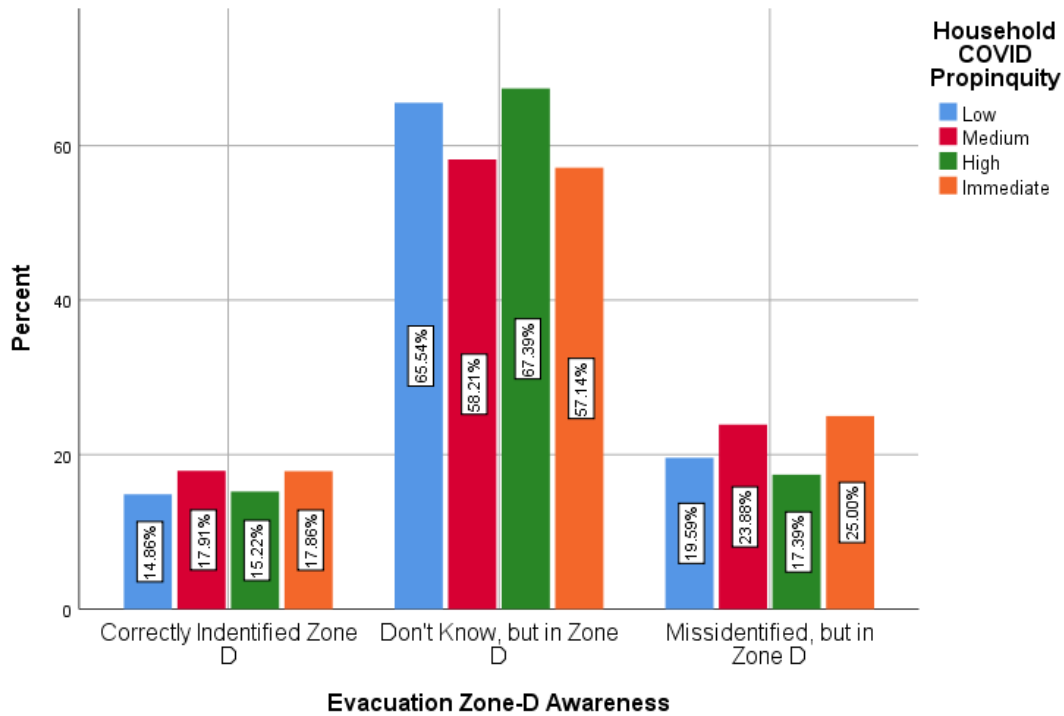
There are not general relationships between household vulnerability and the three attributes for evacuation zone awareness.



..by..Household COVID Propinquity

The chart below illustrates the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across the categories within Evacuation Zone-D Awareness (correctly identified zone, don't know zone, and misidentified zone).

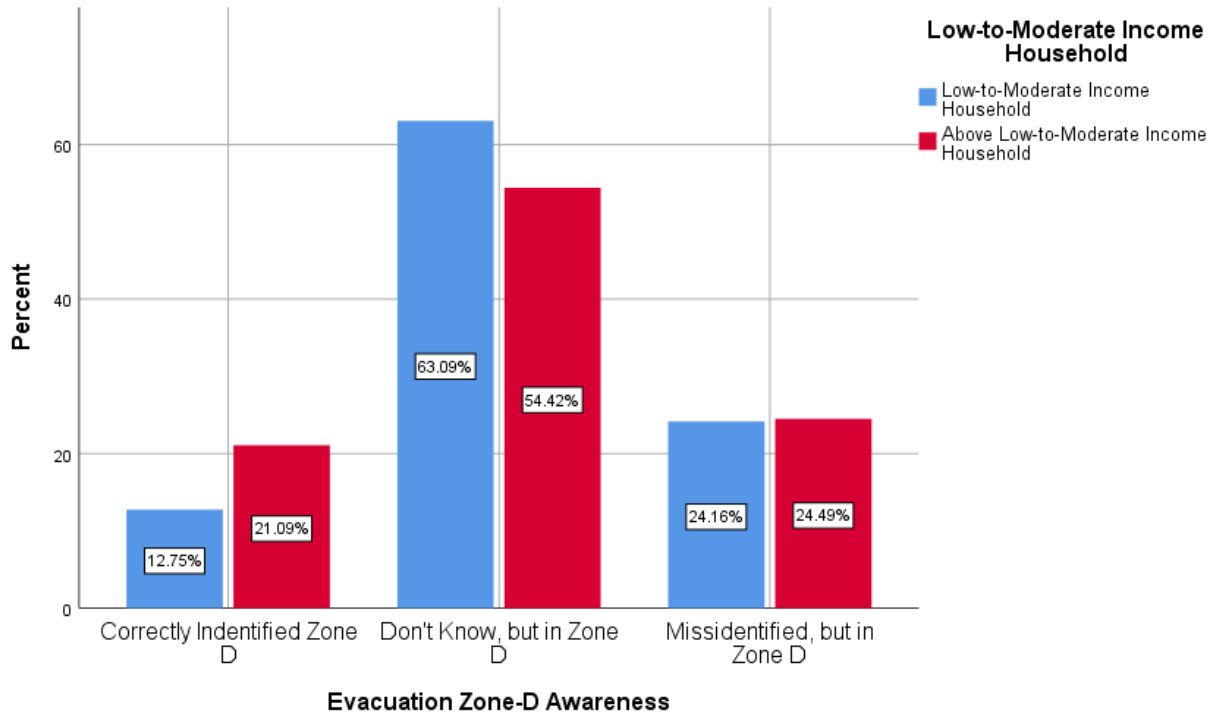
There does not appear a clear relationship between evacuation Zone D awareness and household COVID propinquity.



..by..Low-to-Moderate Income Household

The chart below illustrates the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across the categories within Evacuation Zone-D Awareness (correctly identified zone, don't know zone, and misidentified zone).

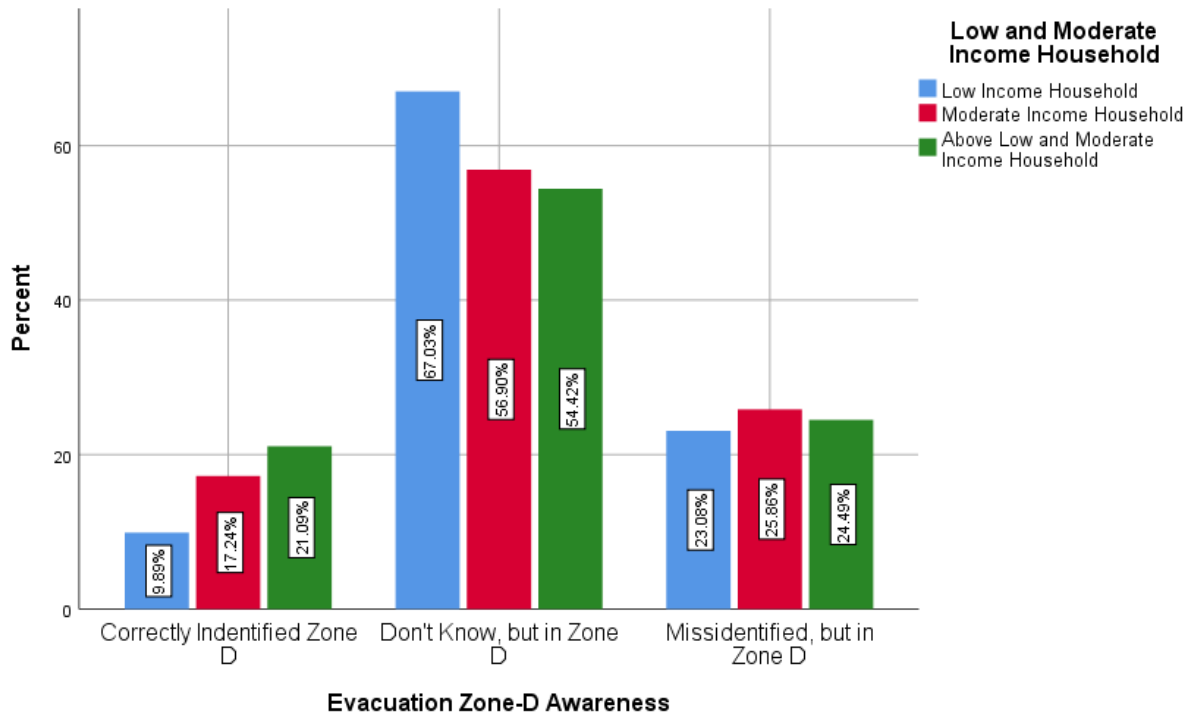
Low-to-moderate income households, relative to not low-to-moderate income households, are more likely not to know the zone in which they reside, about 63.1 and 54.4 percent, respectively.



..by..Low and Moderate Income Household

The chart below illustrates the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across the categories within Evacuation Zone-D Awareness (correctly identified zone, don't know zone, and misidentified zone).

Above low and moderate income households, relative to low income households and moderate income households, are more likely to know the zone in which they reside, about 21.1, 17.2, and 9.9 percent, respectively.

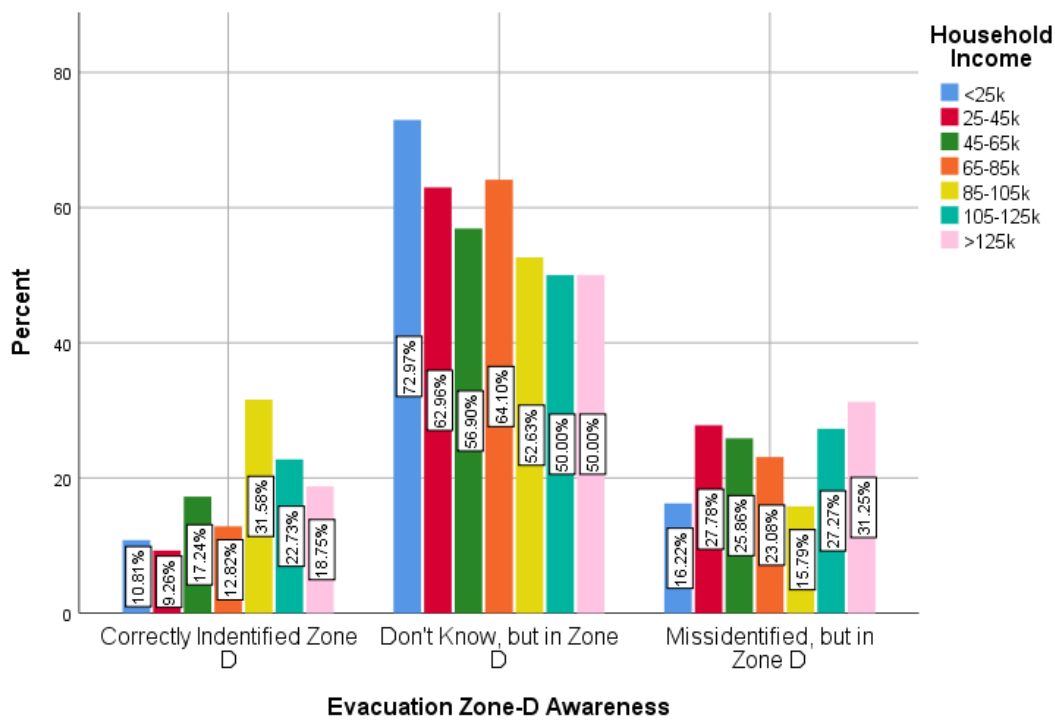




..by..Granulated Household Income

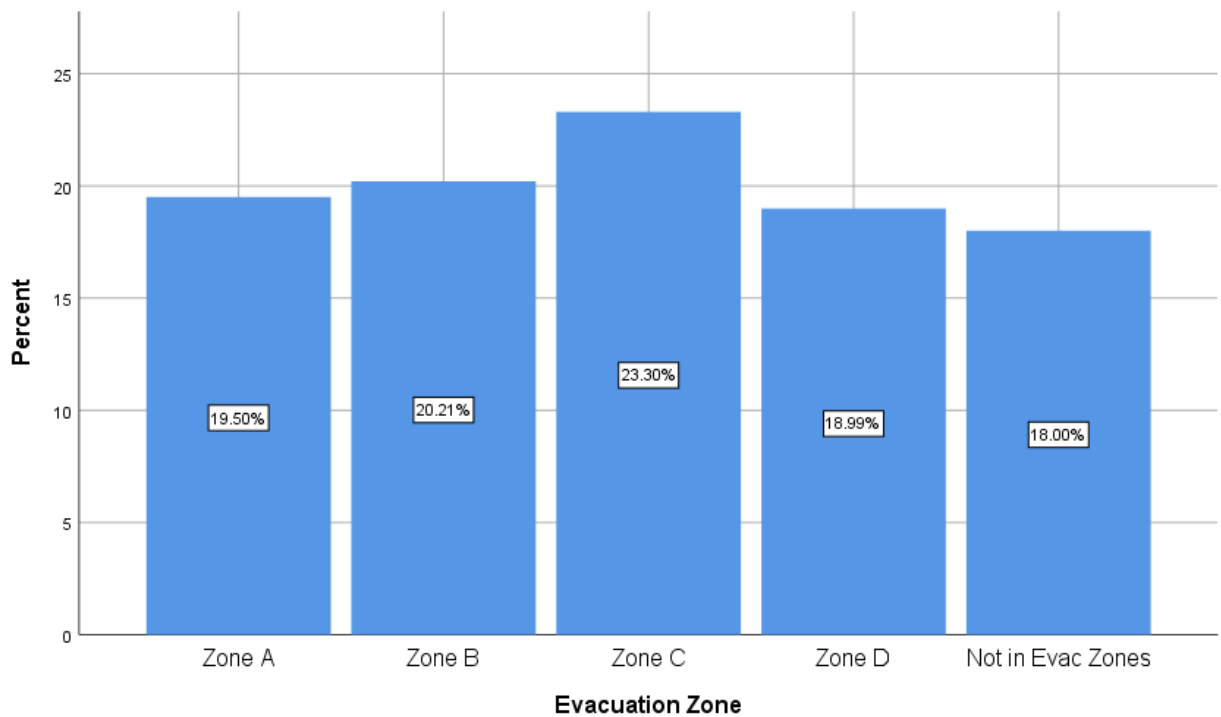
The chart below illustrates the proportions within Household Income (disaggregated into seven household income gradients) across the categories within Evacuation Zone-D Awareness (correctly identified zone, don't know zone, and misidentified zone).

There is a general relationship between household income gradients and not knowing the evacuation zone in which the household resides. Lower income households are more likely not to know the evacuation zone relative to higher income households.



### Evacuation Zone (Validated Location of Household)

The chart below illustrates the percentage of households residing within each of the four evacuation zones and the area not within one of these evacuation zones (i.e., Not in Evac Zones). Residents are roughly spread across the region's zone-stratified geography. Roughly, one-fifth (20 percent) reside in each zone, with Zone C several points more.



### ..by..Frequency of Street Flooding

The next chart illustrates, among all households, the proportions within Frequency of Street Flooding (frequent, semi-frequent, infrequent) across five areas (evacuation Zones A-D and the area not within evacuation zones).

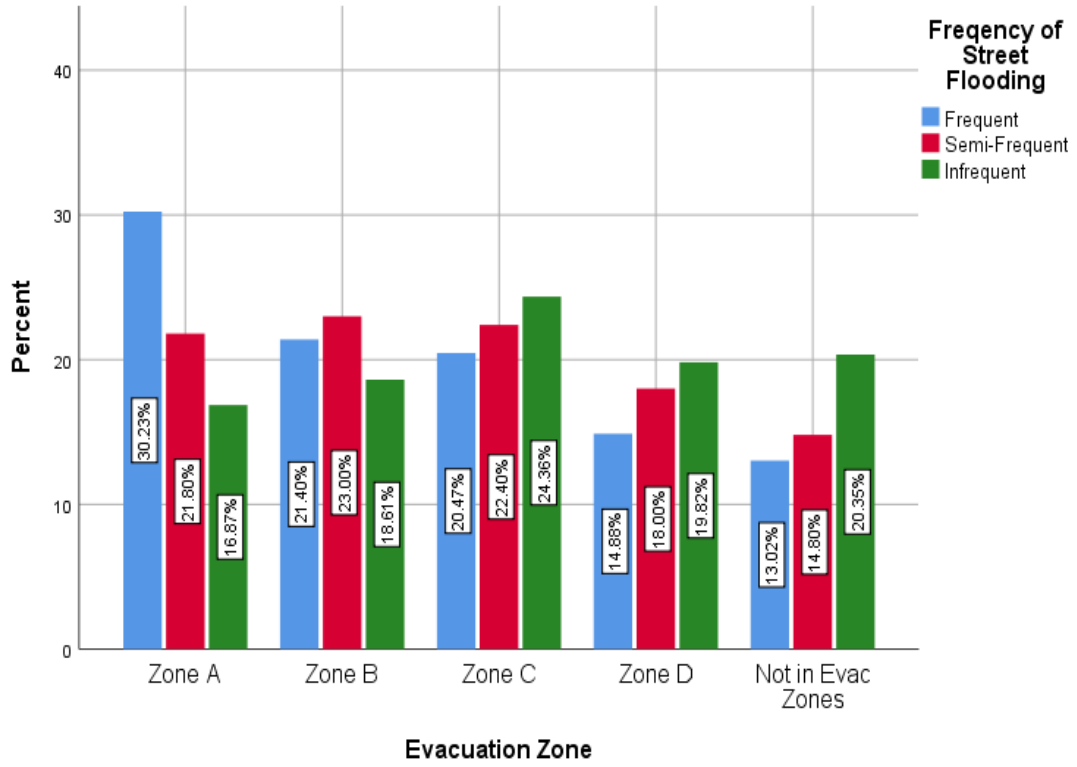
For this chart, the frequency attributes (more than once a month, once a month, couple times a year, once a year, once every couple of years, and rarely if ever) for the variable Frequency of Street Flooding have been collapsed into three attributes (frequent, semi-frequent, infrequent).

This chart illustrates notable relationships when comparing the three distributions (frequent, semi-frequent, and Infrequent). The distribution of proportions of households that report frequent flooding may be expected to skew to the left (towards Zone A), the distribution of proportions of households that report infrequent flooding may be expected to skew to the right (towards Not in Evac Zones), and the distribution for semi-frequent to more centered between these two skews. In fact, this pattern is shown.

For frequent flooding, the skew towards Zone A residents makes sense since Zone A is proximate shore and river lines and the urban areas may have aging storm water infrastructure, hence suffer from frequent tidal flooding. Notable, though, is that while 30 percent of the households reporting frequent flooding are in Zone A, the remaining 70 percent of households reporting frequent street flooding are not within Zone A. Zones B, C, and D, as well as the remaining non-zone area, have households reporting frequent flooding. This suggests that, while flooding is relatively more prevalent in Zone A, frequent flooding is being experienced across the entire geography, and even so in non-zone areas.

For semi-frequent flooding, the distribution is more balanced, but still slightly skewed towards Zone A. This suggests that semi-frequent flooding is being experienced across the region, and to a sizable extent in areas distant the shore and river lines. Note that 18 and 15 percent of households experiencing semi-frequent flooding reside in Zone D and the area not in an evacuation zone, respectively.

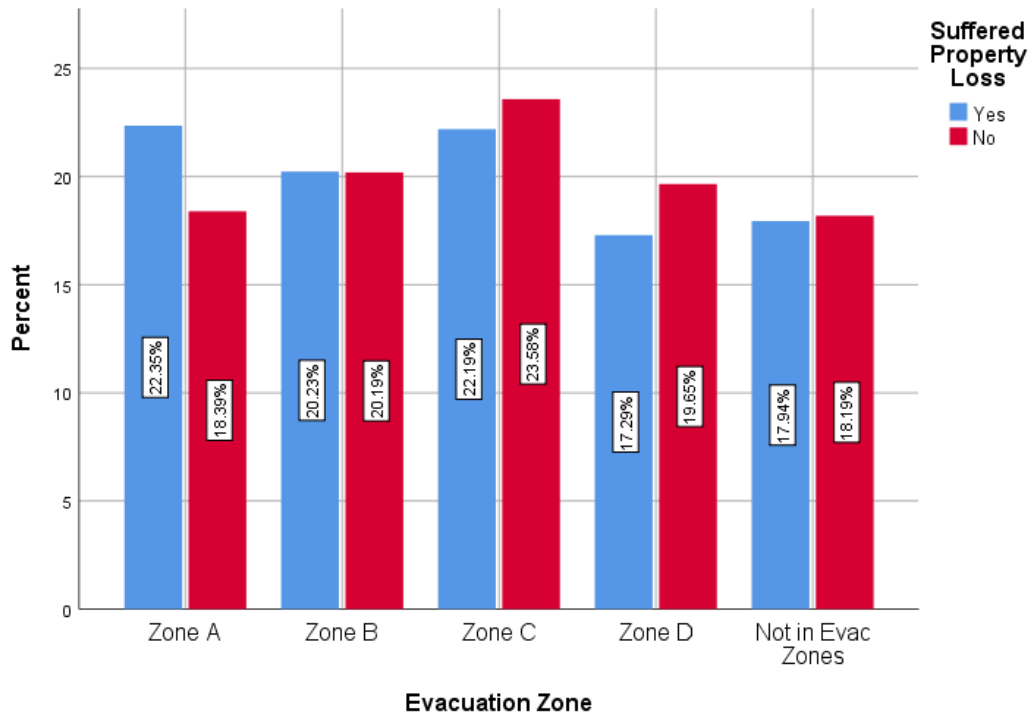
Infrequent flooding occurs across the geographies, the proportions ranging from 16.9 to 24.4 percent. We noted in the previous bar chart that sampled households are near equally distributed across the zones. Notable, is the 16.9 percent of infrequent households are in Zone A. This suggests that, despite Zone A's proximity to water, there is quite a variation in frequency of street flooding in Zone A. Many Zone A households report frequent flooding, but a sizable number also report infrequent street flooding.



..by..Suffered Property Loss

The chart below illustrates, among all households, the proportions within Suffered Property Loss (yes, no) across five areas (evacuation Zones A-D and area not within an evacuation zone).

The greatest of the proportions of households that have suffered a severe weather-related property loss may be found in Zone A and Zone C (22.4 and 22.2 percent, respectively). The distribution of households that have suffered indicate proportions across the five areas, the range being from 17.3 to 22.4 percent. This suggests that suffering a severe-weather-related property does not tend to be associated heavily with one particular area relative to the other. Simply, all areas are suffering severe weather-related property loss.

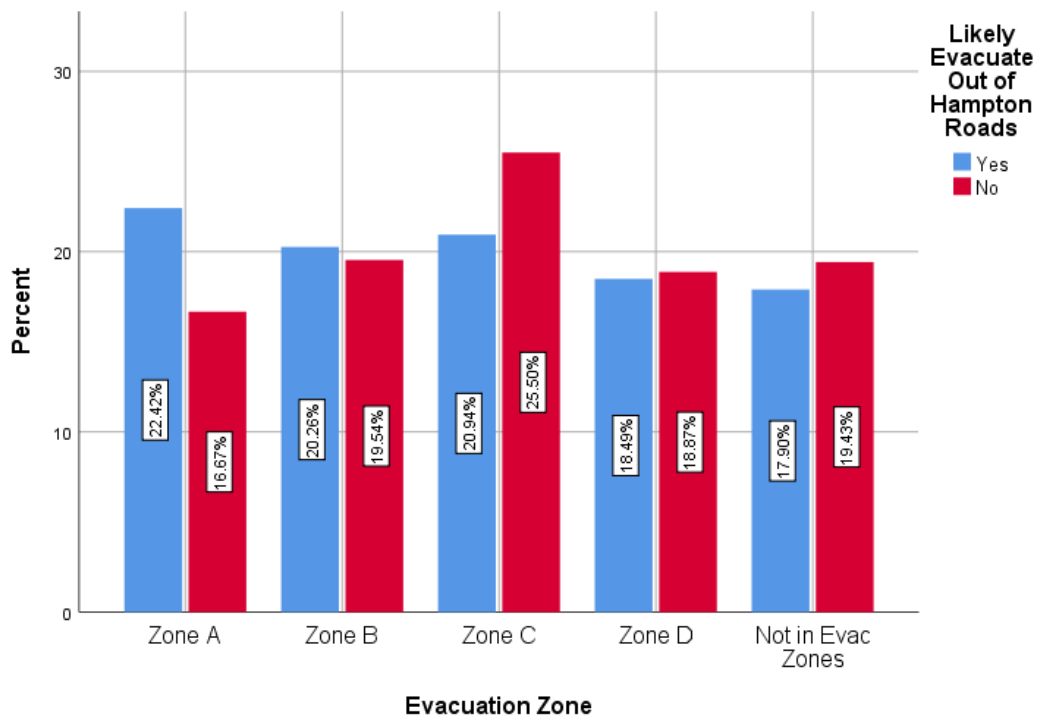


..by..Likely Evacuate Out of Hampton Roads

The chart below illustrates, among all households, the proportions within Likely Evacuate Out of Hampton Roads (yes, no) across five areas (evacuation Zones A-D and area not within an evacuation zone).

For households anticipating evacuating out of Hampton Roads if a significant hurricane were to head for the region, the proportions fall across the five areas and range from 17.9 to 22.4 percent. There is a slight relationship where larger proportions are found in zones most proximate shoreline, however this is fairly weak.

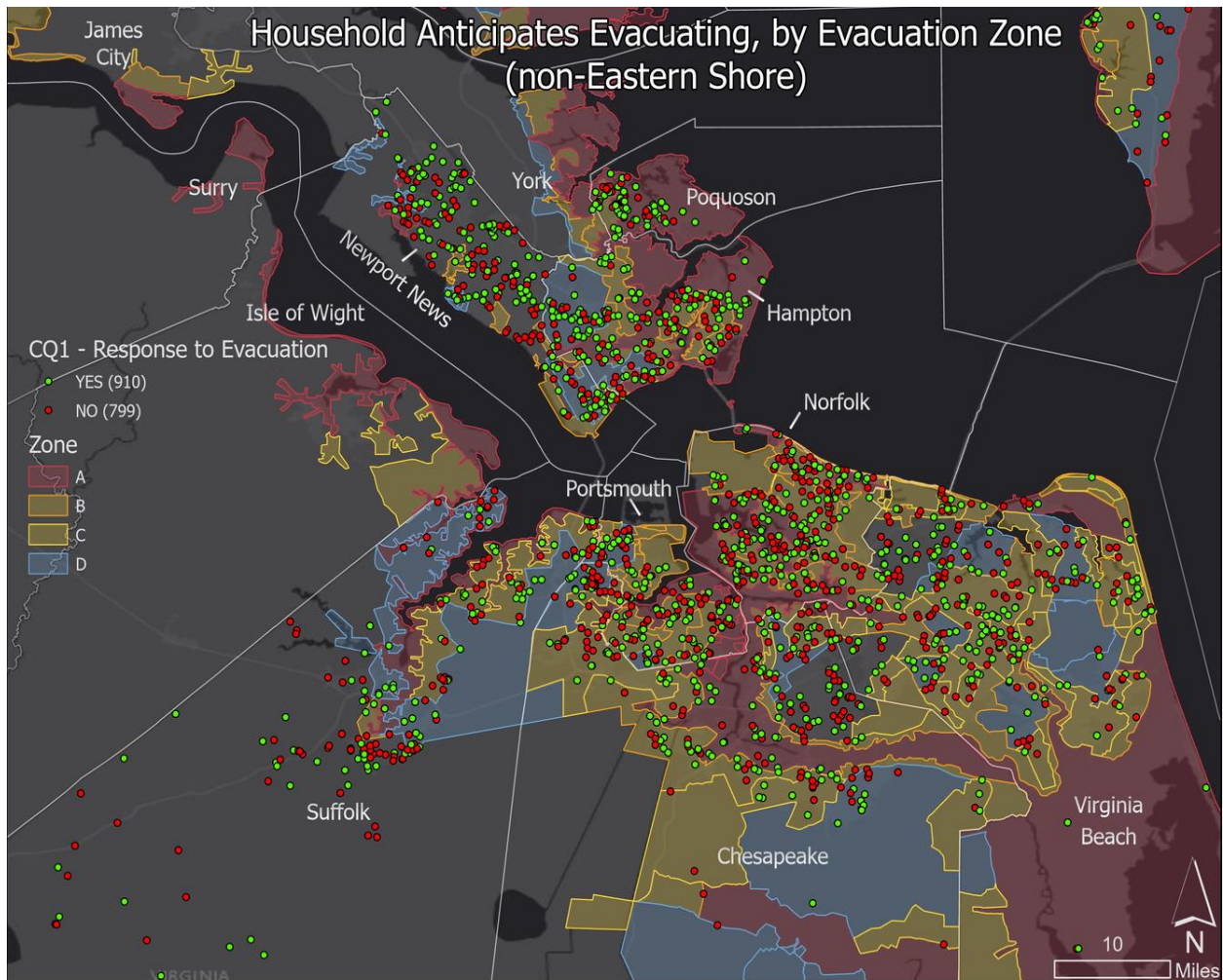
For those households not likely to evacuate, and therefore likely to shelter within the region, the proportions range from 16.7 to 25.5 percent. There is a weak relationship across the zones with smaller proportions located in zones more proximate shorelines.



## Likely to Evacuate Out of Hampton Roads by Evacuation Zone Map

The below map provides a visual representation of the households that report likelihood to evacuate from the region, red indicating 'not likely to evacuate' and green indicating 'likely to evacuate.' Although high level, households that are not likely to evacuate are found in all zones, including zones that are proximate to water and likely to be suffer storm inundation.

The below map illustrates the general location of sampled households (precise location of geocoded dots is masked to assure anonymity).



## Part 11: Trust for Storm Information

This Part 11 reports the key “Trust Variables” across seven control variables.

In querying households, we prefaced by saying, *“Now I am going to ask who you can trust for information about a storm heading towards Hampton Roads”* follow by, *“tell me, on a scale from zero to ten, with zero being no trust at all, how much you trust the following persons.”*

In Part 11, the elicited data have been reported in two ways:

1. Reporting all eleven scores (0-10), and
2. Collapsing these eleven scores into five attributes of no (0), low (1-3), moderate (4-6), high (7-9), and total (10).

Trust Variables:

1. Local News
2. Local Elected officials
3. Local Emergency Officials
4. State Emergency Officials
5. Governor

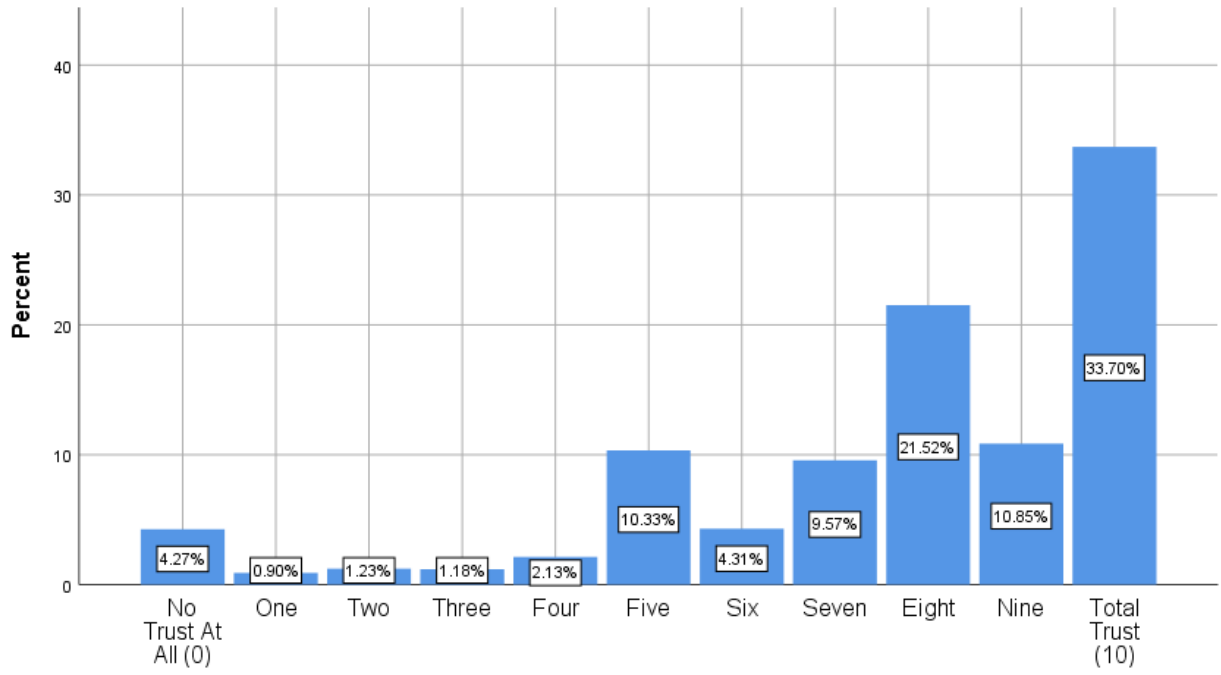
Control Variables:

1. Medically Fragile Household
2. Household Vulnerability
3. Household COVID Proximity
4. Low-to-Moderate Income Household
5. Low and Moderate Income Household
6. Granulated Income Household
7. Evacuation Zone



### Trust for Storm Information: Local News (0-10 Score)

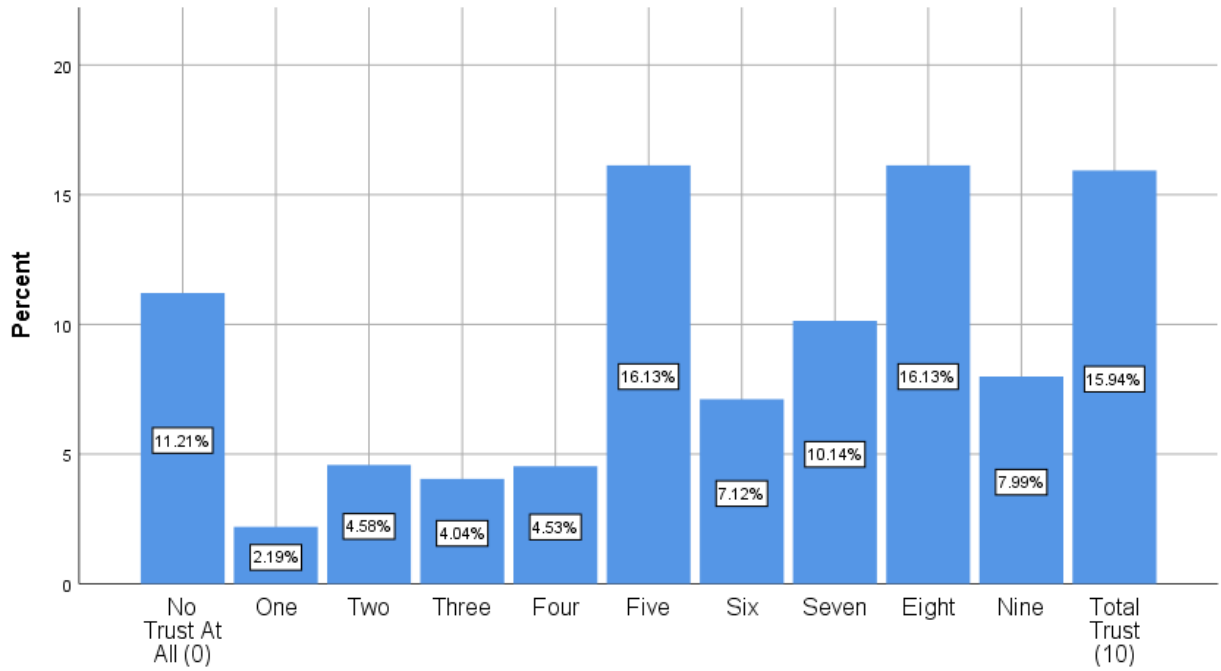
In an evaluation of the population's trust in the local news to communicate information about a storm heading towards Hampton Roads, this chart illustrates, among all households, the proportion within each trust score, from zero meaning no trust to ten meaning total trust.



**Trust for Storm Information: Local News**

### Trust for Storm Information: Local Elected Officials (0-10 Score)

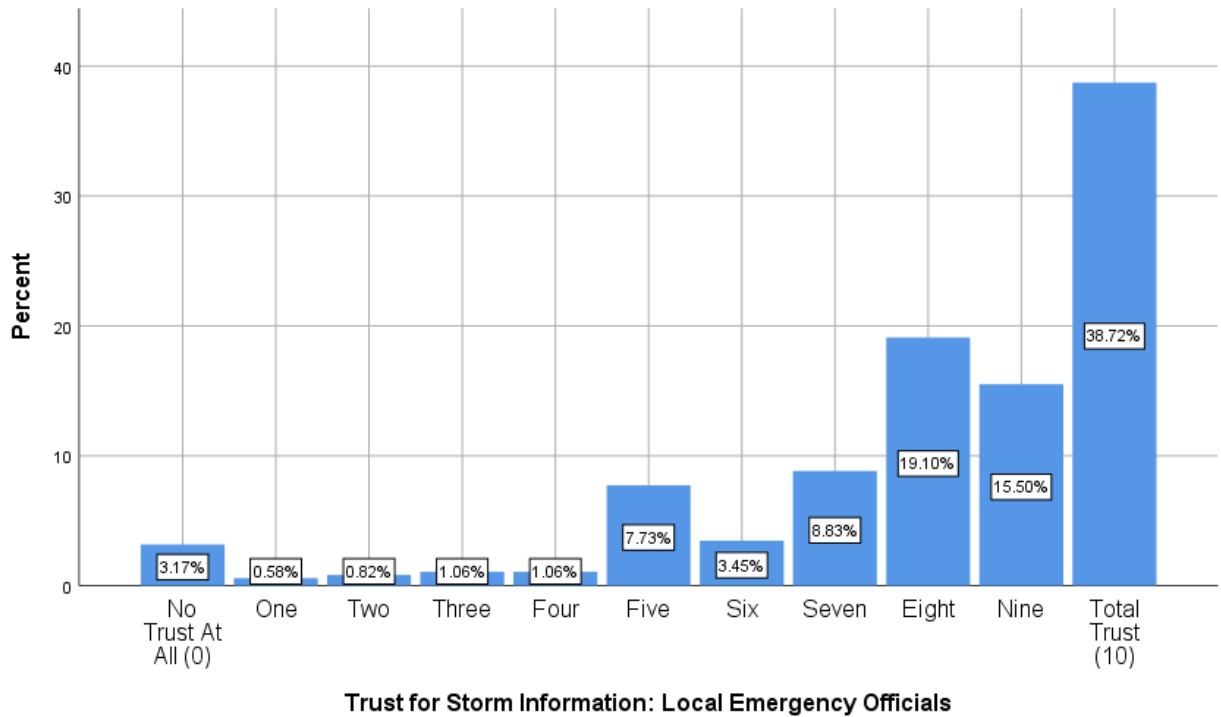
In an evaluation of the population’s trust in local elected officials to communicate information about a storm heading towards Hampton Roads, this chart illustrates, among all households, the proportion within each trust score, from zero meaning no trust to ten meaning total trust.



**Trust for Storm Information: Local Elected Officials**

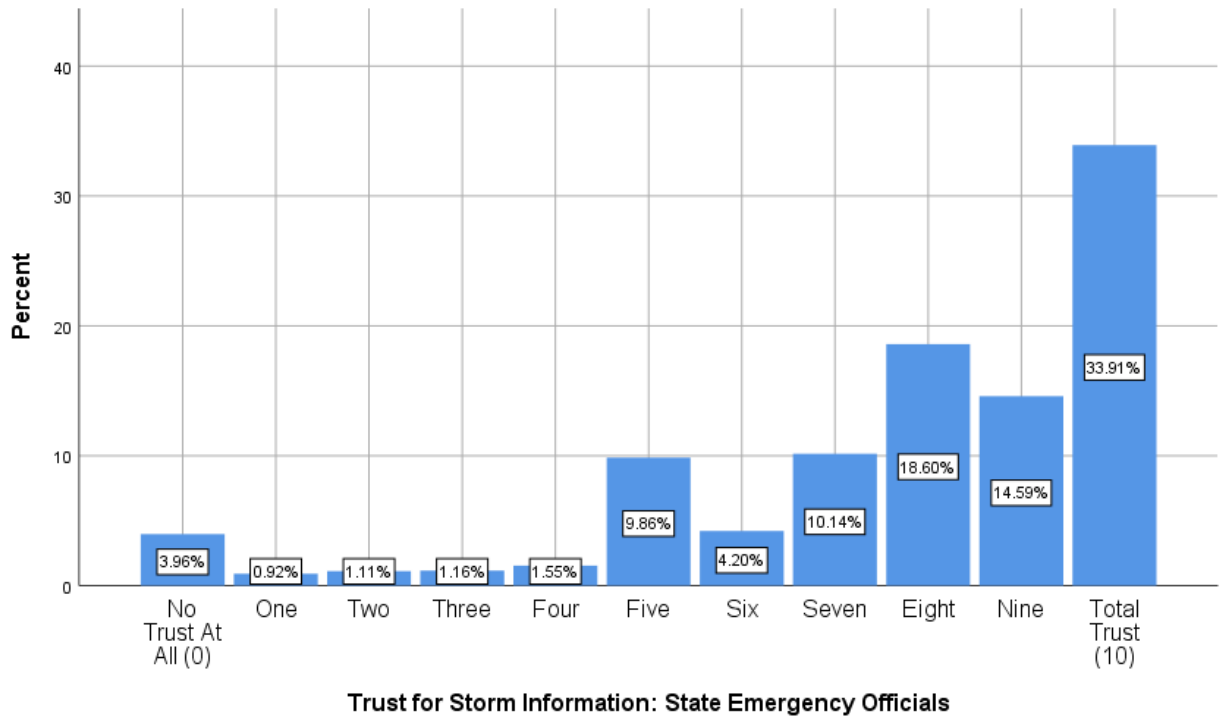
### Trust for Storm Information: Local Emergency Officials (0-10 Score)

In an evaluation of the population’s trust in local emergency officials to communicate information about a storm heading towards Hampton Roads, this chart illustrates, among all households, the proportion within each trust score, from zero meaning no trust to ten meaning total trust.



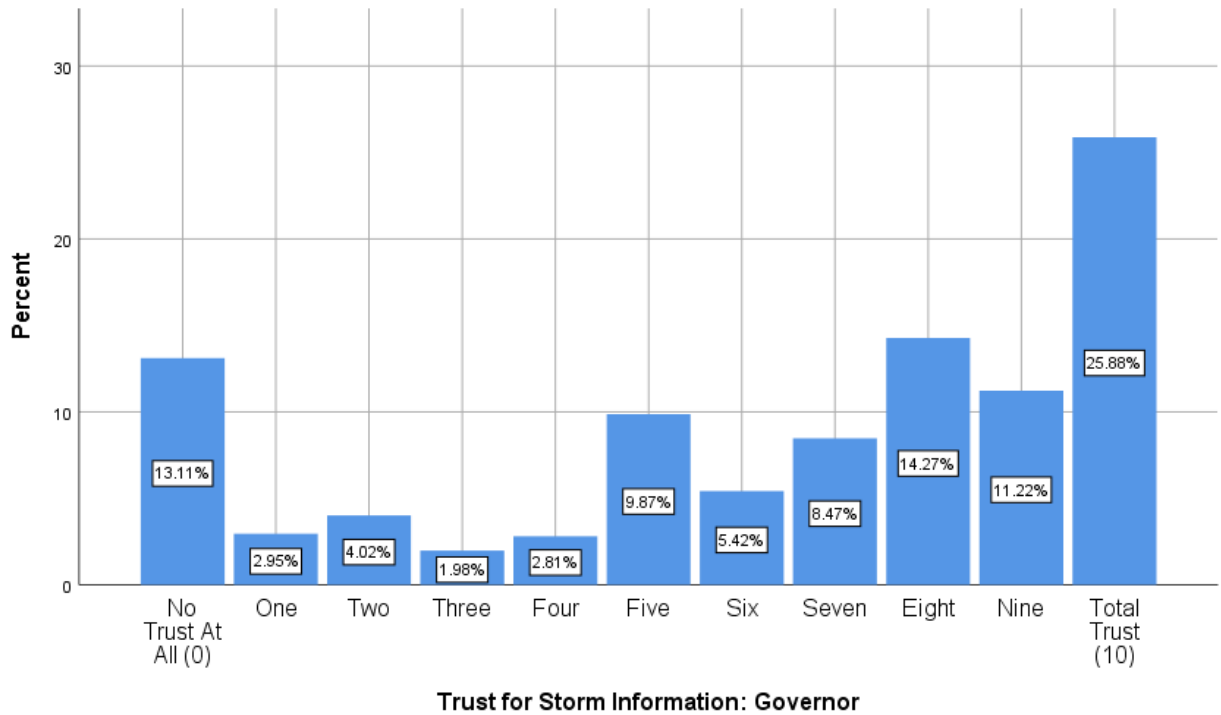
### Trust for Storm Information: State Emergency Officials (0-10 Score)

In an evaluation of the population’s trust in State emergency officials to communicate information about a storm heading towards Hampton Roads, this chart illustrates, among all households, the proportion within each trust score, from zero meaning no trust to ten meaning total trust.



### Trust for Storm Information: Governor (0-10 Score)

In an evaluation of the population’s trust in Governor to communicate information about a storm heading towards Hampton Roads, the chart below illustrates, among all households, the proportion within each trust score, from zero meaning no trust to ten meaning total trust.



## Summary Average Trust Across Actors

Emergency officials as trusted sources for information about an impending storm had the highest trust scores, with 82 percent and 77 percent of all households rating their local emergency officials and State emergency officials a score of 7 or higher on a scale from zero to ten (with zero being no trust at all and ten being total trust), respectively. Trust in local news for information about an impending storm was moderately high, with almost 76 percent of all households reporting a score of 7 or higher. Just under 60 percent of households report a score of 7 or higher for the Governor as a source for information about an impending storm. Roughly 50 percent report a score of 7 or higher for their local elected officials.

The below table summarizes responses to the survey question\* about trust in different sources of information for an impending storm, including local and State emergency officials, the local news, the Governor, and local elected officials.

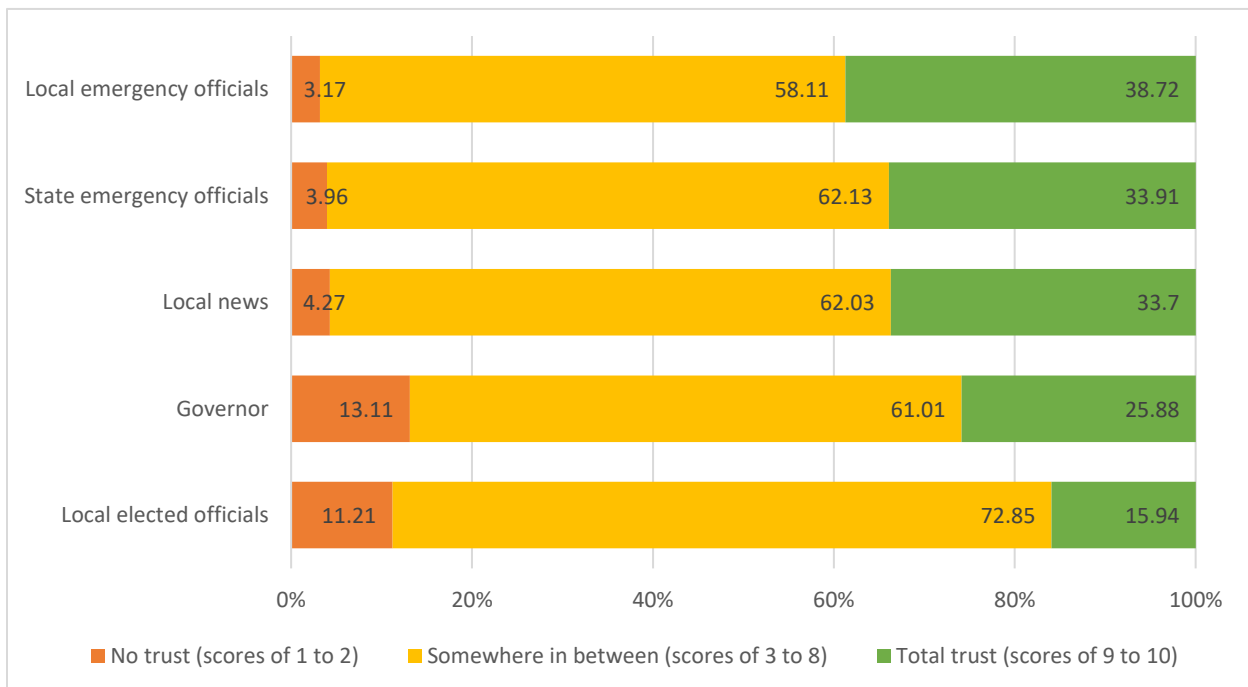
The table is presented as a ranking with the actor with the highest trust score at the top (local emergency officials, 8.10) and the actor with the lowest trust score at the bottom (local elected officials, 5.96). The standard deviation is a measure of the spread about the average score, suggesting less agreement and more spread in the scores around the average. Local elected officials and Governor have relatively high standard deviations (3.17 and 3.48, respectively) and register the lowest trust scores.

<b>Actor</b>	<b>Average Score</b>	<b>Standard Deviation</b>
Local Emergency Officials	8.10	2.38
State Emergency Officials	7.78	2.56
Local news	7.67	2.61
Governor	6.43	3.48
Local Elected Officials	5.96	3.17

*\*Question: Now I am going to ask who you can trust for information about a storm heading towards Hampton Roads. Tell me, on a scale from zero to ten, with ten being total trust and zero being no trust at all, how much you trust the following persons...*

## Summary Distribution Trust Across Actors

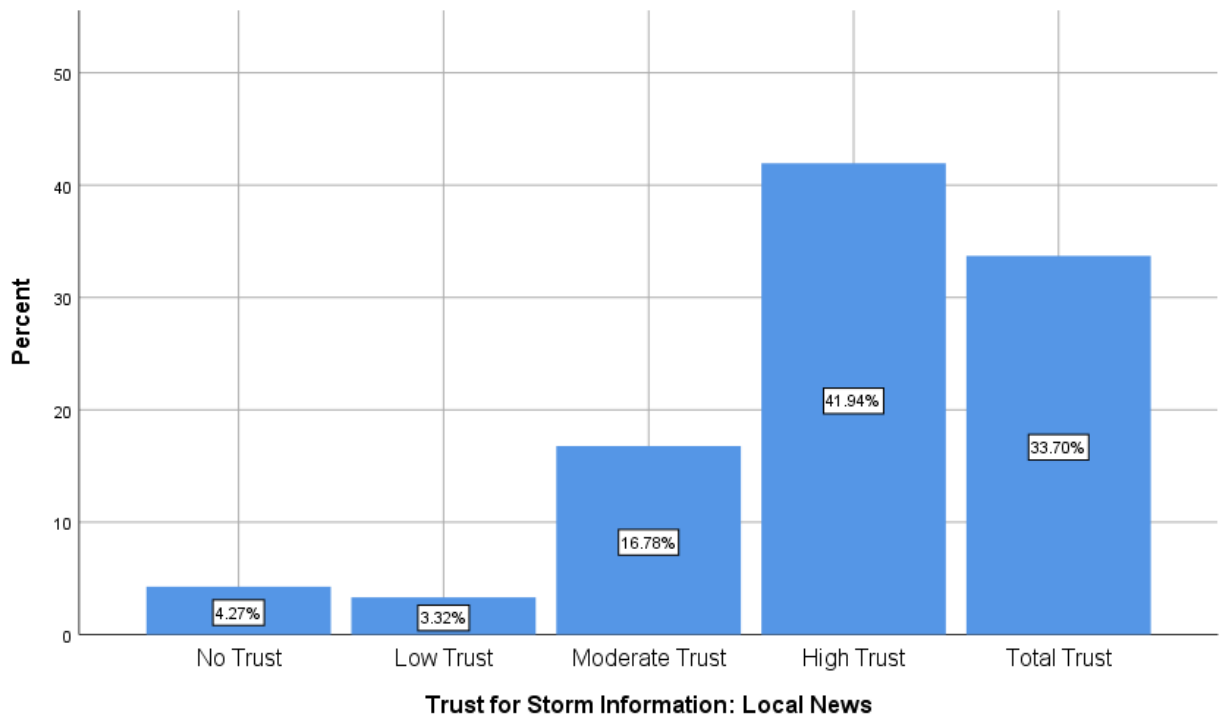
The below stacked bar chart illustrates, in comparative fashion, trust across all actors. The orange represents the proportion of respondents assigning a relatively low score to the actor (low trust), the green represents the proportion assigning a relatively high score to the actor (high trust), and the yellow represents the proportion assigning a middle-range score to the actor. As on the chart on the previous page, the actors here are also ranking, from top to bottom, based on the green score. Local emergency officials receive the largest proportion of high trust (38.7 percent) and local elected officials receive the least proportion of high trust (19.9 percent). Likewise, Local emergency officials receive the least proportion of low trust (3.2 percent) and Governor receives the largest proportion of low trust (13.1 percent).



## Trust for Storm Information: Local News

In an evaluation of the population's trust in local news to communicate information about a storm heading towards Hampton Roads, the chart below illustrates the proportion of households that are collapsed within the five attributes representing the intensity of trust (no, low, moderate, high, and total). The No attribute are cases reporting zero, the Low attribute are cases reporting 1-3, the Moderate attribute are cases reporting 4-6, the High attribute are cases reporting 7-9, and the Total attribute are cases reporting ten.

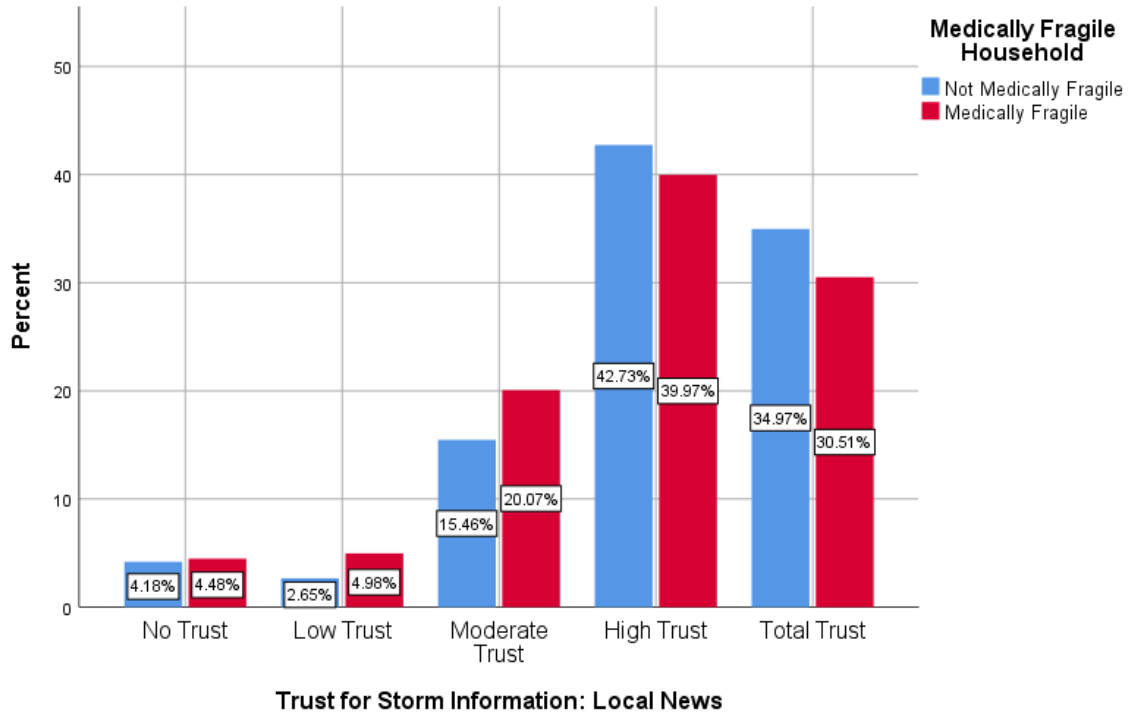
Overall, the population exhibits trust in the local news with more than 75 percent of household scoring the local news at 7 or above.





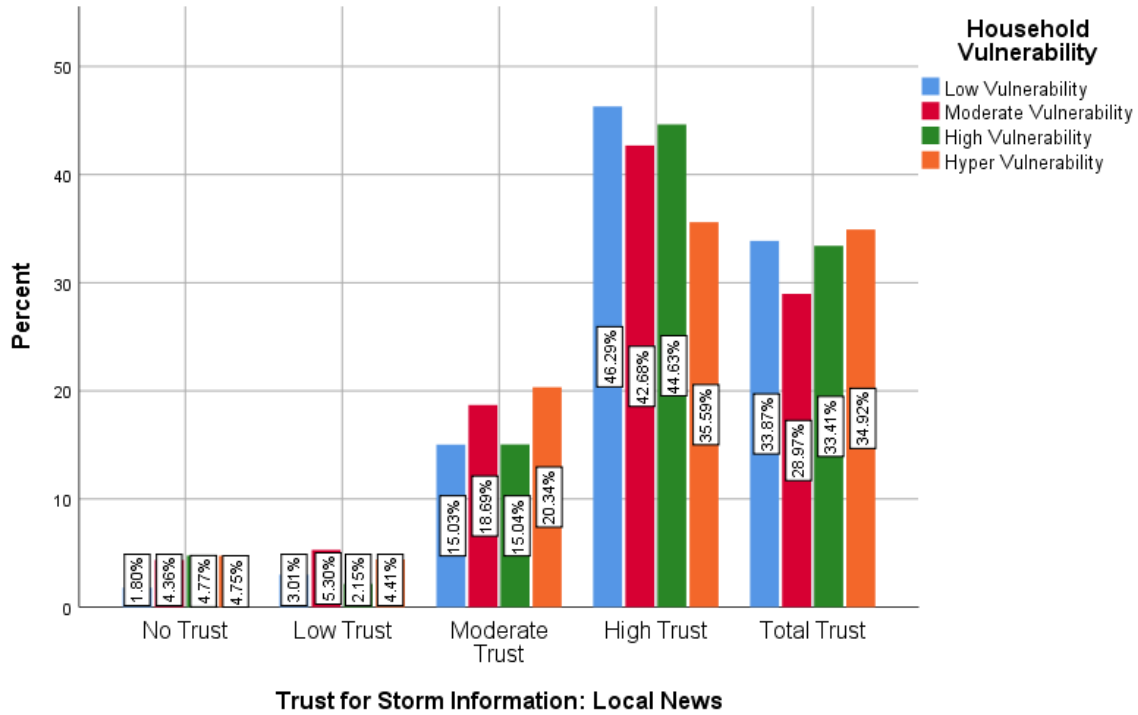
..by..Medically Fragile Household

This chart illustrates the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across the categories within Trust for Storm Information: Local News (no, low, moderate, high, and total trust).



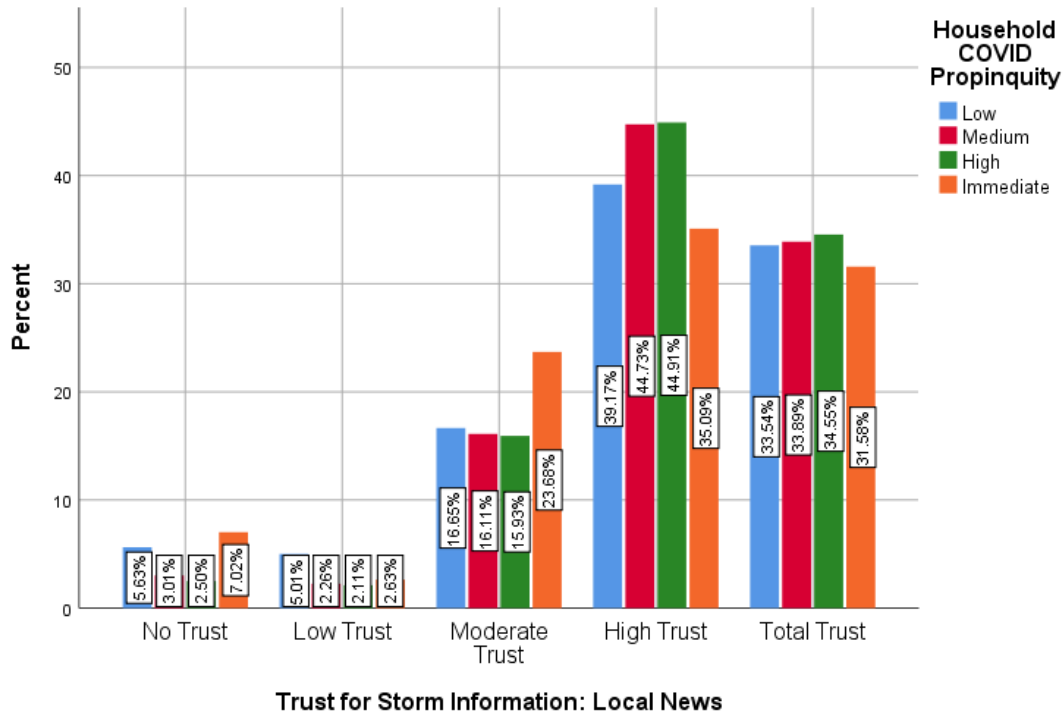
..by..Household Vulnerability

The chart below illustrates the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across the categories within Trust for Storm Information: Local News (no, low, moderate, high, and total trust).



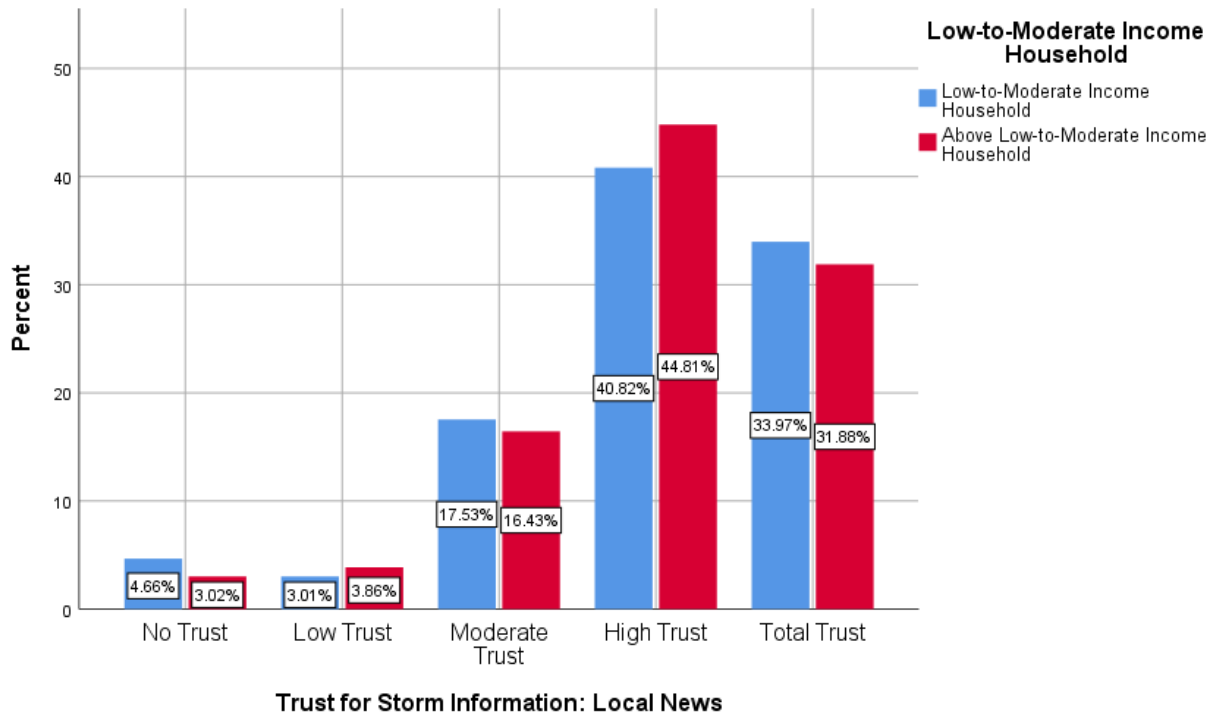
..by..Household COVID Propinquity

The chart below illustrates the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across the categories within Trust for Storm Information: Local News (no, low, moderate, high, and total trust).



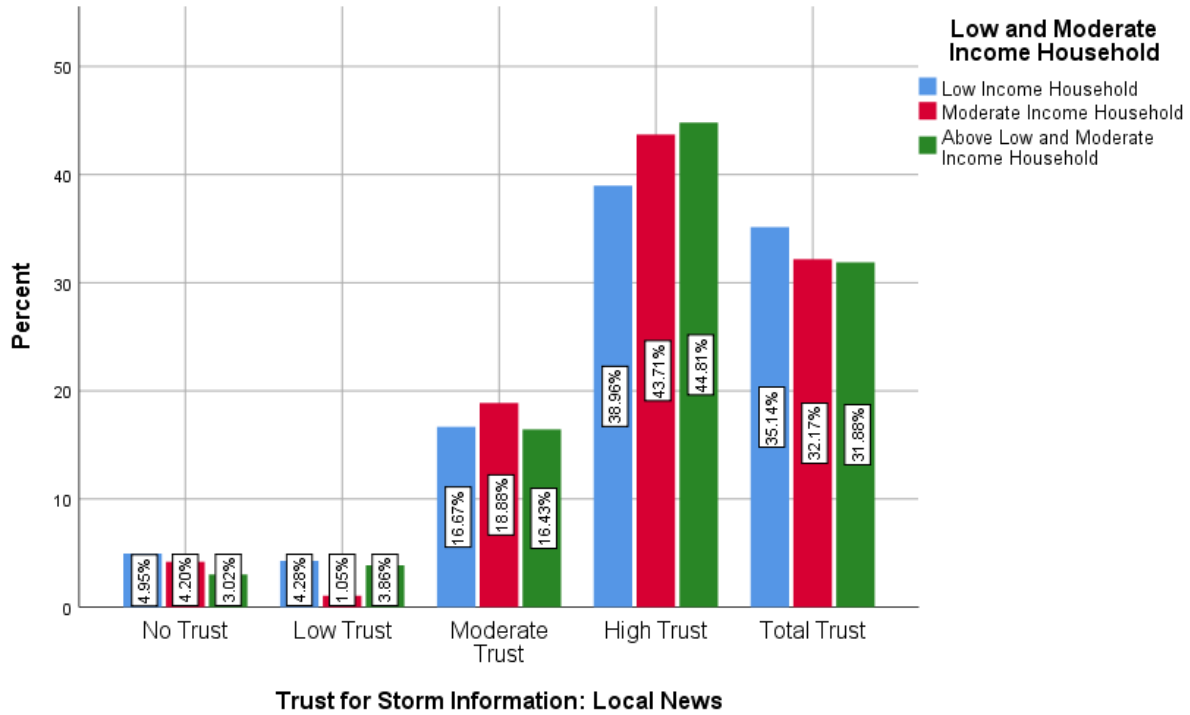
..by..Low-to-Moderate Income Household

The chart below illustrates the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across the categories within Trust for Storm Information: Local News (no, low, moderate, high, and total trust).



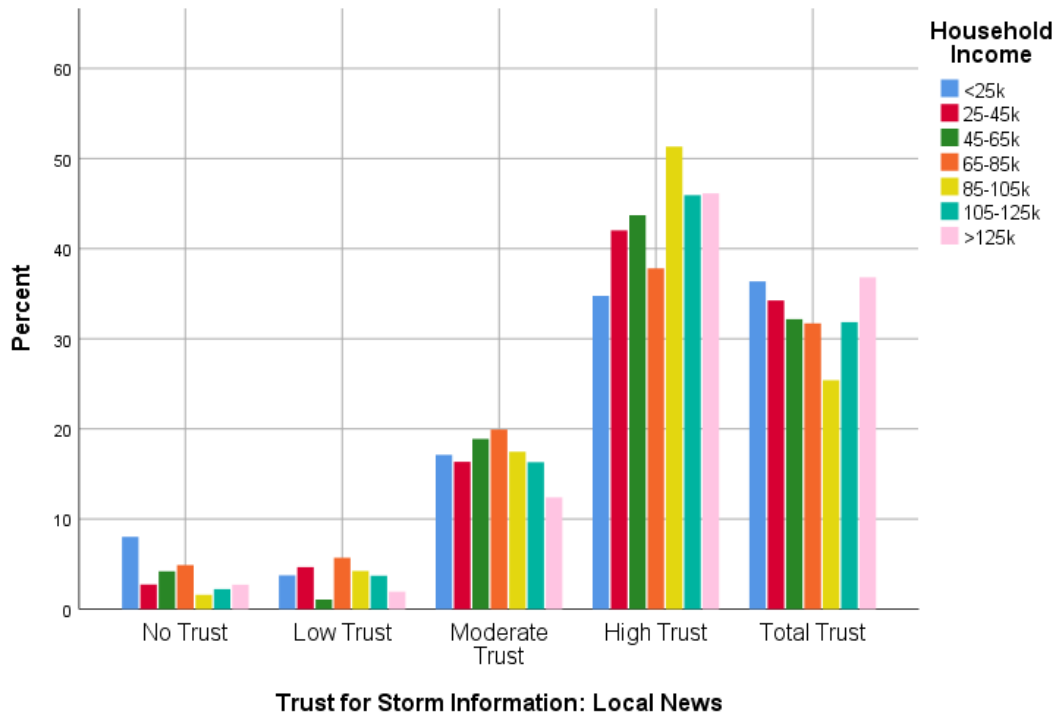
..by..Low and Moderate Income Household

The chart below illustrates the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across the categories within Trust for Storm Information: Local News (no, low, moderate, high, and total trust).



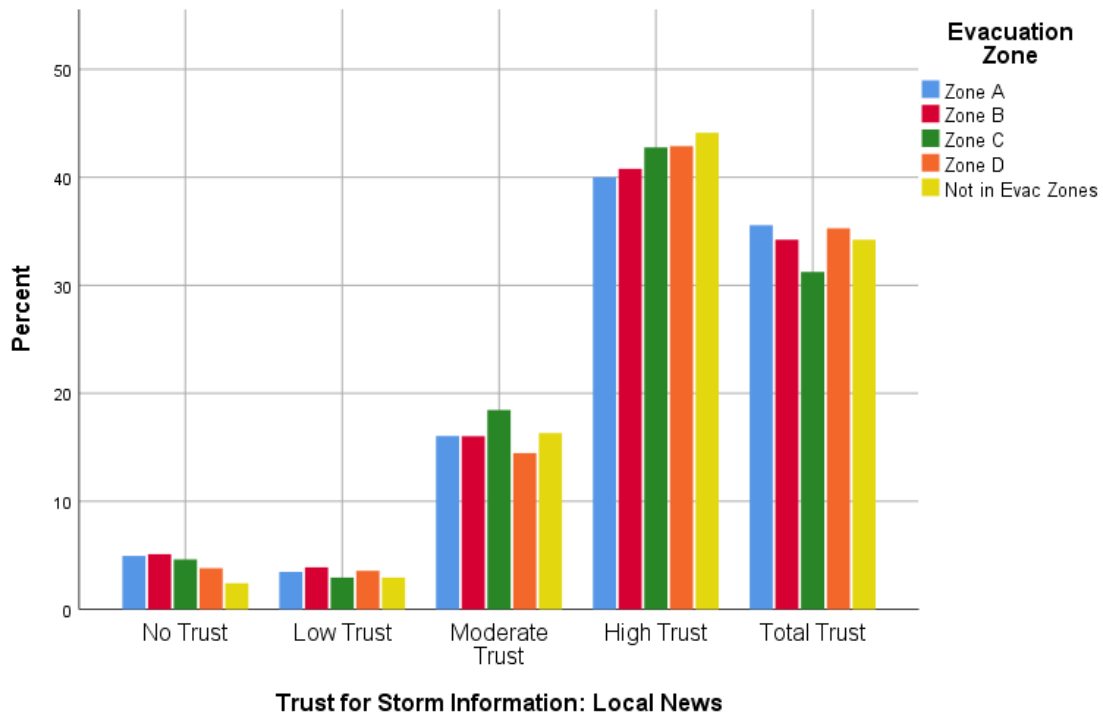
..by..Granulated Household Income

This chart illustrates the proportions within Household Income (disaggregated into seven household income gradients) across the categories within Trust for Storm Information: Local News (no, low, moderate, high, and total trust).



..by..Evacuation Zone

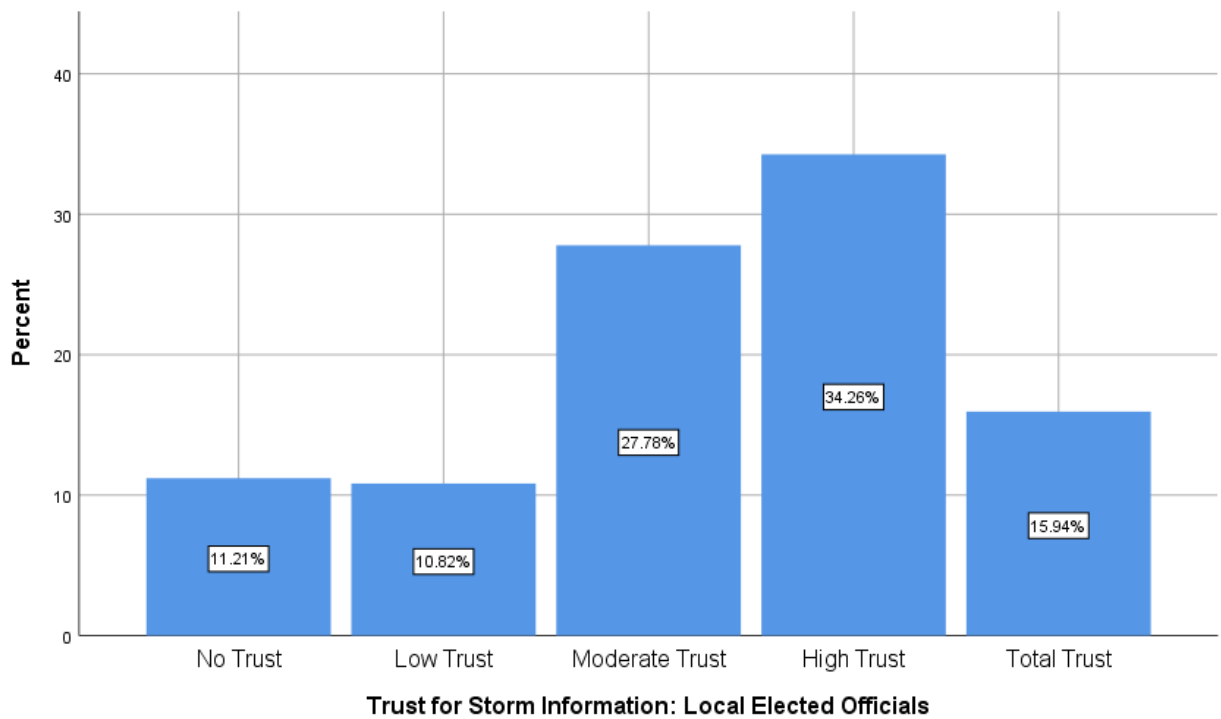
The chart below illustrates the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across the categories within Trust for Storm Information: Local News (no, low, moderate, high, and total trust).



## Trust for Storm Information: Local Elected Officials

In an evaluation of the population’s trust in local elected officials to communicate information about a storm heading towards Hampton Roads, the chart below illustrates the proportion of households that are collapsed within the five attributes representing the intensity of trust (no, low, moderate, high, and total). The No attribute are cases reporting zero, the Low attribute are cases reporting 1-3, the Moderate attribute are cases reporting 4-6, the High attribute are cases reporting 7-9, and the Total attribute are cases reporting ten.

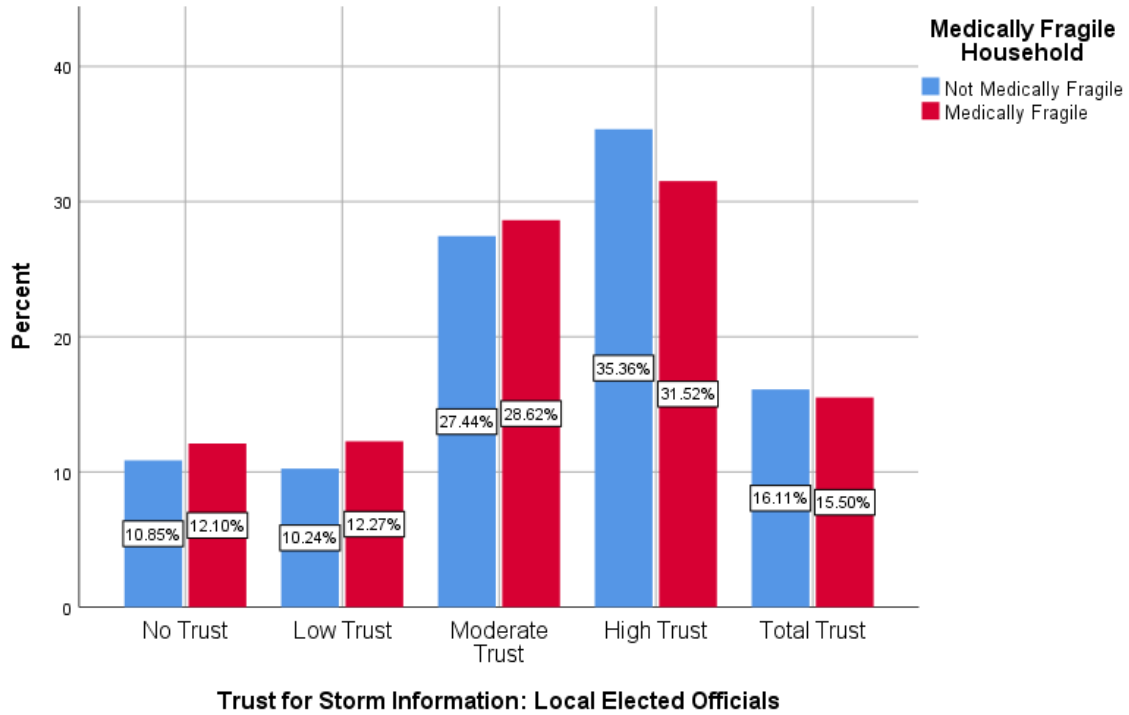
Overall, the population exhibits limited trust in local elected officials with about 50 percent of household scoring local elected officials at 7 or above.





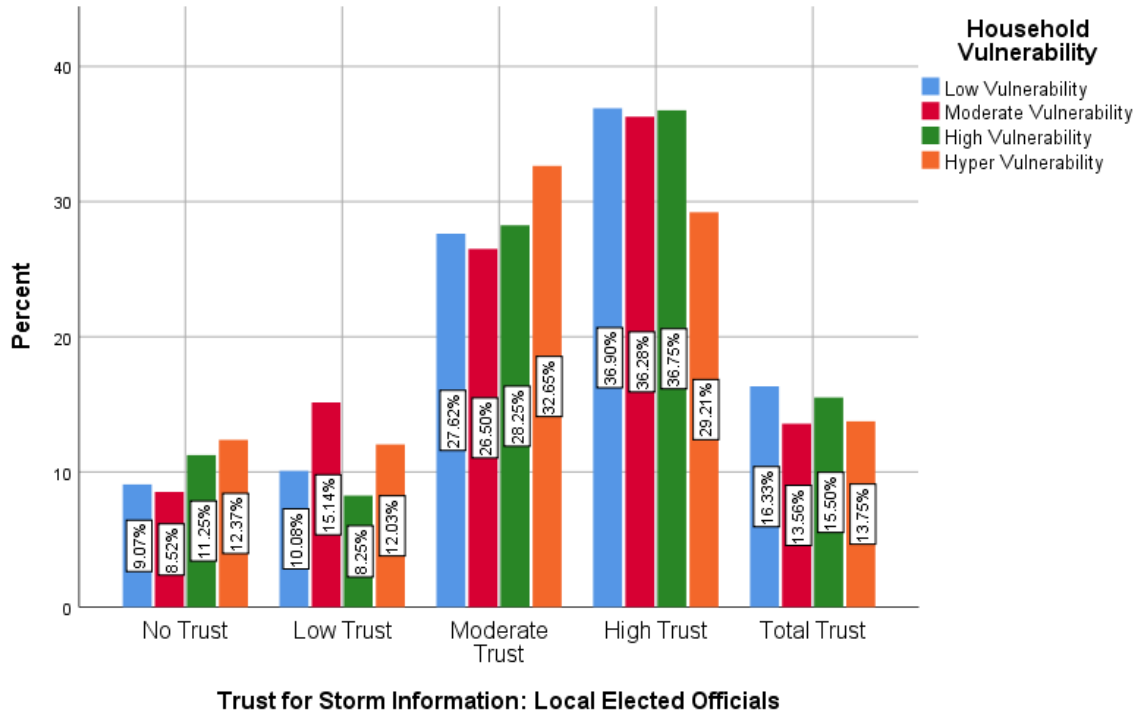
..by..Medically Fragile Household

The chart below illustrates the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across the categories within Trust for Storm Information: Local Elected Officials (no, low, moderate, high, and total trust).



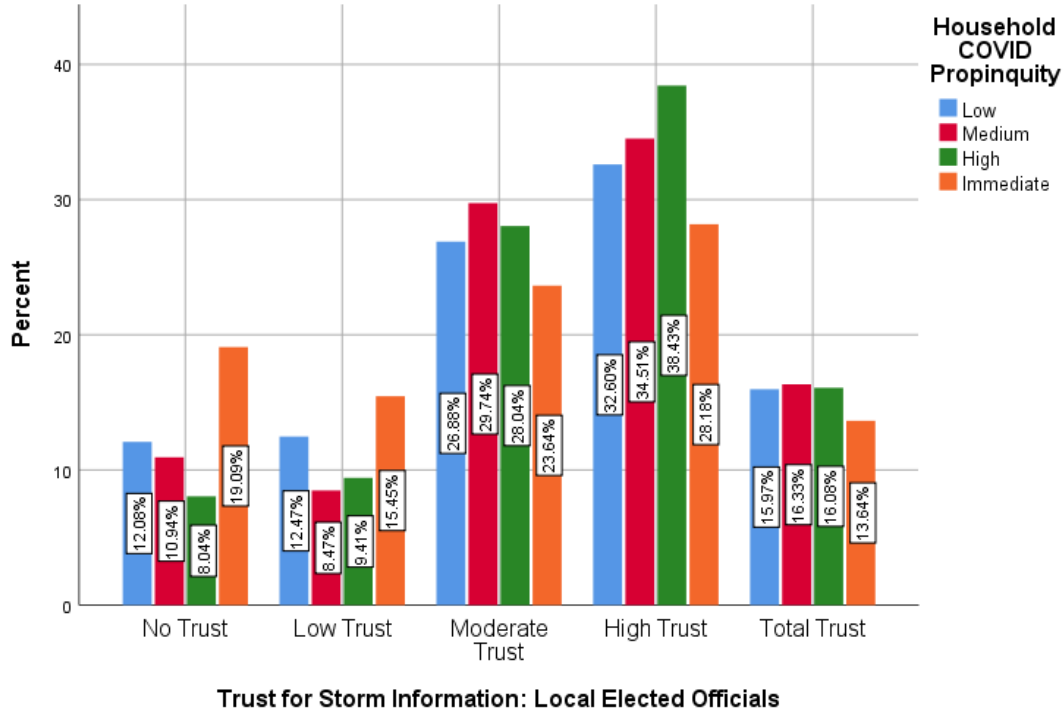
..by..Household Vulnerability

The chart below illustrates the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across the categories within Trust for Storm Information: Local Elected Officials (no, low, moderate, high, and total trust).



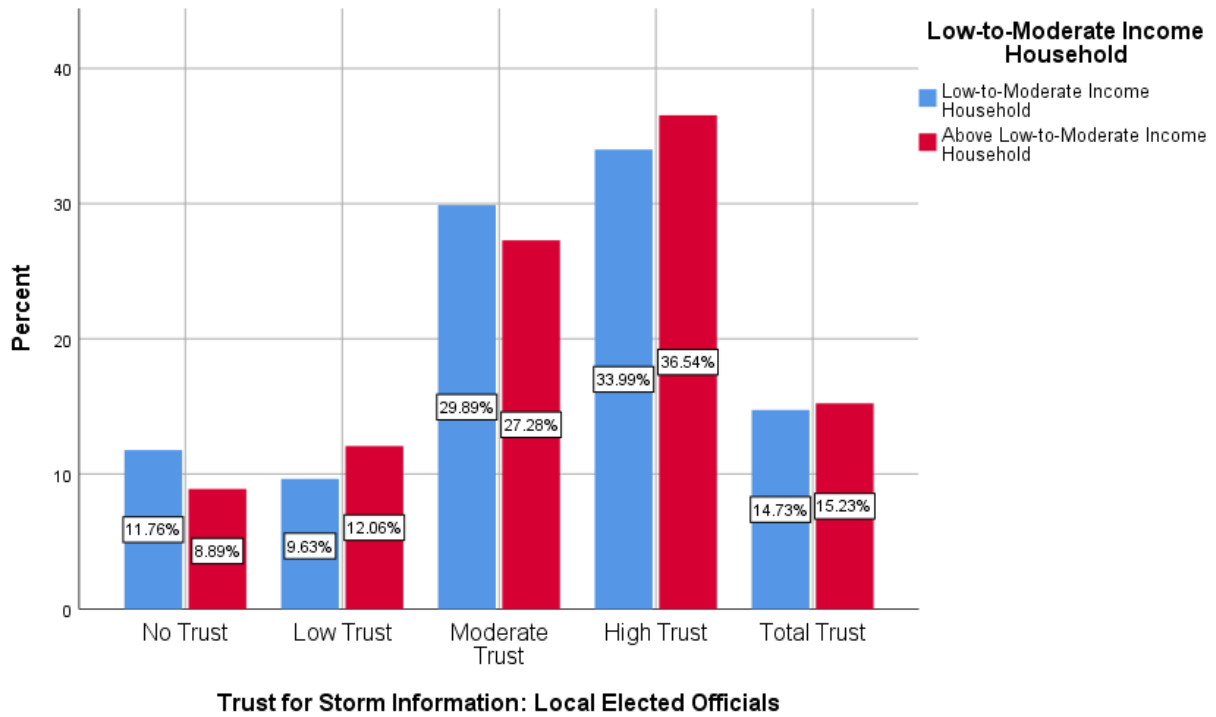
..by..Household COVID Propinquity

This chart illustrates the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across the categories within Trust for Storm Information: Local Elected Officials (no, low, moderate, high, and total trust).



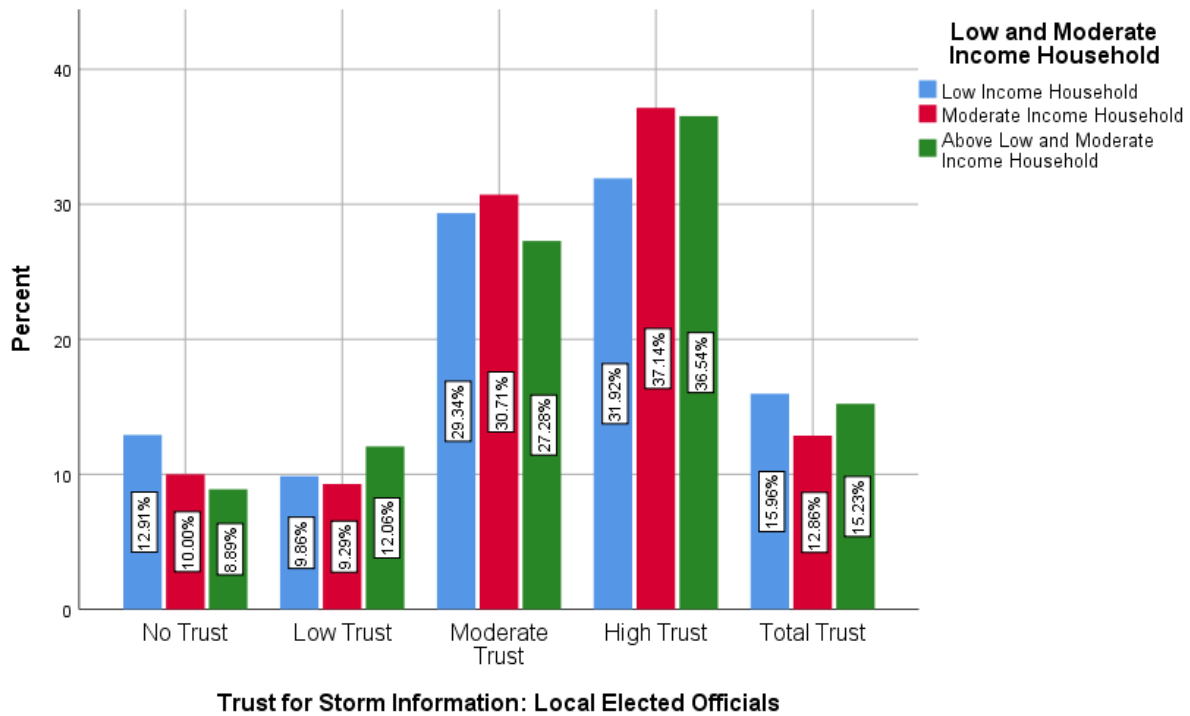
..by..Low-to-Moderate Income Household

The chart below illustrates the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across the categories within Trust for Storm Information: Local Elected Officials (no, low, moderate, high, and total trust).



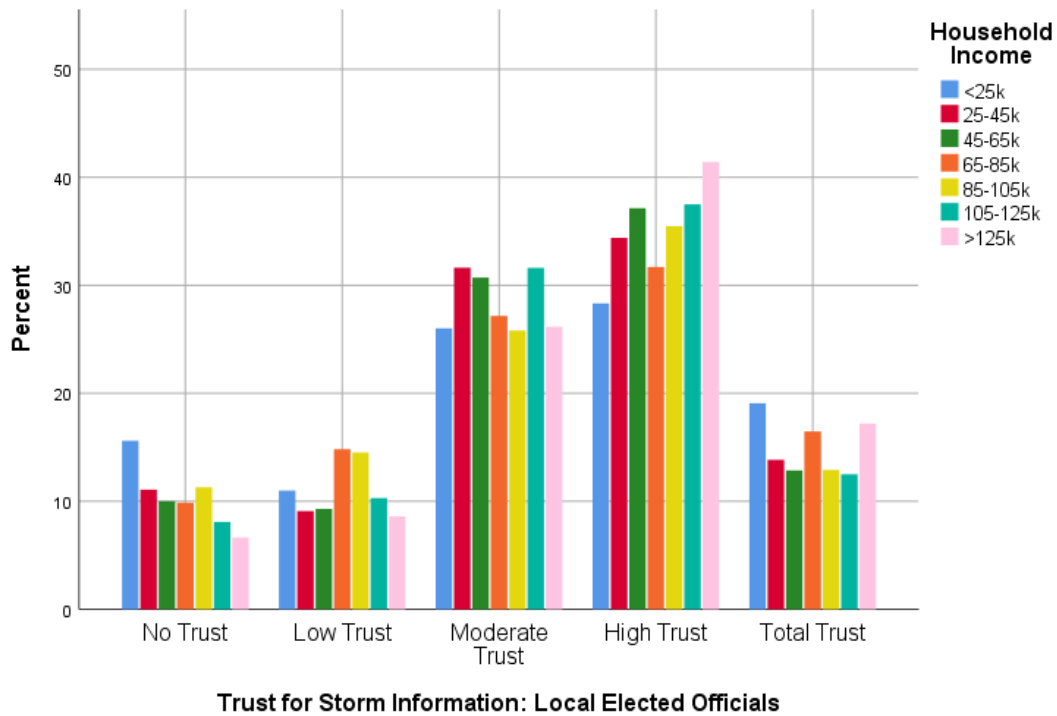
..by..Low and Moderate Income Household

The chart below illustrates the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across the categories within Trust for Storm Information: Local Elected Officials (no, low, moderate, high, and total trust).



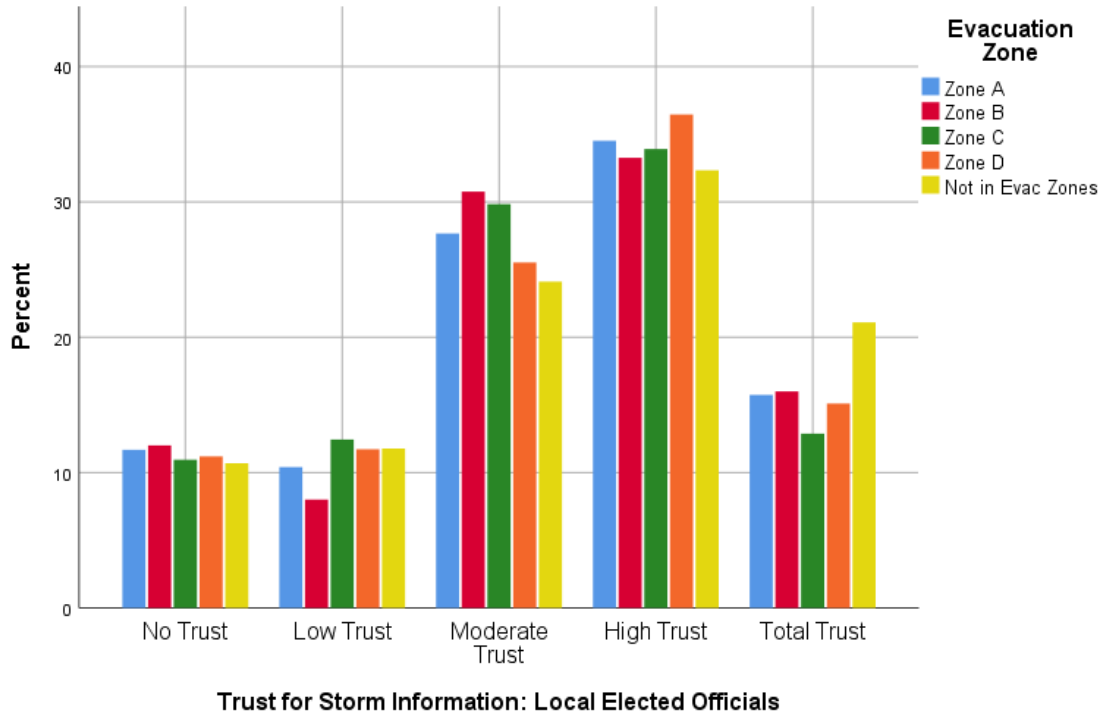
..by..Granulated Household Income

The chart below illustrates the proportions within Household Income (disaggregated into seven household income gradients) across the categories within Trust for Storm Information: Local Elected Officials (no, low, moderate, high, and total trust).



..by..Evacuation Zone

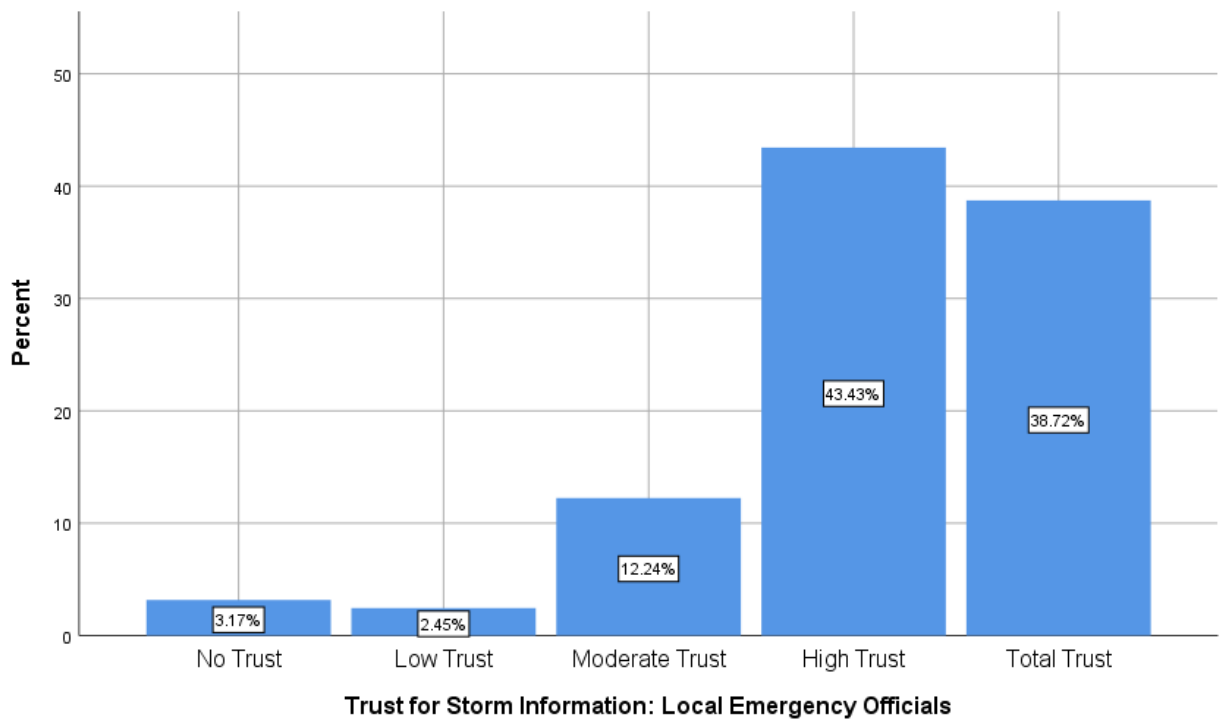
The chart below illustrates the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across the categories within Trust for Storm Information: Local Elected Officials (no, low, moderate, high, and total trust).



## Trust for Storm Information: Local Emergency Officials

In an evaluation of the population's trust in local emergency officials to communicate information about a storm heading towards Hampton Roads, the chart below illustrates the proportion of households that are collapsed within the five attributes representing the intensity of trust (no, low, moderate, high, and total). The No attribute are cases reporting zero, the Low attribute are cases reporting 1-3, the Moderate attribute are cases reporting 4-6, the High attribute are cases reporting 7-9, and the Total attribute are cases reporting ten.

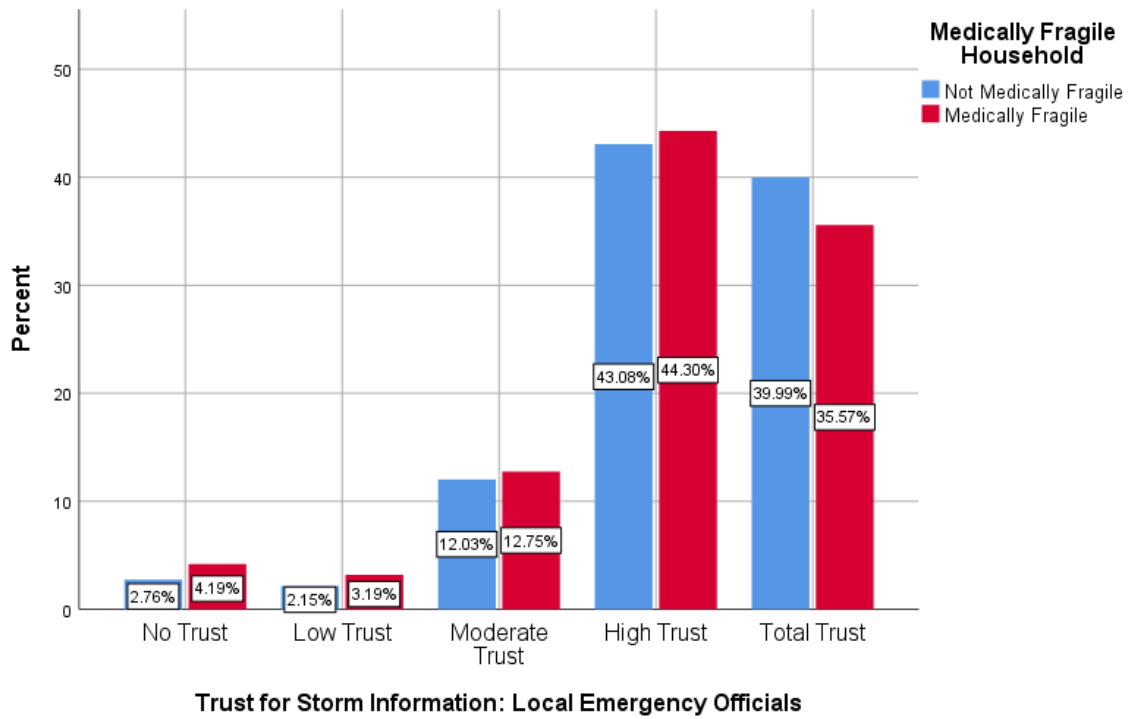
Overall, the population exhibits remarkable trust in local emergency officials with over 82 percent of household scoring local emergency officials at 7 or above.





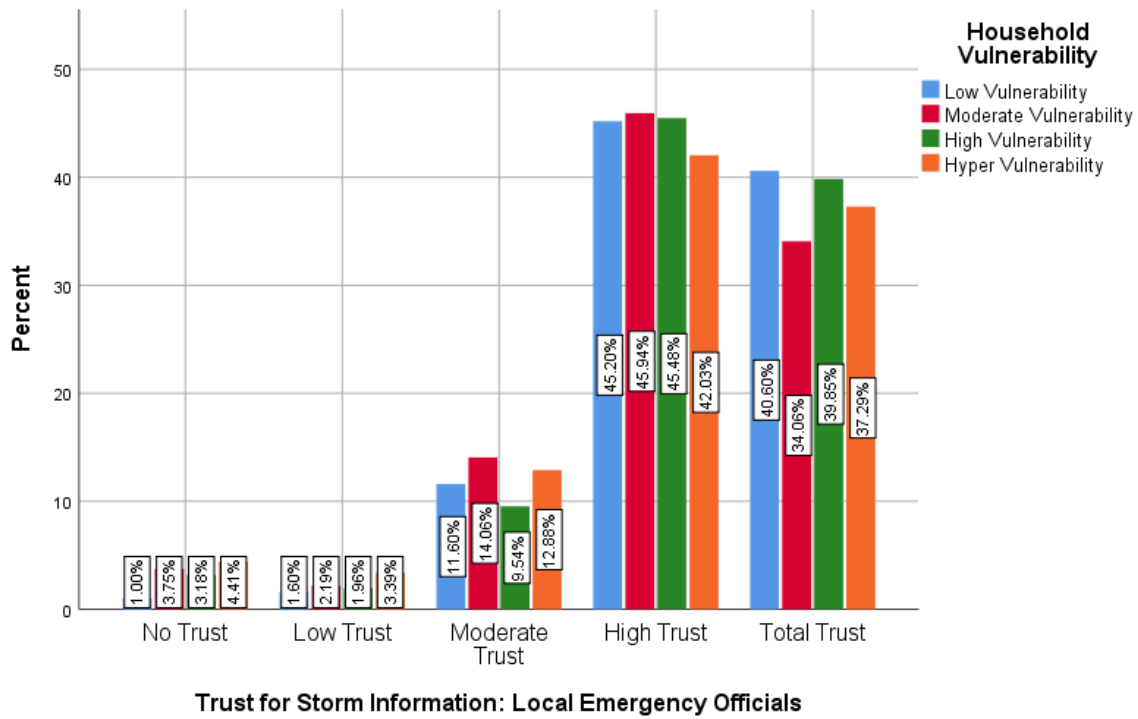
..by..Medically Fragile Household

The chart below illustrates the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across the categories within Trust for Storm Information: Local Emergency Officials (no, low, moderate, high, and total trust).



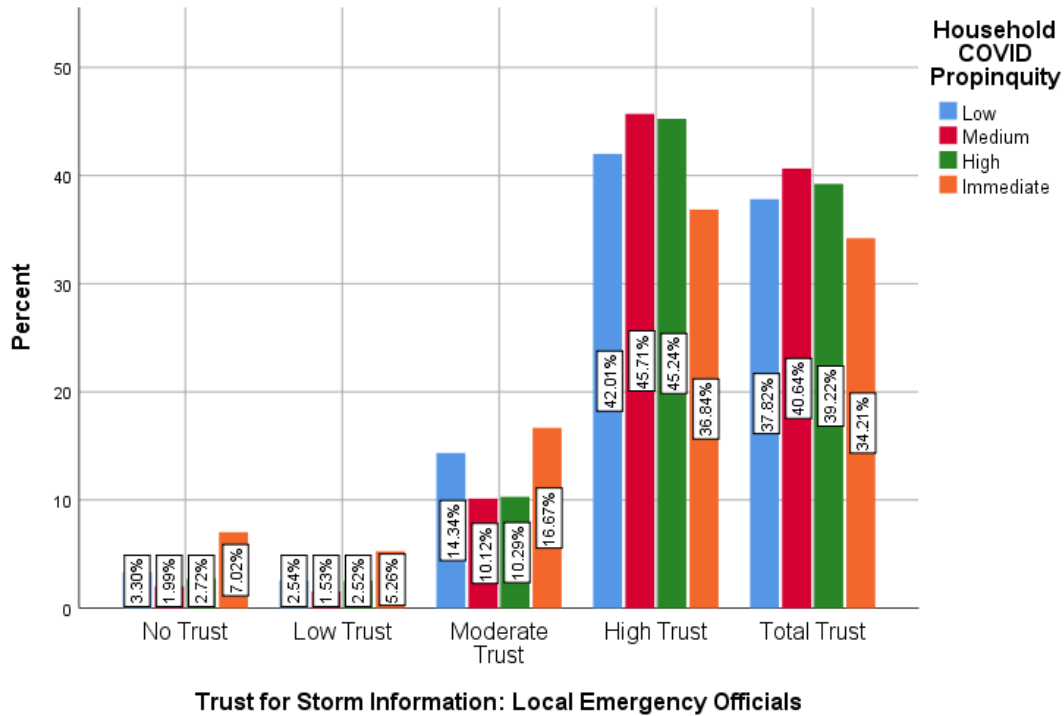
..by..Household Vulnerability

This chart illustrates the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across the categories within Trust for Storm Information: Local Emergency Officials (no, low, moderate, high, and total trust).



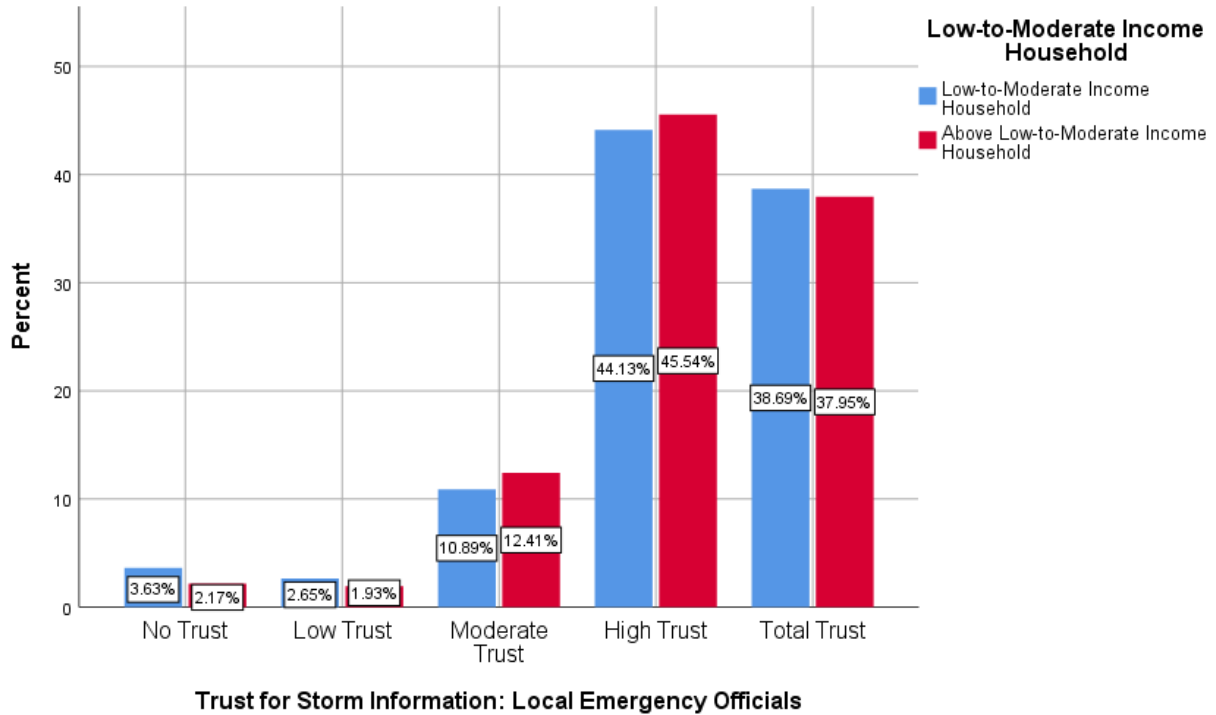
..by..Household COVID Propinquity

The chart below illustrates the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across the categories within Trust for Storm Information: Local Emergency Officials (no, low, moderate, high, and total trust).



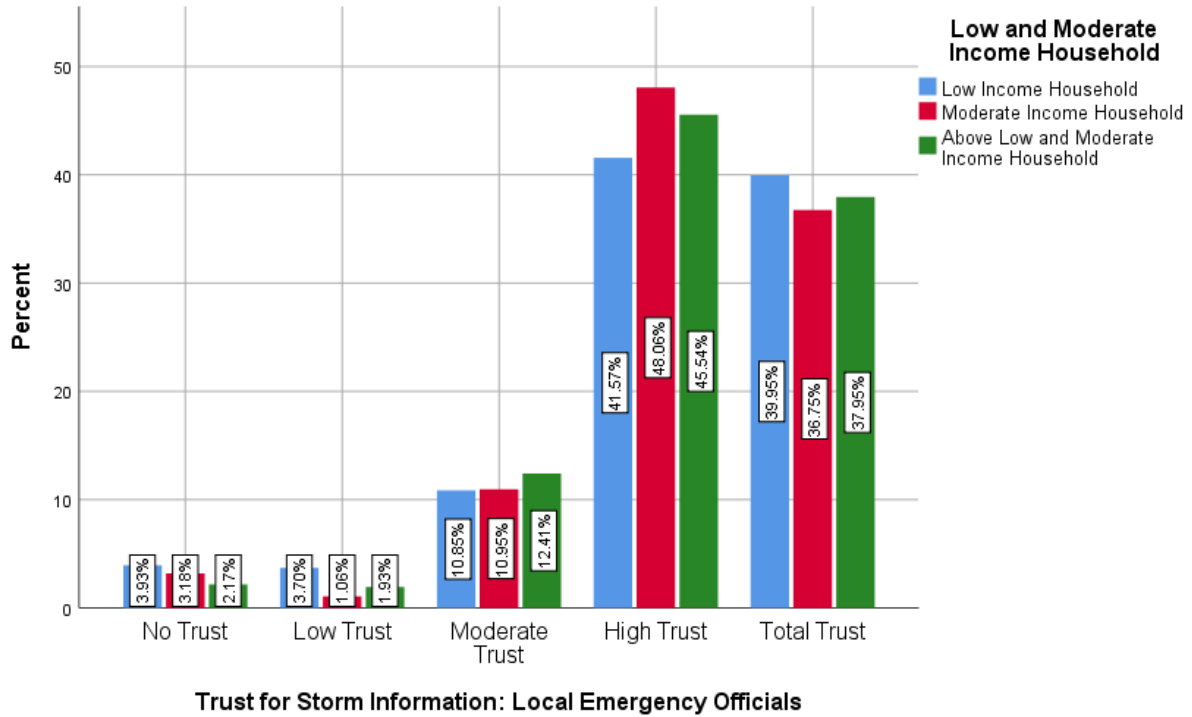
..by..Low-to-Moderate Income Household

The chart below illustrates the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across the categories within Trust for Storm Information: Local Emergency Officials (no, low, moderate, high, and total trust).



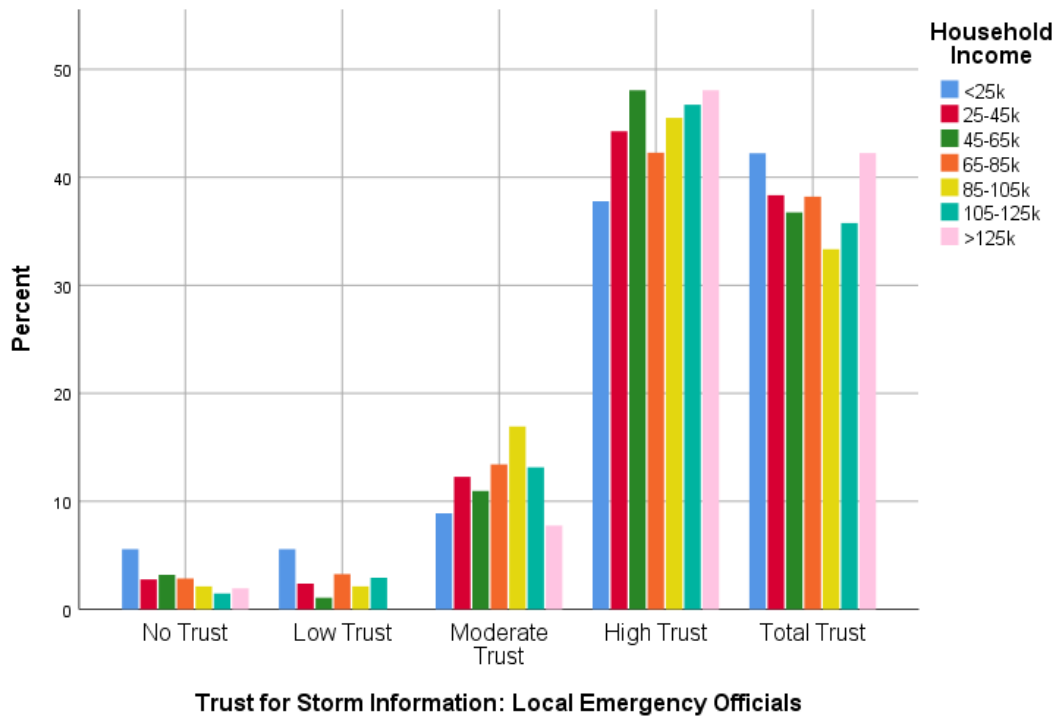
..by..Low and Moderate Income Household

The chart below illustrates the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across the categories within Trust for Storm Information: Local Emergency Officials (no, low, moderate, high, and total trust).



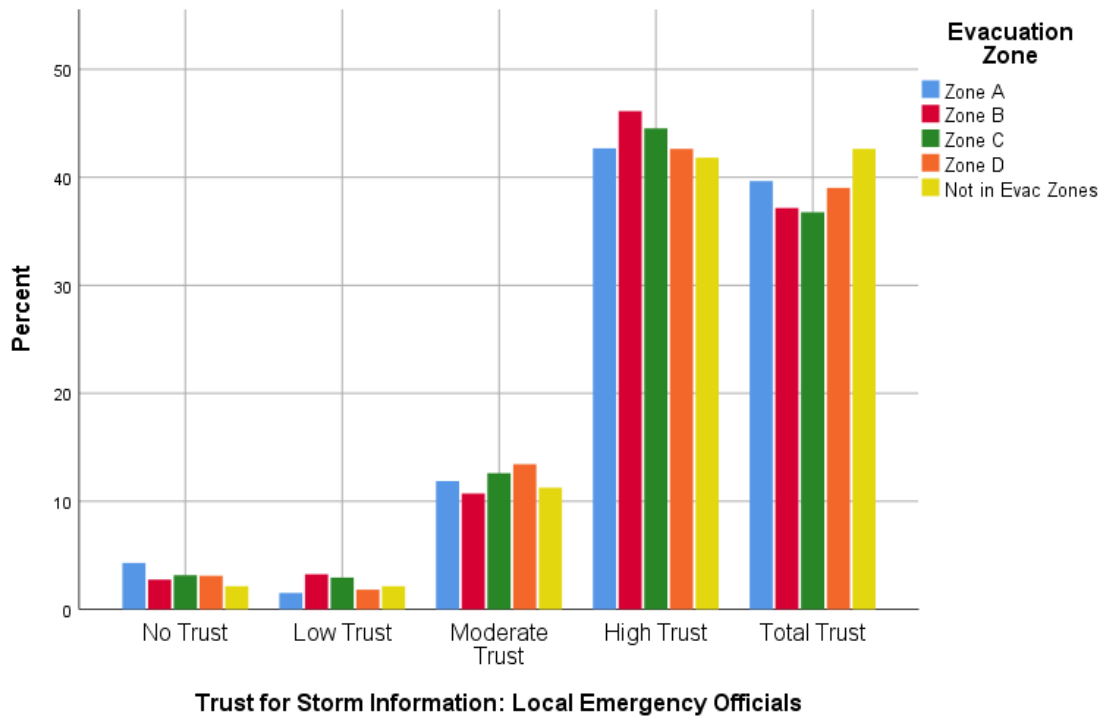
..by..Granulated Household Income

The chart below illustrates the proportions within Household Income (disaggregated into seven household income gradients) across the categories within Trust for Storm Information: Local Emergency Officials (no, low, moderate, high, and total trust).



..by..Evacuation Zone

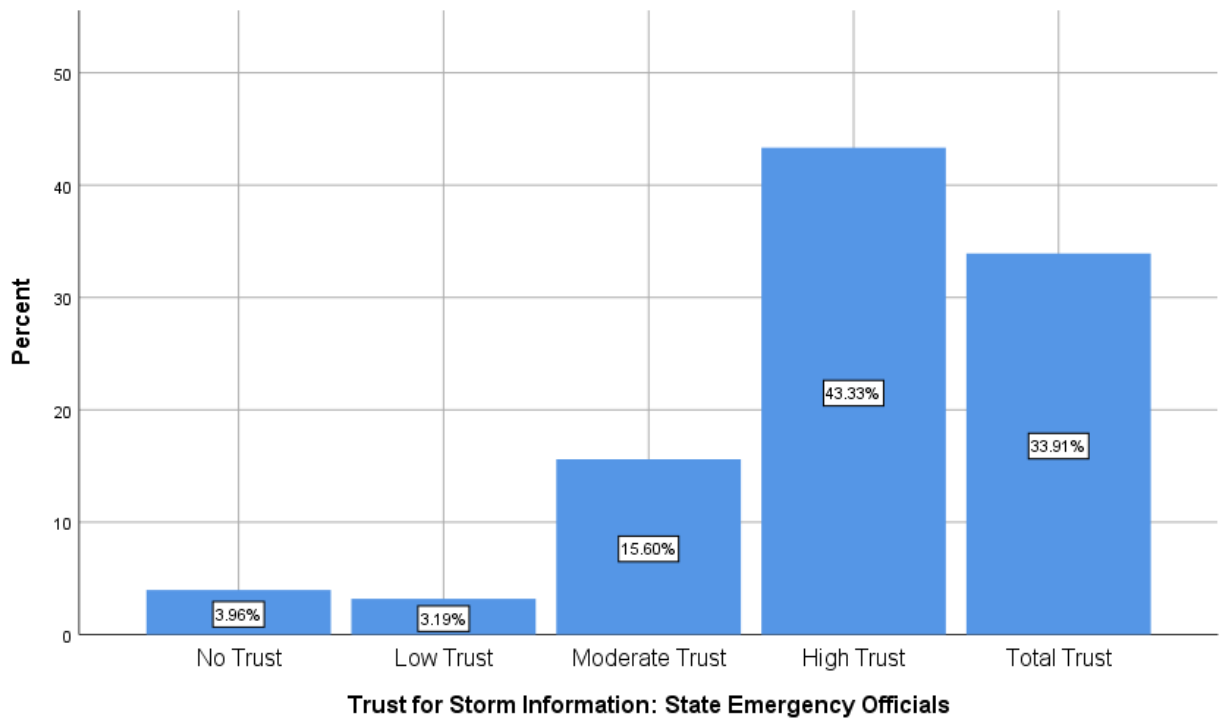
The chart below illustrates the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across the categories within Trust for Storm Information: Local Emergency Officials (no, low, moderate, high, and total trust).



### Trust for Storm Information: State Emergency Officials

In an evaluation of the population’s trust in state emergency officials to communicate information about a storm heading towards Hampton Roads, the chart below illustrates the proportion of households that are collapsed within the five attributes representing the intensity of trust (no, low, moderate, high, and total). The No attribute are cases reporting zero, the Low attribute are cases reporting 1-3, the Moderate attribute are cases reporting 4-6, the High attribute are cases reporting 7-9, and the Total attribute are cases reporting ten.

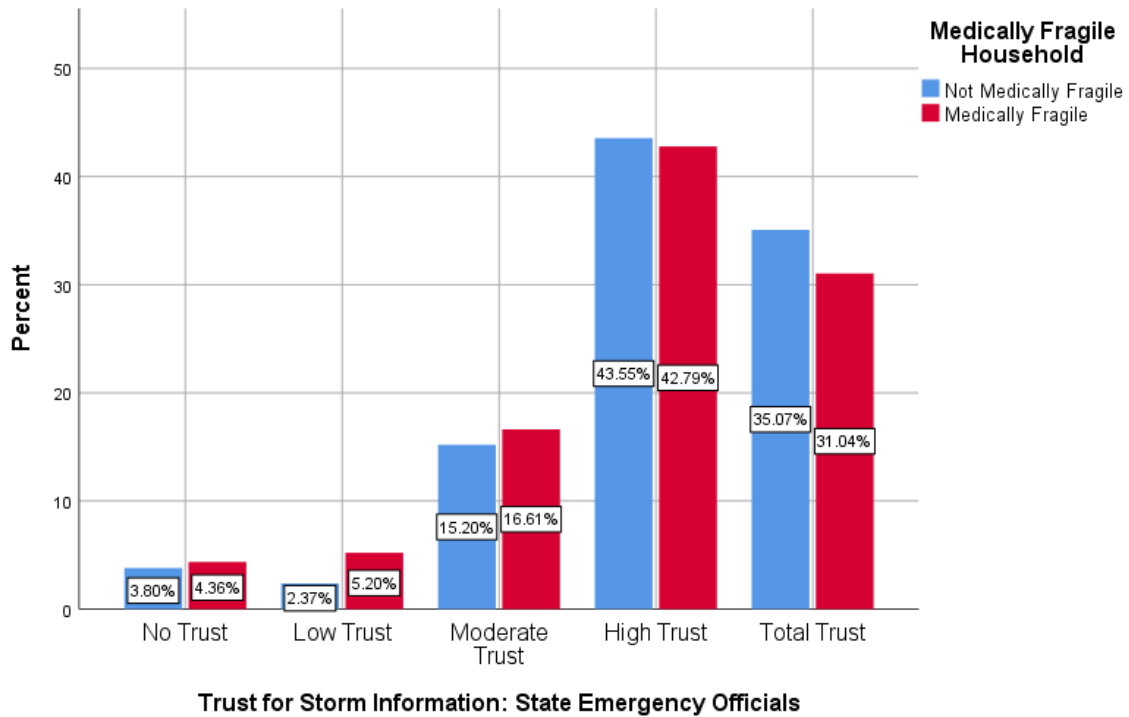
Overall, the population exhibits remarkable trust in state emergency officials with over 77 percent of household scoring state emergency officials at 7 or above.





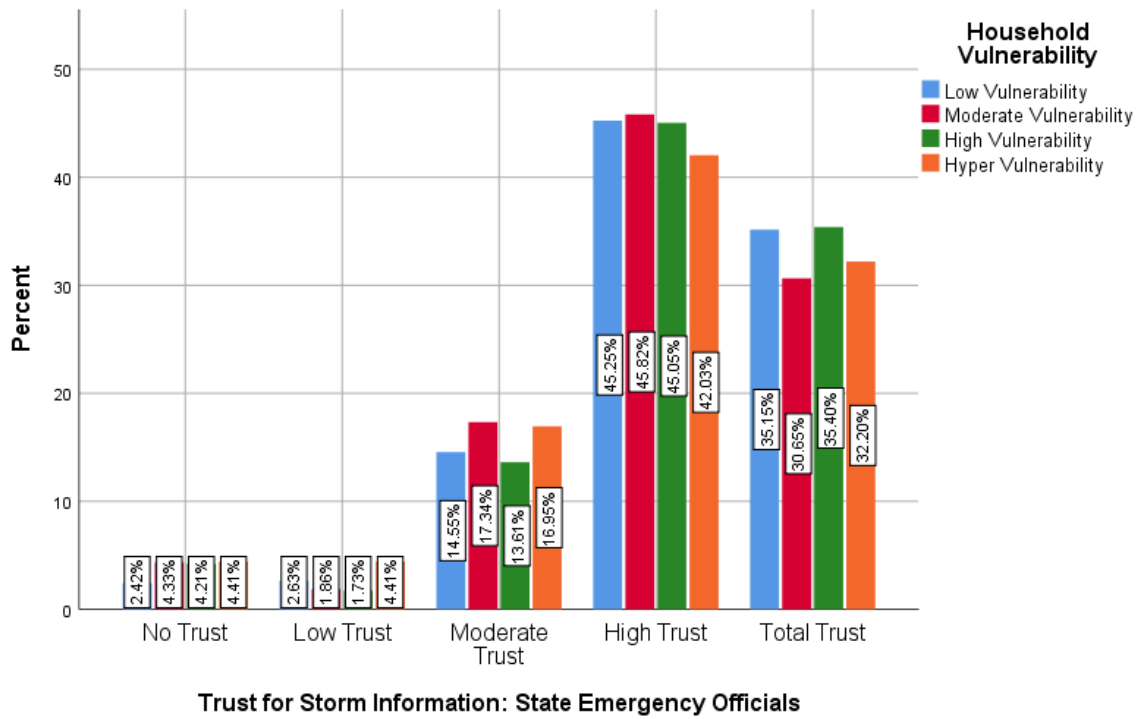
..by..Medically Fragile Household

This chart illustrates the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across the categories within Trust for Storm Information: State Emergency Officials (no, low, moderate, high, and total trust).



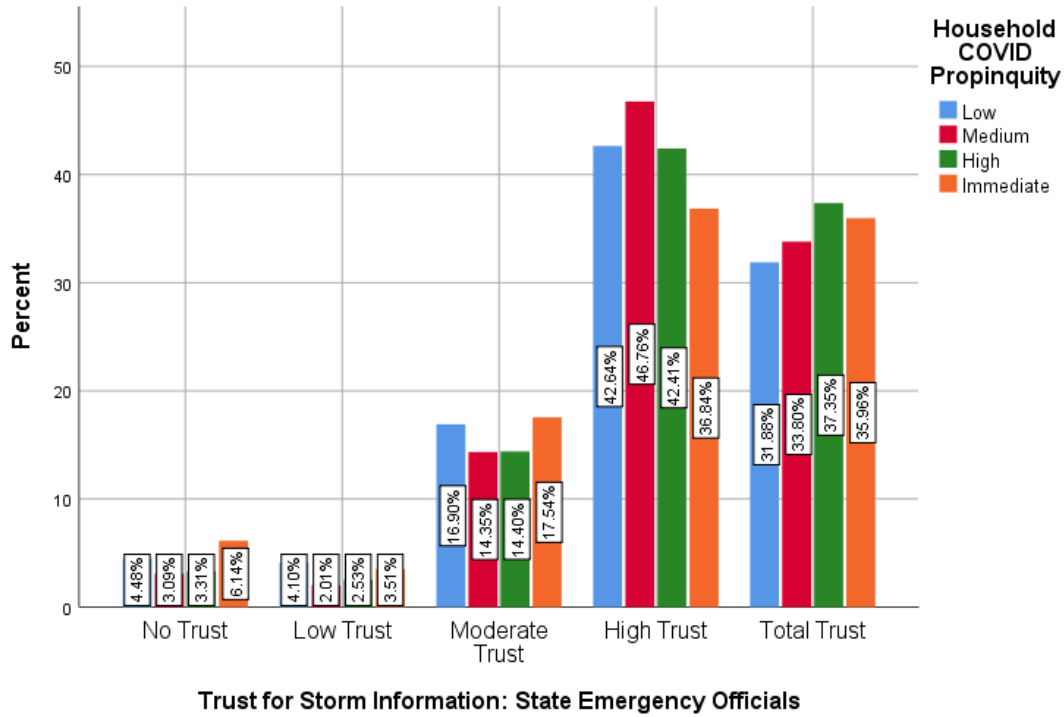
..by..Household Vulnerability

The chart below illustrates the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across the categories within Trust for Storm Information: State Emergency Officials (no, low, moderate, high, and total trust).



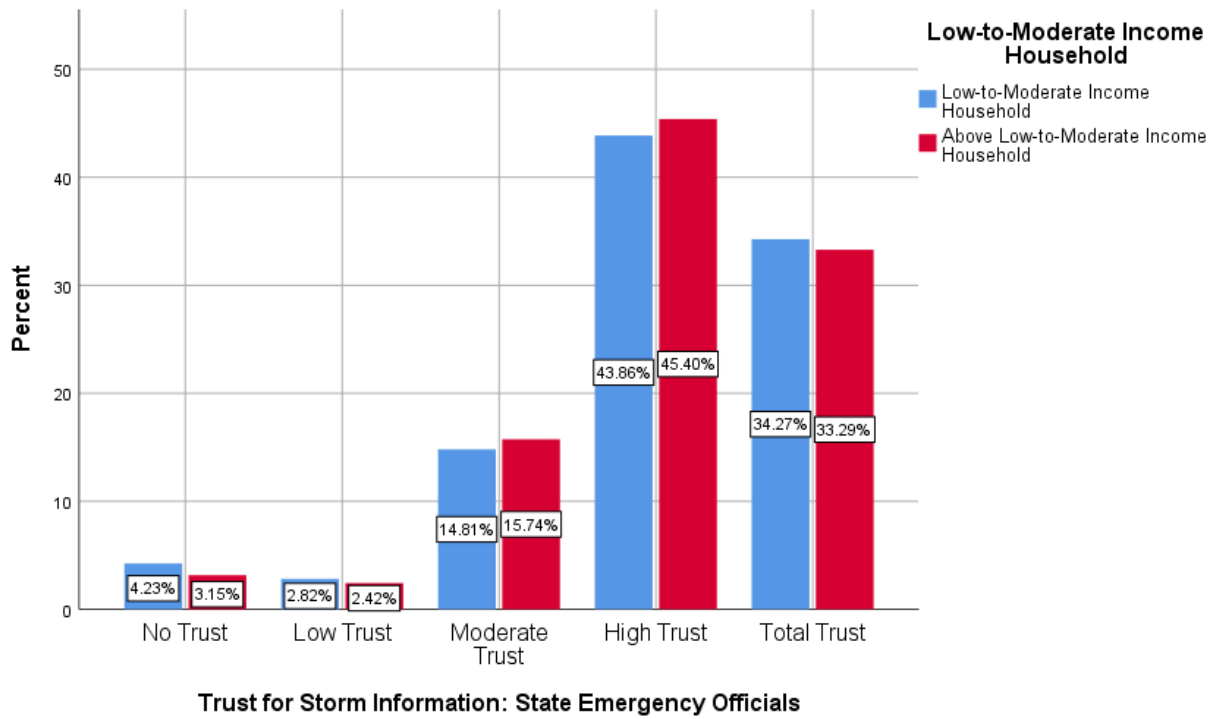
..by..Household COVID Propinquity

This chart illustrates the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across the categories within Trust for Storm Information: State Emergency Officials (no, low, moderate, high, and total trust).



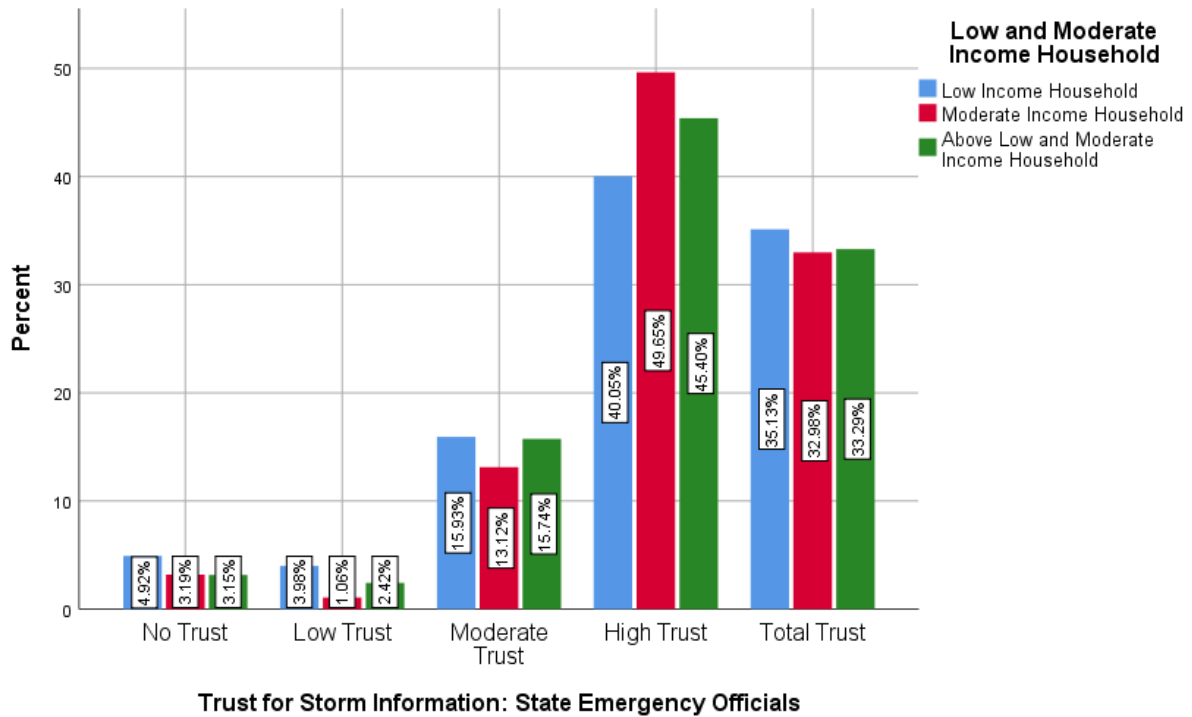
..by..Low-to-Moderate Income Household

The chart below illustrates the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across the categories within Trust for Storm Information: State Emergency Officials (no, low, moderate, high, and total trust).



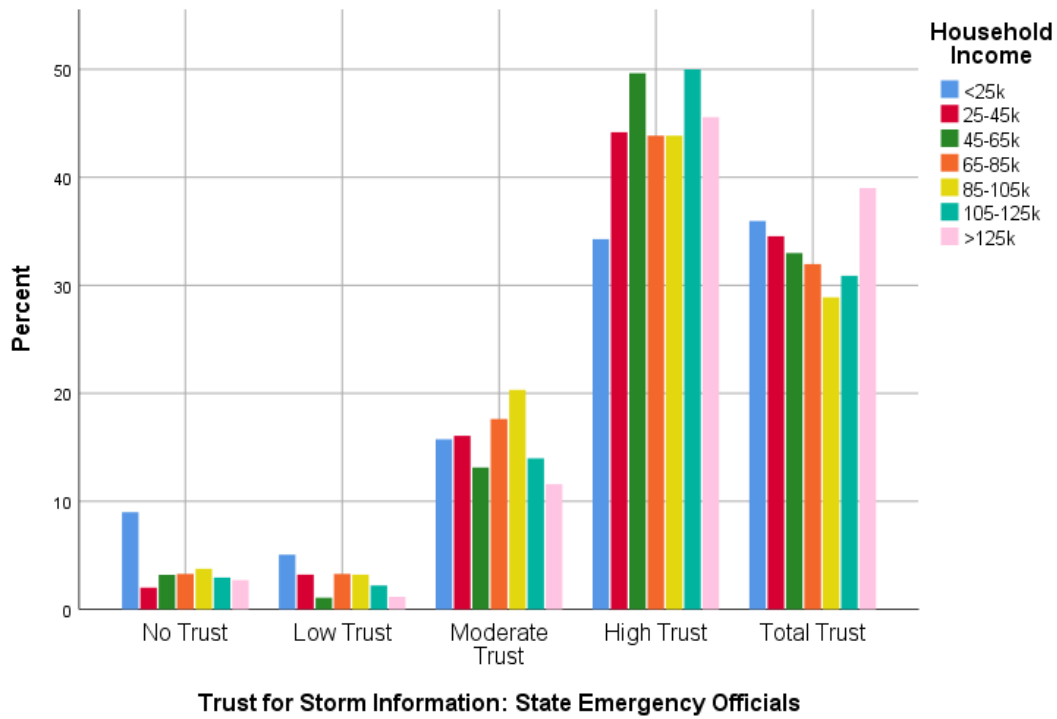
..by..Low and Moderate Income Household

The chart below illustrates the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across the categories within Trust for Storm Information: State Emergency Officials (no, low, moderate, high, and total trust).



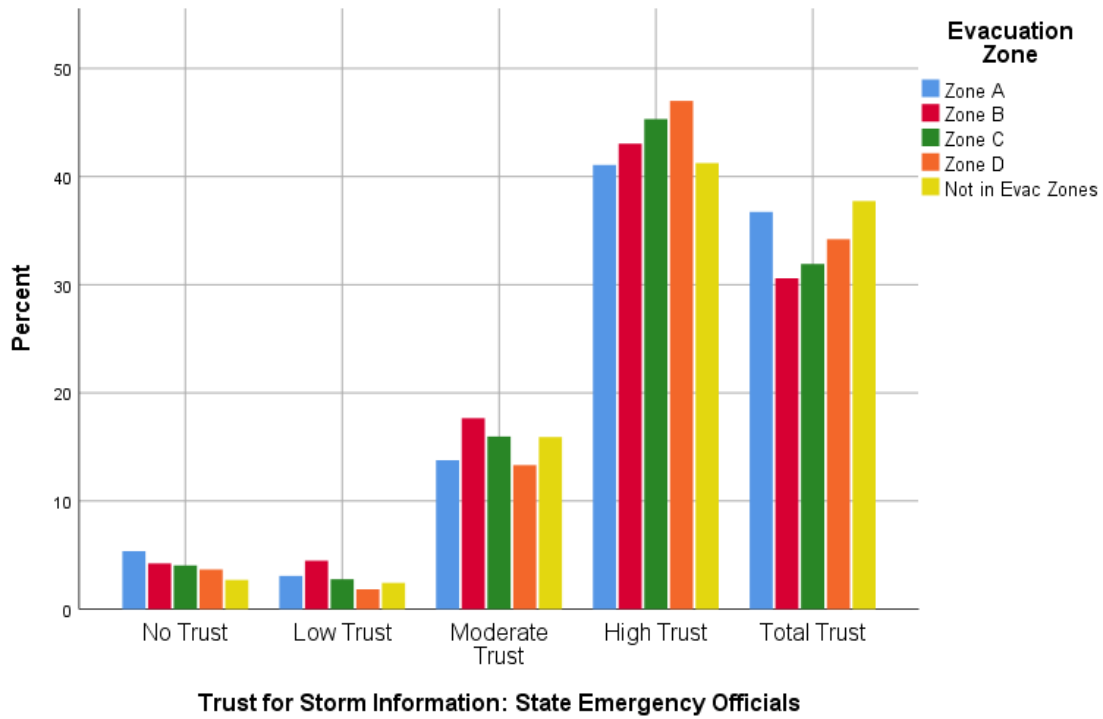
..by..Granulated Household Income

This chart illustrates the proportions within Household Income (disaggregated into seven household income gradients) across the categories within Trust for Storm Information: State Emergency Officials (no, low, moderate, high, and total trust).



..by..Evacuation Zone

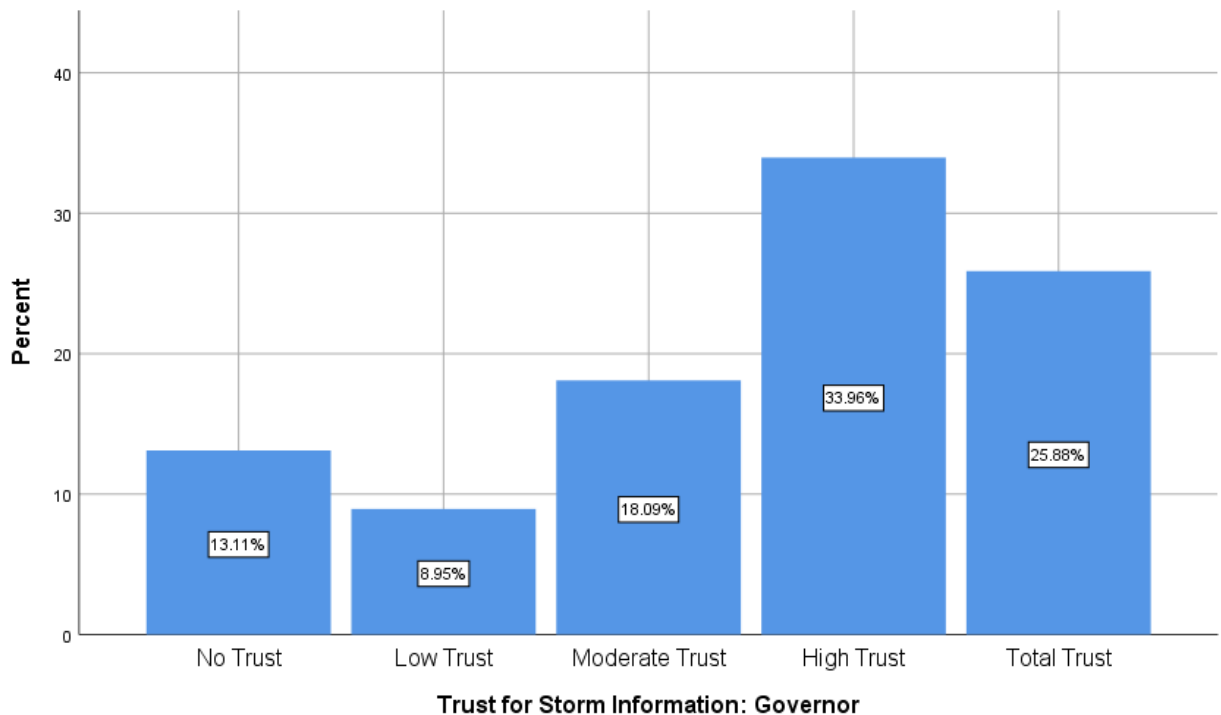
The chart below illustrates the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across the categories within Trust for Storm Information: State Emergency Officials (no, low, moderate, high, and total trust).



## Trust for Storm Information: Governor

In an evaluation of the population's trust in the Governor to communicate information about a storm heading towards Hampton Roads, the chart below illustrates the proportion of households that are collapsed within the five attributes representing the intensity of trust (no, low, moderate, high, and total). The No attribute are cases reporting zero, the Low attribute are cases reporting 1-3, the Moderate attribute are cases reporting 4-6, the High attribute are cases reporting 7-9, and the Total attribute are cases reporting ten.

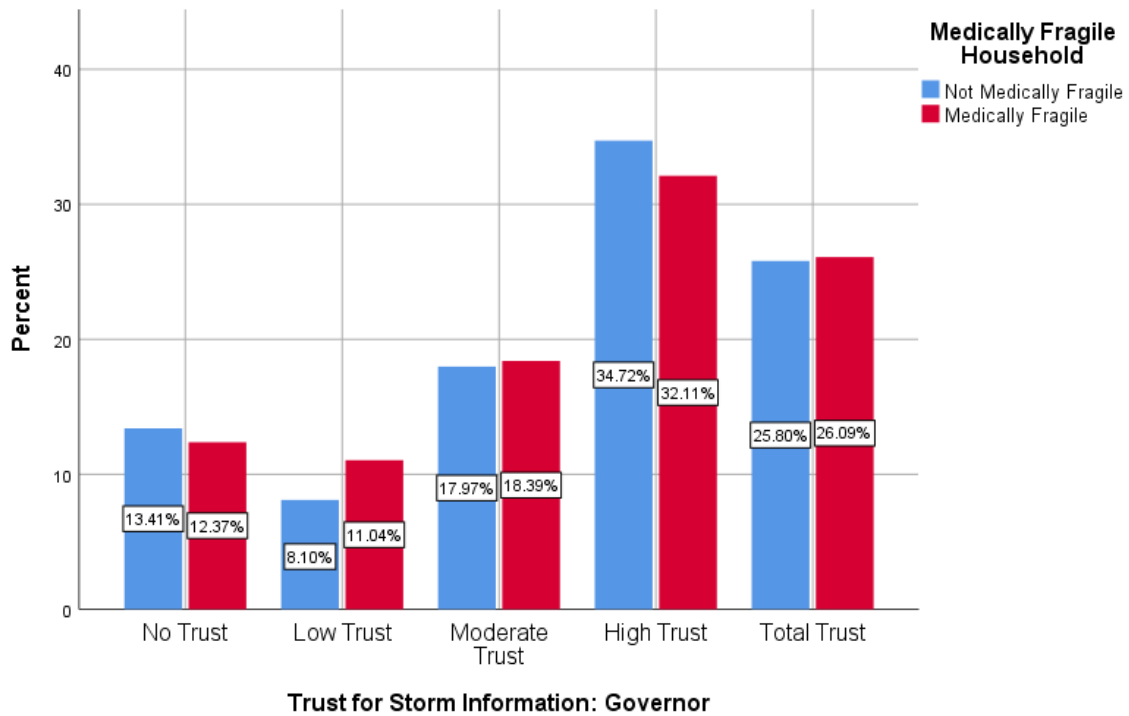
Overall, the population exhibits trust in Governor with just about 60 percent of household scoring the Governor at 7 or above.





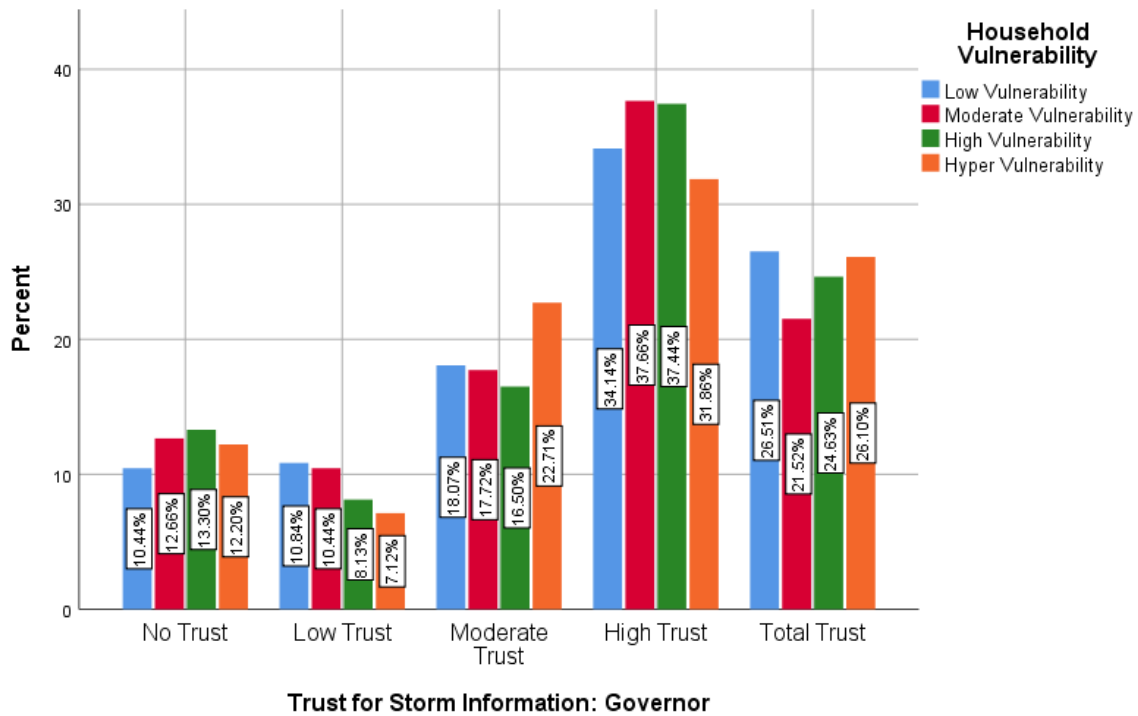
..by..Medically Fragile Household

The chart below illustrates the proportions within Medically Fragile Household (disaggregated into not medically fragile and medically fragile households) across the categories within Trust for Storm Information: Governor (no, low, moderate, high, and total trust).



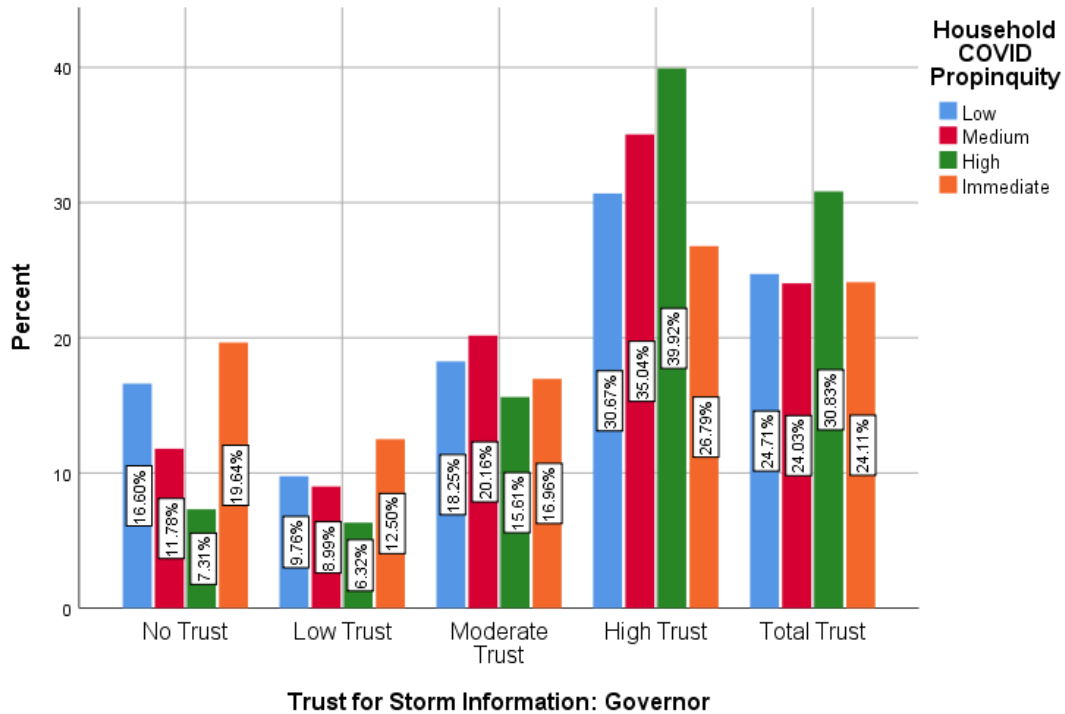
..by..Household Vulnerability

This chart illustrates the proportions within Household Vulnerability (disaggregated into low, moderate, high, and hyper vulnerability households) across the categories within Trust for Storm Information: Governor (no, low, moderate, high, and total trust).



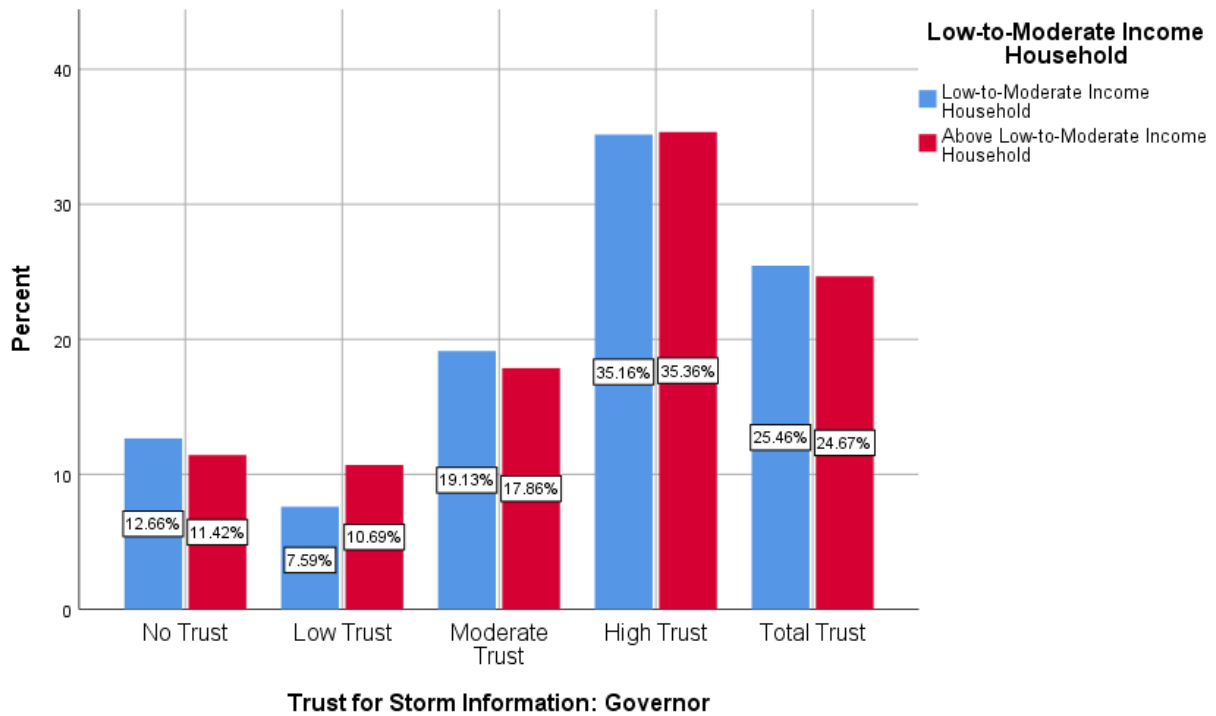
..by..Household COVID Propinquity

The chart below illustrates the proportions within Household COVID Propinquity (low, medium, high, and immediate COVID propinquity households) across the categories within Trust for Storm Information: Governor (no, low, moderate, high, and total trust).



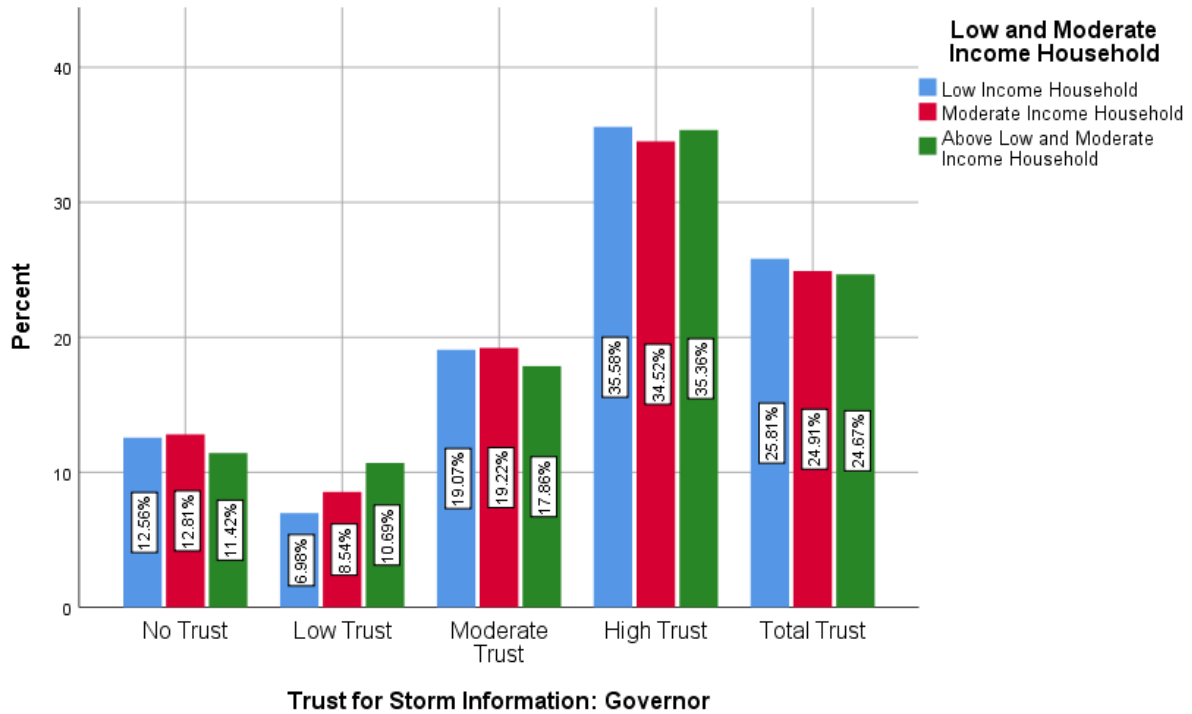
..by..Low-to-Moderate Income Household

The chart below illustrates the proportions within Low-to-Moderate Income Household (disaggregated into LMI and above LMI households) across the categories within Trust for Storm Information: Governor (no, low, moderate, high, and total trust).



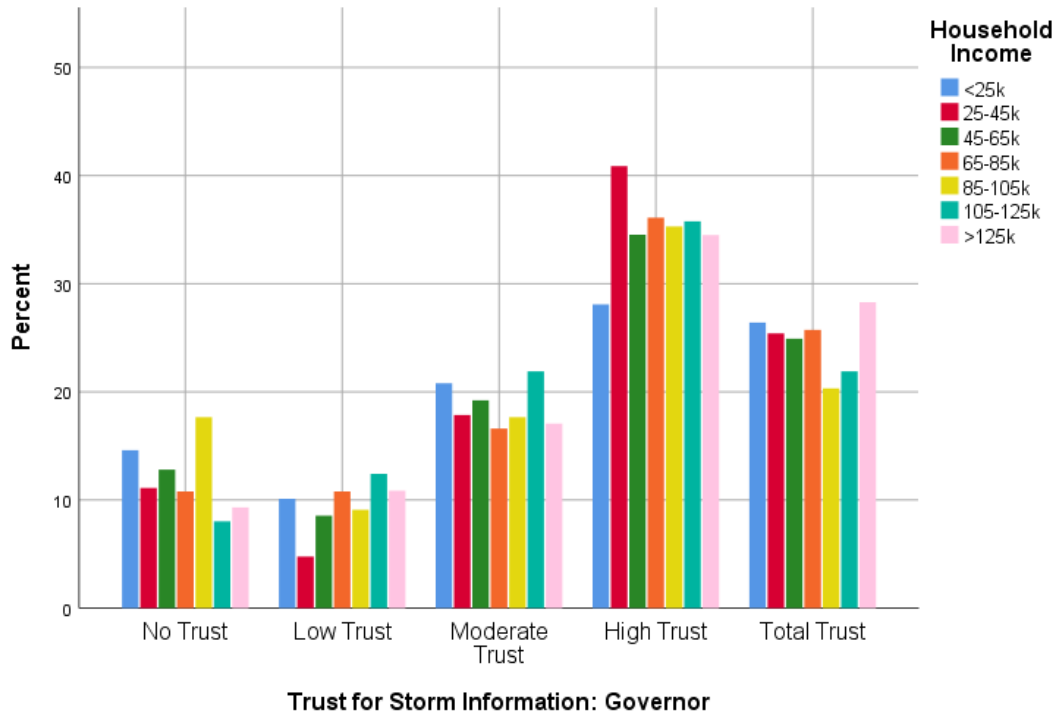
..by..Low and Moderate Income Household

The chart below illustrates the proportions within Low and Moderate Income Household (disaggregated into low, moderate, and above households) across the categories within Trust for Storm Information: Governor (no, low, moderate, high, and total trust).



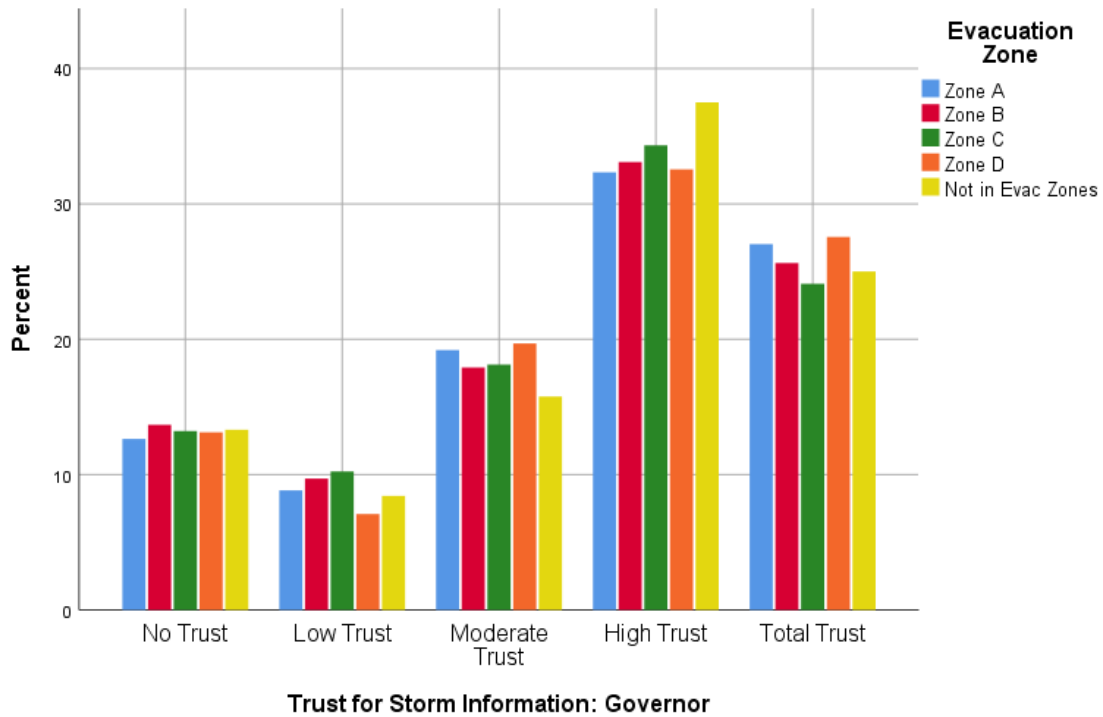
..by..Granulated Household Income

The chart below illustrates the proportions within Household Income (disaggregated into seven household income gradients) across the categories within Trust for Storm Information: Governor (no, low, moderate, high, and total trust).



..by..Evacuation Zone

The chart below illustrates the proportions of households within five areas (evacuation Zones A-D and area not within an evacuation zone) across the categories within Trust for Storm Information: Governor (no, low, moderate, high, and total trust).



## Part 12: Household Characteristics x City (Crosstabulations)

Part 12 revisits many of the previous “Household Characteristics” variables analyzed in Part 3, but reports these variables by locality, showing the variation across Hampton Roads.

### Years Living in Hampton Roads (5 Year increment)

#### City \* Years Living in Hampton Roads Crosstabulation

		Years Living in Hampton Roads																
City		5 Years or Less	6-10 Years	11-15 Years	16-20 Years	21-25 Years	26-30 Years	31-35 Years	36-40 Years	41-45 Years	46-50 Years	51-55 Years	56-60 Years	61-65 Years	66-70 Years	71-75 Years	76 Years or More	Total
Virginia Beach		14.0%	11%	6.1%	9.8%	10.6%	10.6%	5.8%	8.7%	3.7%	7.1%	2.6%	4.5%	1.1%	1.6%	0.8%	2.4%	100.0%
Chesapeake		4.9%	6.7%	10.8%	11.9%	7.5%	8.6%	6.0%	10.1%	6.0%	7.1%	2.6%	6.0%	2.6%	4.9%	1.5%	3.0%	100.0%
Norfolk		3.0%	8.7%	8.3%	12.5%	10.2%	6.4%	4.9%	6.0%	4.2%	11.7%	5.3%	6.8%	1.1%	3.8%	3.0%	4.2%	100.0%
Newport News		12.4%	8.1%	8.1%	12.8%	5.6%	9.8%	7.7%	8.1%	1.3%	9.0%	2.1%	6.0%	1.3%	3.8%	1.7%	2.1%	100.0%
Hampton		7.8%	9.1%	9.1%	16.4%	5.9%	11.4%	4.6%	9.6%	4.1%	9.6%	2.7%	5.0%	0.9%	0.9%	0.5%	2.3%	100.0%
Portsmouth		13.2%	8.4%	4.2%	6.3%	6.3%	8.9%	6.8%	6.8%	3.2%	9.5%	3.2%	5.8%	3.7%	2.6%	3.7%	7.4%	100.0%
Suffolk		1.5%	4.1%	6.7%	13.3%	8.7%	12.3%	4.1%	10.3%	4.1%	9.7%	3.6%	4.6%	2.6%	6.2%	3.1%	5.1%	100.0%
Poquoson		5.4%	5.4%	5.4%	9.5%	6.8%	12.2%	4.1%	9.5%	2.7%	13.5%		6.8%	4.1%	2.7%	4.1%	8.1%	100.0%
Accomack		14.2%	5.8%	7.5%	14.2%	6.7%	10.8%	6.7%	9.2%	3.3%	5.8%	1.7%	4.2%	2.5%	3.3%	2.5%	1.7%	100.0%
Northampton		10.5%	5.3%	11.3%	9.0%	6.0%	12.0%	6.0%	9.8%	3.8%	9.0%	3.8%	5.3%	0.8%	3.0%	3.0%	1.5%	100.0%
Total		8.8%	7.8%	7.8%	11.7%	7.8%	10.0%	5.7%	8.7%	3.8%	8.9%	3.0%	5.4%	1.8%	3.2%	2.1%	3.5%	100.0%



Years Living in Hampton Roads (10 Year increment)

**City \* Years Living in Hampton Roads Crosstabulation**

		Years Living in Hampton Roads								
		5 Years or Less	6-15 Years	16-25 Years	26-35 Years	36-45 Years	46-55 Years	56-65 Years	66 Years or More	Total
City	Virginia Beach	14.0%	16.9%	20.3%	16.4%	12.4%	9.8%	5.5%	4.7%	100.0%
	Chesapeake	4.9%	17.5%	19.4%	14.6%	16.0%	9.7%	8.6%	9.3%	100.0%
	Norfolk	3.0%	17.0%	22.6%	11.3%	10.2%	17.0%	7.9%	10.9%	100.0%
	Newport News	12.4%	16.2%	18.4%	17.5%	9.4%	11.1%	7.3%	7.7%	100.0%
	Hampton	7.8%	18.3%	22.4%	16.0%	13.7%	12.3%	5.9%	3.7%	100.0%
	Portsmouth	13.2%	12.6%	12.6%	15.8%	10.0%	12.6%	9.5%	13.7%	100.0%
	Suffolk	1.5%	10.8%	22.1%	16.4%	14.4%	13.3%	7.2%	14.4%	100.0%
	Poquoson	5.4%	10.8%	16.2%	16.2%	12.2%	13.5%	10.8%	14.9%	100.0%
	Accomack	14.2%	13.3%	20.8%	17.5%	12.5%	7.5%	6.7%	7.5%	100.0%
	Northampton	10.5%	16.5%	15.0%	18.0%	13.5%	12.8%	6.0%	7.5%	100.0%
	<b>Total</b>	<b>8.8%</b>	<b>15.6%</b>	<b>19.5%</b>	<b>15.7%</b>	<b>12.4%</b>	<b>11.9%</b>	<b>7.3%</b>	<b>8.8%</b>	<b>100.0%</b>

Size of Household (4 Groups)

**City \* Size of Household Crosstabulation**

		Size of Household				Total
		1 Person	2 Persons	3-4 Persons	5 or More Persons	
City	Virginia Beach	17.2%	36.5%	32.4%	13.9%	100.0%
	Chesapeake	15.8%	32.3%	36.5%	15.4%	100.0%
	Norfolk	23.5%	36.7%	29.2%	10.6%	100.0%
	Newport News	16.7%	34.2%	35.8%	13.3%	100.0%
	Hampton	12.9%	36.4%	37.3%	13.4%	100.0%
	Portsmouth	24.4%	29.5%	30.1%	16.1%	100.0%
	Suffolk	18.9%	41.8%	32.1%	7.1%	100.0%
	Poquoson	18.9%	43.2%	28.4%	9.5%	100.0%
	Accomack	18.6%	39.5%	27.9%	14.0%	100.0%
	Northampton	19.7%	46.5%	27.5%	6.3%	100.0%
Total		18.4%	36.7%	32.4%	12.5%	100.0%

## Size of Household (Per Person)

### City \* Size of Household Crosstabulation

% within City

		Size of Household								Total
		1 Person	2 Persons	3 Persons	4 Persons	5 Persons	6 Persons	7 Persons	8 or More Persons	
City	Virginia Beach	17.2%	36.5%	15.7%	16.7%	6.2%	4.1%	1.5%	2.1%	100.0%
	Chesapeake	15.8%	32.3%	19.5%	16.9%	8.3%	4.1%	0.8%	2.3%	100.0%
	Norfolk	23.5%	36.7%	16.7%	12.5%	6.1%	2.3%	1.5%	0.8%	100.0%
	Newport News	16.7%	34.2%	22.1%	13.8%	7.1%	3.8%	0.8%	1.7%	100.0%
	Hampton	12.9%	36.4%	20.3%	17.1%	7.8%	1.8%	2.8%	0.9%	100.0%
	Portsmouth	24.4%	29.5%	17.6%	12.4%	8.8%	3.1%	0.5%	3.6%	100.0%
	Suffolk	18.9%	41.8%	19.4%	12.8%	4.1%	1.5%		1.5%	100.0%
	Poquoson	18.9%	43.2%	14.9%	13.5%	9.5%				100.0%
	Accomack	18.6%	39.5%	13.2%	14.7%	7.0%	3.1%		3.9%	100.0%
	Northampton	19.7%	46.5%	20.4%	7.0%	2.1%	3.5%		0.7%	100.0%
Total		18.4%	36.7%	18.2%	14.3%	6.6%	3.0%	1.0%	1.8%	100.0%

## Children Under 18 in Household

### City \* Children Under 18 in Household Crosstabulation

		Children Under 18 in Household		Total
		No Children	Children	
City	Virginia Beach	70.5%	29.5%	100.0%
	Chesapeake	69.5%	30.5%	100.0%
	Norfolk	72.4%	27.6%	100.0%
	Newport News	69.8%	30.2%	100.0%
	Hampton	67.3%	32.7%	100.0%
	Portsmouth	68.6%	31.4%	100.0%
	Suffolk	79.0%	21.0%	100.0%
	Poquoson	78.7%	21.3%	100.0%
	Accomack	70.1%	29.9%	100.0%
	Northampton	78.2%	21.8%	100.0%
Total		71.6%	28.4%	100.0%

Children Under 18 in Household (Per Child)

**City \* Children Under 18 in Household Crosstabulation**

		Children Under 18 in Household						Total
		No Children	1 Child	2 Children	3 Children	4 Children	5 Children or More	
City	Virginia Beach	70.5%	13.1%	8.7%	2.3%	3.6%	1.8%	100.0%
	Chesapeake	69.5%	12.3%	9.3%	5.6%	1.9%	1.5%	100.0%
	Norfolk	72.4%	13.1%	7.8%	5.2%	0.7%	0.7%	100.0%
	Newport News	69.8%	14.0%	6.6%	5.0%	2.1%	2.5%	100.0%
	Hampton	67.3%	13.1%	12.6%	3.7%	1.9%	1.4%	100.0%
	Portsmouth	68.6%	10.1%	12.8%	5.3%	0.5%	2.7%	100.0%
	Suffolk	79.0%	11.0%	6.5%	2.5%	0.5%	0.5%	100.0%
	Poquoson	78.7%	12.0%	6.7%	2.7%			100.0%
	Accomack	70.1%	11.8%	12.6%	2.4%	1.6%	1.6%	100.0%
	Northampton	78.2%	12.0%	8.5%	1.4%			100.0%
Total		71.6%	12.4%	9.1%	3.8%	1.6%	1.4%	100.0%

## Multigenerational Household

### City \* Multigenerational Household Crosstabulation

		Multigenerational Household		Total
		Yes	No	
City	Virginia Beach	9.5%	90.5%	100.0%
	Chesapeake	13.2%	86.8%	100.0%
	Norfolk	8.3%	91.7%	100.0%
	Newport News	10.5%	89.5%	100.0%
	Hampton	9.8%	90.2%	100.0%
	Portsmouth	10.2%	89.8%	100.0%
	Suffolk	6.4%	93.6%	100.0%
	Poquoson	2.6%	97.4%	100.0%
	Accomack	11.7%	88.3%	100.0%
	Northampton	5.6%	94.4%	100.0%
	Total	9.4%	90.6%	100.0%

## Medically Fragile Household

### City \* Medically Fragile Household Crosstabulation

		Medically Fragile Household		
		Not Medically Fragile	Medically Fragile	Total
City	Virginia Beach	68.2%	31.8%	100.0%
	Chesapeake	74.0%	26.0%	100.0%
	Norfolk	71.2%	28.8%	100.0%
	Newport News	74.4%	25.6%	100.0%
	Hampton	69.8%	30.2%	100.0%
	Portsmouth	65.5%	34.5%	100.0%
	Suffolk	73.4%	26.6%	100.0%
	Poquoson	80.3%	19.7%	100.0%
	Accomack	69.9%	30.1%	100.0%
	Northampton	69.8%	30.2%	100.0%
Total		71.0%	29.0%	100.0%

## Severely Handicapped Children

### City \* Severely Handicapped Children Crosstabulation

		Severely Handicapped Children		
		Yes	No	Total
City	Virginia Beach	1.0%	99.0%	100.0%
	Chesapeake	1.5%	98.5%	100.0%
	Norfolk	0.7%	99.3%	100.0%
	Newport News	2.0%	98.0%	100.0%
	Hampton	3.6%	96.4%	100.0%
	Portsmouth	1.0%	99.0%	100.0%
	Suffolk	1.5%	98.5%	100.0%
	Poquoson		100.0%	100.0%
	Accomack	0.8%	99.2%	100.0%
	Northampton	1.4%	98.6%	100.0%
	Total		1.4%	98.6%



## Household Vulnerability

### City \* Household Vulnerability Crosstabulation

		Household Vulnerability				Total
		Low Vulnerability	Moderate Vulnerability	High Vulnerability	Hyper Vulnerability	
City	Virginia Beach	28.7%	23.4%	26.2%	21.8%	100.0%
	Chesapeake	40.6%	23.9%	21.7%	13.9%	100.0%
	Norfolk	27.6%	20.0%	28.1%	24.3%	100.0%
	Newport News	27.6%	18.9%	29.7%	23.8%	100.0%
	Hampton	29.0%	21.9%	23.2%	25.8%	100.0%
	Portsmouth	19.9%	22.5%	35.8%	21.9%	100.0%
	Suffolk	39.9%	16.8%	29.4%	14.0%	100.0%
	Poquoson	48.2%	21.4%	21.4%	8.9%	100.0%
	Accomack	36.7%	22.4%	24.5%	16.3%	100.0%
	Northampton	42.6%	14.8%	25.9%	16.7%	100.0%
Total		32.1%	21.0%	26.9%	20.0%	100.0%

## Household COVID Propinquity

### City \* Household COVID Propinquity Crosstabulation

		Household COVID Propinquity				Total
		Low	Medium	High	Immediate	
City	Virginia Beach	39.2%	30.0%	22.9%	7.9%	100.0%
	Chesapeake	38.8%	38.8%	19.6%	2.9%	100.0%
	Norfolk	39.9%	31.5%	25.4%	3.3%	100.0%
	Newport News	41.2%	28.8%	26.0%	4.0%	100.0%
	Hampton	33.3%	31.6%	29.8%	5.3%	100.0%
	Portsmouth	41.2%	32.0%	21.6%	5.2%	100.0%
	Suffolk	33.5%	31.5%	27.1%	7.9%	100.0%
	Poquoson	48.0%	25.3%	22.7%	4.0%	100.0%
	Accomack	35.9%	26.0%	26.7%	11.5%	100.0%
	Northampton	38.1%	29.3%	26.5%	6.1%	100.0%
Total		38.5%	31.2%	24.6%	5.7%	100.0%

Low-to-Moderate Income (LMI) Household

**City \* Low-to-Moderate Income Household  
Crosstabulation**

		Low-to-Moderate Income Household		
		Low-to-Moderate Income Household	Above Low-to-Moderate Income Household	Total
City	Virginia Beach	48.3%	51.7%	100.0%
	Chesapeake	35.6%	64.4%	100.0%
	Norfolk	52.7%	47.3%	100.0%
	Newport News	53.7%	46.3%	100.0%
	Hampton	49.1%	50.9%	100.0%
	Portsmouth	58.5%	41.5%	100.0%
	Suffolk	43.8%	56.3%	100.0%
	Poquoson	31.0%	69.0%	100.0%
	Accomack	42.2%	57.8%	100.0%
	Northampton	41.8%	58.2%	100.0%
	<b>Total</b>	<b>47.3%</b>	<b>52.7%</b>	<b>100.0%</b>

## Low and Moderate Income Household

### City \* Low and Moderate Income Household Crosstabulation

		Low and Moderate Income Household			
		Low Income Household	Moderate Income Household	Above Low and Moderate Income Household	Total
City	Virginia Beach	29.7%	18.6%	51.7%	100.0%
	Chesapeake	19.4%	16.1%	64.4%	100.0%
	Norfolk	30.9%	21.8%	47.3%	100.0%
	Newport News	37.2%	16.5%	46.3%	100.0%
	Hampton	32.7%	16.4%	50.9%	100.0%
	Portsmouth	32.1%	26.4%	41.5%	100.0%
	Suffolk	25.7%	18.1%	56.3%	100.0%
	Poquoson	15.5%	15.5%	69.0%	100.0%
	Accomack	26.5%	15.7%	57.8%	100.0%
	Northampton	32.7%	9.1%	58.2%	100.0%
Total		29.2%	18.0%	52.7%	100.0%

## Granualted Household Income

### City \* Household Income Crosstabulation

		Household Income							Total
		<25k	25-45k	45-65k	65-85k	85-105k	105-125k	>125k	
City	Virginia Beach	13.5%	16.2%	18.6%	15.9%	13.2%	7.2%	15.3%	100.0%
	Chesapeake	7.8%	11.7%	16.1%	20.0%	12.8%	10.0%	21.7%	100.0%
	Norfolk	11.2%	19.7%	21.8%	16.0%	7.4%	9.0%	14.9%	100.0%
	Newport News	17.0%	20.2%	16.5%	14.9%	12.2%	9.0%	10.1%	100.0%
	Hampton	14.5%	18.2%	16.4%	10.1%	13.8%	10.1%	17.0%	100.0%
	Portsmouth	14.5%	17.6%	26.4%	15.1%	9.4%	7.5%	9.4%	100.0%
	Suffolk	12.5%	13.2%	18.1%	22.2%	10.4%	6.9%	16.7%	100.0%
	Poquoson	3.4%	12.1%	15.5%	13.8%	17.2%	12.1%	25.9%	100.0%
	Accomack	10.8%	15.7%	15.7%	11.8%	15.7%	5.9%	24.5%	100.0%
	Northampton	12.7%	20.0%	9.1%	14.5%	12.7%	11.8%	19.1%	100.0%
Total		12.5%	16.7%	18.0%	15.7%	12.1%	8.6%	16.3%	100.0%

## At or Near Federal Poverty Level

### City \* At or Near Federal Poverty Level Crosstabulation

		At or Near Federal Poverty Level			Total
		Yes	No	Can't Determin	
City	Virginia Beach	6.6%	72.1%	21.3%	100.0%
	Chesapeake	4.0%	59.9%	36.1%	100.0%
	Norfolk	4.7%	62.2%	33.1%	100.0%
	Newport News	10.0%	63.6%	26.4%	100.0%
	Hampton	6.7%	63.6%	29.8%	100.0%
	Portsmouth	7.0%	69.5%	23.5%	100.0%
	Suffolk	6.4%	64.5%	29.1%	100.0%
	Poquoson	1.3%	73.7%	25.0%	100.0%
	Accomack	3.8%	72.2%	24.1%	100.0%
	Northampton	4.7%	67.8%	27.5%	100.0%
Total		6.0%	66.3%	27.7%	100.0%

## Active Duty Military

### City \* Active Duty Military Crosstabulation

		Active Duty Military		Total
		Yes	No	
City	Virginia Beach	13.0%	87.0%	100.0%
	Chesapeake	9.2%	90.8%	100.0%
	Norfolk	5.1%	94.9%	100.0%
	Newport News	8.5%	91.5%	100.0%
	Hampton	8.1%	91.9%	100.0%
	Portsmouth	10.3%	89.7%	100.0%
	Suffolk	5.4%	94.6%	100.0%
	Poquoson	5.3%	94.7%	100.0%
	Accomack	5.3%	94.7%	100.0%
	Northampton	5.5%	94.5%	100.0%
Total		8.3%	91.7%	100.0%

Household Race and/or Ethnicity (Collapsed, Excluding DK & R)

**City \* Household Race and/or Ethnicity Crosstabulation**

		Household Race and/or Ethnicity						
		White	Black	Hispanic	Asian	Mixed	Other	Total
City	Virginia Beach	73.2%	15.1%	2.9%	1.3%	2.6%	4.9%	100.0%
	Chesapeake	66.3%	22.6%	2.8%	2.0%	4.8%	1.6%	100.0%
	Norfolk	57.9%	32.6%	2.9%	0.8%	4.1%	1.7%	100.0%
	Newport News	53.4%	32.3%	4.5%	1.8%	4.9%	3.1%	100.0%
	Hampton	55.3%	34.1%	1.4%		7.2%	1.9%	100.0%
	Portsmouth	57.3%	31.9%	2.2%	2.7%	3.8%	2.2%	100.0%
	Suffolk	66.8%	24.6%	1.1%	0.5%	5.9%	1.1%	100.0%
	Poquoson	90.2%	3.3%		1.6%	4.9%		100.0%
	Accomack	79.8%	14.0%			4.4%	1.8%	100.0%
	Northampton	77.7%	13.8%	1.5%	1.5%	3.1%	2.3%	100.0%
	Total		65.5%	24.1%	2.3%	1.3%	4.4%	2.5%



## Part 13: Adult Disabilities x City (Crosstabulations)

Part 13 revisits many of the previous “Adult Disabilities” variables analyzed in Part 4, but reports these variables by locality, showing the variation across Hampton Roads.

### Activities of Daily Living (ADL)

#### City \* ADL Household Crosstabulation

		ADL Household		Total
		No Adults	One or More Adults	
City	Virginia Beach	78.5%	21.5%	100.0%
	Chesapeake	86.3%	13.7%	100.0%
	Norfolk	84.8%	15.2%	100.0%
	Newport News	85.0%	15.0%	100.0%
	Hampton	81.7%	18.3%	100.0%
	Portsmouth	81.6%	18.4%	100.0%
	Suffolk	90.0%	10.0%	100.0%
	Poquoson	94.6%	5.4%	100.0%
	Accomack	84.1%	15.9%	100.0%
	Northampton	86.1%	13.9%	100.0%
Total		84.2%	15.8%	100.0%

Percent of Household Members with ADL Limitations

**City \* Percent of Household Members with ADL Limitations Crosstabulation**

		Percent of Household Members with ADL Limitations				
		None	Moderate (1-25%)	High (26-99%)	Complete (100%)	Total
City	Virginia Beach	78.2%	3.2%	9.8%	8.8%	100.0%
	Chesapeake	86.1%	3.8%	7.1%	3.0%	100.0%
	Norfolk	84.2%	2.3%	8.5%	5.0%	100.0%
	Newport News	84.5%	3.3%	6.7%	5.4%	100.0%
	Hampton	81.2%	4.2%	8.9%	5.6%	100.0%
	Portsmouth	81.4%	2.7%	8.7%	7.1%	100.0%
	Suffolk	89.7%	1.0%	5.6%	3.6%	100.0%
	Poquoson	94.5%	2.7%	2.7%		100.0%
	Accomack	84.0%	2.4%	8.8%	4.8%	100.0%
	Northampton	85.7%	2.1%	8.6%	3.6%	100.0%
Total		83.8%	2.9%	8.0%	5.3%	100.0%

## Hearing Disability

### City \* Hearing Disability Crosstabulation

		Hearing Disability		Total
		No Adults	One or More Adults	
City	Virginia Beach	82.3%	17.7%	100.0%
	Chesapeake	84.9%	15.1%	100.0%
	Norfolk	82.7%	17.3%	100.0%
	Newport News	89.4%	10.6%	100.0%
	Hampton	80.9%	19.1%	100.0%
	Portsmouth	82.8%	17.2%	100.0%
	Suffolk	84.1%	15.9%	100.0%
	Poquoson	82.7%	17.3%	100.0%
	Accomack	85.8%	14.2%	100.0%
	Northampton	84.1%	15.9%	100.0%
Total		83.9%	16.1%	100.0%

## Sight Disability

### City \* Sight Disability Crosstabulation

		Sight Disability		Total
		No Adults	One or More Adults	
City	Virginia Beach	91.8%	8.2%	100.0%
	Chesapeake	95.2%	4.8%	100.0%
	Norfolk	90.4%	9.6%	100.0%
	Newport News	91.5%	8.5%	100.0%
	Hampton	87.3%	12.7%	100.0%
	Portsmouth	91.7%	8.3%	100.0%
	Suffolk	92.5%	7.5%	100.0%
	Poquoson	94.7%	5.3%	100.0%
	Accomack	92.2%	7.8%	100.0%
	Northampton	90.3%	9.7%	100.0%
Total	91.6%	8.4%	100.0%	

## Cognitive Disability

### City \* Cognitive Disability Crosstabulation

		Cognitive Disability		Total
		No Adults	One or More Adults	
City	Virginia Beach	92.5%	7.5%	100.0%
	Chesapeake	96.3%	3.7%	100.0%
	Norfolk	95.2%	4.8%	100.0%
	Newport News	94.7%	5.3%	100.0%
	Hampton	93.6%	6.4%	100.0%
	Portsmouth	91.3%	8.7%	100.0%
	Suffolk	98.0%	2.0%	100.0%
	Poquoson	98.7%	1.3%	100.0%
	Accomack	92.2%	7.8%	100.0%
	Northampton	94.5%	5.5%	100.0%
Total		94.4%	5.6%	100.0%

## Part 14: Evacuation Out and Sheltering Within the Region x City (Crosstabulations)

Part 14 revisits many of the previous “Evacuation Out and Sheltering Within the Region” variables analyzed in Part 5, but reports these variables by locality, showing the variation across Hampton Roads.

Likely Stay in Hampton Roads (Primary Residence +1)

### City \* Likely Stay in Hampton Roads Crosstabulation

		Likely Stay in Hampton Roads		
		Own Home	Place Other than Own Home, Including Public Shelter	Total
City	Virginia Beach	87.2%	12.8%	100.0%
	Chesapeake	87.4%	12.6%	100.0%
	Norfolk	84.9%	15.1%	100.0%
	Newport News	84.3%	15.7%	100.0%
	Hampton	86.5%	13.5%	100.0%
	Portsmouth	79.4%	20.6%	100.0%
	Suffolk	91.5%	8.5%	100.0%
	Poquoson	89.3%	10.7%	100.0%
	Accomack	87.0%	13.0%	100.0%
	Northampton	84.5%	15.5%	100.0%
	<b>Total</b>	<b>86.1%</b>	<b>13.9%</b>	<b>100.0%</b>

Likely Stay in Hampton Roads (Primary Residence +2)

**City \* Likely Stay in Hampton Roads Crosstabulation**

		Likely Stay in Hampton Roads			
		Own Home	Place Other than Own Home, Excluding Public Shelter	Public Shelter	Total
City	Virginia Beach	87.2%	7.8%	5.0%	100.0%
	Chesapeake	87.4%	9.1%	3.5%	100.0%
	Norfolk	84.9%	11.5%	3.6%	100.0%
	Newport News	84.3%	11.3%	4.3%	100.0%
	Hampton	86.5%	10.4%	3.1%	100.0%
	Portsmouth	79.4%	15.7%	4.9%	100.0%
	Suffolk	91.5%	2.8%	5.7%	100.0%
	Poquoson	89.3%	10.7%		100.0%
	Accomack	87.0%	10.4%	2.6%	100.0%
	Northampton	84.5%	14.3%	1.2%	100.0%
	<b>Total</b>	<b>86.1%</b>	<b>10.0%</b>	<b>3.9%</b>	<b>100.0%</b>

Likely Stay in Hampton Roads (Primary Residence +3)

**City \* Likely Stay in Hampton Roads Crosstabulation**

		Likely Stay in Hampton Roads				Total
		Own Home	Somebody Else's Home	Public Shelter	Place Other than a Home or Shelter	
City	Virginia Beach	87.2%	5.5%	5.0%	2.3%	100.0%
	Chesapeake	87.4%	6.3%	3.5%	2.8%	100.0%
	Norfolk	84.9%	9.4%	3.6%	2.2%	100.0%
	Newport News	84.3%	7.0%	4.3%	4.3%	100.0%
	Hampton	86.5%	6.3%	3.1%	4.2%	100.0%
	Portsmouth	79.4%	4.9%	4.9%	10.8%	100.0%
	Suffolk	91.5%	0.9%	5.7%	1.9%	100.0%
	Poquoson	89.3%	3.6%		7.1%	100.0%
	Accomack	87.0%	7.8%	2.6%	2.6%	100.0%
	Northampton	84.5%	10.7%	1.2%	3.6%	100.0%
Total		86.1%	6.3%	3.9%	3.7%	100.0%



Likely Evacuate Out of Hampton Roads

**City \* Likely Evacuate Out of Hampton Roads  
Crosstabulation**

		Likely Evacuate Out of Hampton Roads		
		Yes	No	Total
City	Virginia Beach	51.9%	48.1%	100.0%
	Chesapeake	50.6%	49.4%	100.0%
	Norfolk	51.6%	48.4%	100.0%
	Newport News	55.6%	44.4%	100.0%
	Hampton	60.3%	39.7%	100.0%
	Portsmouth	57.6%	42.4%	100.0%
	Suffolk	49.2%	50.8%	100.0%
	Poquoson	67.1%	32.9%	100.0%
	Accomack	46.0%	54.0%	100.0%
	Northampton	46.9%	53.1%	100.0%
	<b>Total</b>	<b>53.1%</b>	<b>46.9%</b>	<b>100.0%</b>

## Part 15: Branch 1 (Shelter within Hampton Roads, but not within a Public Shelter) x City (Crosstabulations)

Part 15 revisits many of the previous “Branch 1” variables analyzed in Part 7, but reports these variables by locality, showing the variation across Hampton Roads.

### Reason Not Evacuate: Transportation

#### City \* Reason Not Evacuate: Transportation Crosstabulation

		Reason Not Evacuate: Transportation		
		Yes	No	Total
City	Virginia Beach	7.7%	92.3%	100.0%
	Chesapeake	3.6%	96.4%	100.0%
	Norfolk	8.8%	91.2%	100.0%
	Newport News	6.9%	93.1%	100.0%
	Hampton	9.4%	90.6%	100.0%
	Portsmouth	7.3%	92.7%	100.0%
	Suffolk	8.1%	91.9%	100.0%
	Poquoson		100.0%	100.0%
	Accomack	2.6%	97.4%	100.0%
	Northampton	4.7%	95.3%	100.0%
	<b>Total</b>	<b>6.6%</b>	<b>93.4%</b>	<b>100.0%</b>

Reason Not Evacuate: Care for Another Person

**City \* Reason Not Evacuate: Care for Another Person  
Crosstabulation**

		Reason Not Evacuate: Care for Another Person		
		Yes	No	Total
City	Virginia Beach	21.8%	78.2%	100.0%
	Chesapeake	11.5%	88.5%	100.0%
	Norfolk	15.2%	84.8%	100.0%
	Newport News	18.6%	81.4%	100.0%
	Hampton	21.6%	78.4%	100.0%
	Portsmouth	18.8%	81.3%	100.0%
	Suffolk	13.0%	87.0%	100.0%
	Poquoson	13.8%	86.2%	100.0%
	Accomack	15.8%	84.2%	100.0%
	Northampton	16.9%	83.1%	100.0%
	Total		17.2%	82.8%

Reason Not Evacuate: Job Duties

**City \* Reason Not Evacuate: Job Duties Crosstabulation**

		Reason Not Evacuate: Job Duties		
		Yes	No	Total
City	Virginia Beach	23.6%	76.4%	100.0%
	Chesapeake	25.2%	74.8%	100.0%
	Norfolk	18.8%	81.2%	100.0%
	Newport News	22.6%	77.4%	100.0%
	Hampton	31.6%	68.4%	100.0%
	Portsmouth	19.8%	80.2%	100.0%
	Suffolk	14.9%	85.1%	100.0%
	Poquoson	10.7%	89.3%	100.0%
	Accomack	26.0%	74.0%	100.0%
	Northampton	17.6%	82.4%	100.0%
	<b>Total</b>	<b>22.0%</b>	<b>78.0%</b>	<b>100.0%</b>

Reason Not Evacuate: Care for Pet or Livestock

**City \* Reason Not Evacuate: Care for Pet or Livestock  
Crosstabulation**

		Reason Not Evacuate: Care for Pet or Livestock		
		Yes	No	Total
City	Virginia Beach	22.9%	77.1%	100.0%
	Chesapeake	21.6%	78.4%	100.0%
	Norfolk	14.2%	85.8%	100.0%
	Newport News	19.1%	80.9%	100.0%
	Hampton	17.2%	82.8%	100.0%
	Portsmouth	24.0%	76.0%	100.0%
	Suffolk	18.6%	81.4%	100.0%
	Poquoson	10.3%	89.7%	100.0%
	Accomack	18.7%	81.3%	100.0%
	Northampton	17.6%	82.4%	100.0%
	Total		19.4%	80.6%

Reason Not Evacuate: Concern COVID Exposure

**City \* Reason Not Evacuate: Concern COVID Exposure  
Crosstabulation**

		Reason Not Evacuate: Concern COVID Exposure		
		Yes	No	Total
City	Virginia Beach	23.7%	76.3%	100.0%
	Chesapeake	15.7%	84.3%	100.0%
	Norfolk	29.4%	70.6%	100.0%
	Newport News	24.1%	75.9%	100.0%
	Hampton	15.3%	84.7%	100.0%
	Portsmouth	28.0%	72.0%	100.0%
	Suffolk	21.8%	78.2%	100.0%
	Poquoson	24.1%	75.9%	100.0%
	Accomack	26.7%	73.3%	100.0%
	Northampton	27.1%	72.9%	100.0%
Total		23.3%	76.7%	100.0%

Reason Not Evacuate: COVID is the Primary

**City \* Reason Not Evacuate: COVID is the Primary  
Crosstabulation**

		Reason Not Evacuate: COVID is the Primary		
		Yes	No	Total
City	Virginia Beach	54.0%	46.0%	100.0%
	Chesapeake	66.7%	33.3%	100.0%
	Norfolk	51.2%	48.8%	100.0%
	Newport News	67.9%	32.1%	100.0%
	Hampton	60.0%	40.0%	100.0%
	Portsmouth	60.0%	40.0%	100.0%
	Suffolk	43.5%	56.5%	100.0%
	Poquoson	57.1%	42.9%	100.0%
	Accomack	70.0%	30.0%	100.0%
	Northampton	47.6%	52.4%	100.0%
	<b>Total</b>	<b>57.0%</b>	<b>43.0%</b>	<b>100.0%</b>

Reason Not Go To Public Shelter: Concern COVID Exposure

**City \* Reason Not Go To Public Shelter: Concern COVID Exposure Crosstabulation**

		Reason Not Go To Public Shelter: Concern COVID Exposure		
		Yes	No	Total
City	Virginia Beach	47.0%	53.0%	100.0%
	Chesapeake	29.7%	70.3%	100.0%
	Norfolk	39.0%	61.0%	100.0%
	Newport News	36.8%	63.2%	100.0%
	Hampton	35.7%	64.3%	100.0%
	Portsmouth	40.0%	60.0%	100.0%
	Suffolk	38.2%	61.8%	100.0%
	Poquoson	27.6%	72.4%	100.0%
	Accomack	29.2%	70.8%	100.0%
	Northampton	34.1%	65.9%	100.0%
	<b>Total</b>	<b>37.5%</b>	<b>62.5%</b>	<b>100.0%</b>



Reason Not Go To Public Shelter: COVID is the Primary

**City \* Reason Not Go To Public Shelter: COVID is the Primary Crosstabulation**

		Reason Not Go To Public Shelter: COVID is the Primary		
		Yes	No	Total
City	Virginia Beach	78.9%	21.1%	100.0%
	Chesapeake	66.7%	33.3%	100.0%
	Norfolk	75.0%	25.0%	100.0%
	Newport News	79.5%	20.5%	100.0%
	Hampton	68.6%	31.4%	100.0%
	Portsmouth	70.7%	29.3%	100.0%
	Suffolk	71.8%	28.2%	100.0%
	Poquoson	87.5%	12.5%	100.0%
	Accomack	58.3%	41.7%	100.0%
	Northampton	62.5%	37.5%	100.0%
	Total		72.6%	27.4%

Increases Likelihood Go To Public Shelter: Social Distancing

**City \* Increases Likelihood Go To Public Shelter: Social Distancing Crosstabulation**

		Increases Likelihood Go To Public Shelter: Social Distancing		
		Yes	No	Total
City	Virginia Beach	14.3%	85.7%	100.0%
	Chesapeake	12.7%	87.3%	100.0%
	Norfolk	17.4%	82.6%	100.0%
	Newport News	12.7%	87.3%	100.0%
	Hampton	11.6%	88.4%	100.0%
	Portsmouth	16.0%	84.0%	100.0%
	Suffolk	12.5%	87.5%	100.0%
	Poquoson	3.6%	96.4%	100.0%
	Accomack	21.9%	78.1%	100.0%
	Northampton	12.5%	87.5%	100.0%
	Total		14.2%	85.8%

Increases Likelihood Go To Public Shelter: Vigorous Cleaning

**City \* Increases Likelihood Go To Public Shelter:  
Vigorous Cleaning Crosstabulation**

		Increases Likelihood Go To Public Shelter: Vigorous Cleaning		
		Yes	No	Total
City	Virginia Beach	20.7%	79.3%	100.0%
	Chesapeake	18.2%	81.8%	100.0%
	Norfolk	20.2%	79.8%	100.0%
	Newport News	20.5%	79.5%	100.0%
	Hampton	13.0%	87.0%	100.0%
	Portsmouth	17.8%	82.2%	100.0%
	Suffolk	15.2%	84.8%	100.0%
	Poquoson	3.6%	96.4%	100.0%
	Accomack	21.9%	78.1%	100.0%
	Northampton	13.3%	86.7%	100.0%
Total		17.9%	82.1%	100.0%

Increases Likelihood Go To Public Shelter: Hotel Room

**City \* Increases Likelihood Go To Public Shelter: Hotel Room Crosstabulation**

		Increases Likelihood Go To Public Shelter: Hotel Room		
		Yes	No	Total
City	Virginia Beach	53.1%	46.9%	100.0%
	Chesapeake	41.5%	58.5%	100.0%
	Norfolk	50.4%	49.6%	100.0%
	Newport News	52.2%	47.8%	100.0%
	Hampton	47.9%	52.1%	100.0%
	Portsmouth	39.1%	60.9%	100.0%
	Suffolk	35.7%	64.3%	100.0%
	Poquoson	25.0%	75.0%	100.0%
	Accomack	46.6%	53.4%	100.0%
	Northampton	41.7%	58.3%	100.0%
Total		45.7%	54.3%	100.0%

Household has History of Sheltering in Public Shelter Due to Storm Threat

**City \* Household has History of Sheltering in Public Shelter Due to Storm Threat Crosstabulation**

		Household has History of Sheltering in Public Shelter Due to Storm Threat		
		Yes	No	Total
City	Virginia Beach	5.9%	94.1%	100.0%
	Chesapeake	7.1%	92.9%	100.0%
	Norfolk	2.9%	97.1%	100.0%
	Newport News	7.8%	92.2%	100.0%
	Hampton	6.2%	93.8%	100.0%
	Portsmouth	3.1%	96.9%	100.0%
	Suffolk	2.9%	97.1%	100.0%
	Poquoson		100.0%	100.0%
	Accomack	5.4%	94.6%	100.0%
	Northampton	9.3%	90.7%	100.0%
	Total		5.5%	94.5%

Household has History of Evacuation Out of Region Due to Storm Threat

**City \* Household has History of Evacuation Out of Region Due to Storm Threat Crosstabulation**

		Household has History of Evacuation Out of Region Due to Storm Threat		
		Yes	No	Total
City	Virginia Beach	14.7%	85.3%	100.0%
	Chesapeake	11.4%	88.6%	100.0%
	Norfolk	15.1%	84.9%	100.0%
	Newport News	14.0%	86.0%	100.0%
	Hampton	18.2%	81.8%	100.0%
	Portsmouth	10.3%	89.7%	100.0%
	Suffolk	8.9%	91.1%	100.0%
	Poquoson	37.9%	62.1%	100.0%
	Accomack	20.0%	80.0%	100.0%
	Northampton	12.8%	87.2%	100.0%
	<b>Total</b>	<b>14.5%</b>	<b>85.5%</b>	<b>100.0%</b>

## Part 16: Branch 3 (Evacuation out of the Hampton Roads Region) x City (Crosstabulations)

Part 16 revisits many of the previous “Branch 3” variables analyzed in Part 9, but reports these variables by locality, showing the variation across Hampton Roads.

### Concern about COVID Exposure while Evacuating

#### City \* Concern about COVID Exposure while Evacuating Crosstabulation

		Concern about COVID Exposure while Evacuating			
		Very Concerned	Somewhat Concerned	Not concerned	Total
City	Virginia Beach	38.6%	38.1%	23.3%	100.0%
	Chesapeake	38.6%	28.0%	33.3%	100.0%
	Norfolk	43.2%	32.6%	24.2%	100.0%
	Newport News	42.5%	25.2%	32.3%	100.0%
	Hampton	36.7%	36.7%	26.7%	100.0%
	Portsmouth	38.3%	33.0%	28.7%	100.0%
	Suffolk	38.9%	30.5%	30.5%	100.0%
	Poquoson	23.4%	36.2%	40.4%	100.0%
	Accomack	35.3%	37.3%	27.5%	100.0%
	Northampton	39.7%	20.7%	39.7%	100.0%
	<b>Total</b>	<b>38.7%</b>	<b>32.1%</b>	<b>29.3%</b>	<b>100.0%</b>

Reason Not Go To Public Shelter: Concern COVID Exposure

**City \* Reason Not Go To Public Shelter: Concern COVID Exposure Crosstabulation**

		Reason Not Go To Public Shelter: Concern COVID Exposure		
		Yes	No	Total
City	Virginia Beach	66.9%	33.1%	100.0%
	Chesapeake	60.3%	39.7%	100.0%
	Norfolk	66.4%	33.6%	100.0%
	Newport News	56.6%	43.4%	100.0%
	Hampton	58.1%	41.9%	100.0%
	Portsmouth	69.0%	31.0%	100.0%
	Suffolk	61.7%	38.3%	100.0%
	Poquoson	48.9%	51.1%	100.0%
	Accomack	59.6%	40.4%	100.0%
	Northampton	44.1%	55.9%	100.0%
	<b>Total</b>	<b>60.9%</b>	<b>39.1%</b>	<b>100.0%</b>



Reason Not Go To Public Shelter: COVID is the Primary

**City \* Reason Not Go To Public Shelter: COVID is the Primary Crosstabulation**

		Reason Not Go To Public Shelter: COVID is the Primary		
		Yes	No	Total
City	Virginia Beach	81.4%	18.6%	100.0%
	Chesapeake	77.8%	22.2%	100.0%
	Norfolk	78.7%	21.3%	100.0%
	Newport News	82.4%	17.6%	100.0%
	Hampton	77.1%	22.9%	100.0%
	Portsmouth	72.3%	27.7%	100.0%
	Suffolk	71.9%	28.1%	100.0%
	Poquoson	65.2%	34.8%	100.0%
	Accomack	70.0%	30.0%	100.0%
	Northampton	76.0%	24.0%	100.0%
Total		77.1%	22.9%	100.0%

Increases Likelihood Go To Public Shelter: Social Distancing

**City \* Increases Likelihood Go To Public Shelter: Social Distancing Crosstabulation**

		Increases Likelihood Go To Public Shelter: Social Distancing		
		Yes	No	Total
City	Virginia Beach	43.9%	56.1%	100.0%
	Chesapeake	33.9%	66.1%	100.0%
	Norfolk	34.1%	65.9%	100.0%
	Newport News	31.4%	68.6%	100.0%
	Hampton	31.9%	68.1%	100.0%
	Portsmouth	37.1%	62.9%	100.0%
	Suffolk	30.4%	69.6%	100.0%
	Poquoson	18.2%	81.8%	100.0%
	Accomack	32.7%	67.3%	100.0%
	Northampton	28.1%	71.9%	100.0%
Total		33.9%	66.1%	100.0%

Increases Likelihood Go To Public Shelter: Vigorous Cleaning

**City \* Increases Likelihood Go To Public Shelter:  
Vigorous Cleaning Crosstabulation**

		Increases Likelihood Go To Public Shelter: Vigorous Cleaning		
		Yes	No	Total
City	Virginia Beach	49.1%	50.9%	100.0%
	Chesapeake	41.9%	58.1%	100.0%
	Norfolk	40.3%	59.7%	100.0%
	Newport News	41.1%	58.9%	100.0%
	Hampton	44.2%	55.8%	100.0%
	Portsmouth	39.1%	60.9%	100.0%
	Suffolk	36.7%	63.3%	100.0%
	Poquoson	45.5%	54.5%	100.0%
	Accomack	44.0%	56.0%	100.0%
	Northampton	51.7%	48.3%	100.0%
Total		43.1%	56.9%	100.0%

Increases Likelihood Go To Public Shelter: Hotel Room

**City \* Increases Likelihood Go To Public Shelter: Hotel Room Crosstabulation**

% within City

		Increases Likelihood Go To Public Shelter: Hotel Room		Total
		Yes	No	
City	Virginia Beach	68.3%	31.7%	100.0%
	Chesapeake	63.3%	36.7%	100.0%
	Norfolk	66.9%	33.1%	100.0%
	Newport News	63.5%	36.5%	100.0%
	Hampton	61.7%	38.3%	100.0%
	Portsmouth	67.4%	32.6%	100.0%
	Suffolk	66.3%	33.7%	100.0%
	Poquoson	45.7%	54.3%	100.0%
	Accomack	69.4%	30.6%	100.0%
	Northampton	58.6%	41.4%	100.0%
	Total	64.3%	35.7%	100.0%

Household has History of Sheltering in Public Shelter Due to Storm Threat

**City \* Household has History of Sheltering in Public Shelter Due to Storm Threat Crosstabulation**

		Household has History of Sheltering in Public Shelter Due to Storm Threat		
		Yes	No	Total
City	Virginia Beach	17.9%	82.1%	100.0%
	Chesapeake	11.5%	88.5%	100.0%
	Norfolk	3.0%	97.0%	100.0%
	Newport News	10.9%	89.1%	100.0%
	Hampton	9.8%	90.2%	100.0%
	Portsmouth	11.2%	88.8%	100.0%
	Suffolk	10.5%	89.5%	100.0%
	Poquoson	8.5%	91.5%	100.0%
	Accomack	17.3%	82.7%	100.0%
	Northampton	10.3%	89.7%	100.0%
Total		11.2%	88.8%	100.0%

## Part 17: Common Variable Findings x City (Crosstabulations)

Part 17 revisits many of the previous “Common” variables analyzed in Part 10, but reports these variables by locality, showing the variation across Hampton Roads.

### Enough Cash or Credit to Evacuate

#### City \* Enough Cash or Credit to Evacuate Crosstabulation

		Enough Cash or Credit to Evacuate		Total
		Yes	No	
City	Virginia Beach	80.9%	19.1%	100.0%
	Chesapeake	86.0%	14.0%	100.0%
	Norfolk	82.9%	17.1%	100.0%
	Newport News	82.8%	17.2%	100.0%
	Hampton	80.1%	19.9%	100.0%
	Portsmouth	72.7%	27.3%	100.0%
	Suffolk	83.7%	16.3%	100.0%
	Poquoson	92.6%	7.4%	100.0%
	Accomack	86.3%	13.7%	100.0%
	Northampton	82.5%	17.5%	100.0%
Total		82.3%	17.7%	100.0%

## Lost Wages Impact Upon Rent or Motgage

### City \* Lost Wages Impact Upon Rent or Motgage Crosstabulation

		Lost Wages Impact Upon Rent or Motgage		Total
		Yes	No	
City	Virginia Beach	36.2%	63.8%	100.0%
	Chesapeake	23.3%	76.7%	100.0%
	Norfolk	27.5%	72.5%	100.0%
	Newport News	32.9%	67.1%	100.0%
	Hampton	40.2%	59.8%	100.0%
	Portsmouth	36.4%	63.6%	100.0%
	Suffolk	30.5%	69.5%	100.0%
	Poquoson	10.3%	89.7%	100.0%
	Accomack	26.2%	73.8%	100.0%
	Northampton	23.4%	76.6%	100.0%
Total		30.6%	69.4%	100.0%

Suffered Injury or/and Property Loss

**City \* Suffered Injury or/and Property Loss Crosstabulation**

		Suffered Injury or/and Property Loss				Total
		Suffered Injury	Suffered Property Loss	Suffered Injury & Property Loss	No/Sufferend Neither	
City	Virginia Beach	4.4%	20.0%	3.6%	72.1%	100.0%
	Chesapeake	0.7%	25.8%	1.1%	72.4%	100.0%
	Norfolk	0.4%	26.2%	1.5%	72.0%	100.0%
	Newport News		27.6%	2.0%	70.4%	100.0%
	Hampton	0.9%	26.2%	1.8%	71.1%	100.0%
	Portsmouth	3.1%	28.1%	3.6%	65.3%	100.0%
	Suffolk	1.0%	32.3%	0.5%	66.2%	100.0%
	Poquoson		43.4%	1.3%	55.3%	100.0%
	Accomack	2.3%	30.3%	3.0%	64.4%	100.0%
	Northampton	0.7%	26.7%	0.7%	71.9%	100.0%
Total		1.6%	26.8%	2.0%	69.6%	100.0%



## Suffered Property Loss

### City \* Suffered Property Loss Crosstabulation

		Suffered Property Loss		Total
		Yes	No	
City	Virginia Beach	23.6%	76.4%	100.0%
	Chesapeake	26.9%	73.1%	100.0%
	Norfolk	27.6%	72.4%	100.0%
	Newport News	29.6%	70.4%	100.0%
	Hampton	28.0%	72.0%	100.0%
	Portsmouth	31.6%	68.4%	100.0%
	Suffolk	32.8%	67.2%	100.0%
	Poquoson	44.7%	55.3%	100.0%
	Accomack	33.3%	66.7%	100.0%
	Northampton	27.4%	72.6%	100.0%
Total		28.9%	71.1%	100.0%

## Suffered Injury

### City \* Suffered Injury Crosstabulation

		Suffered Injury		Total
		Yes	No	
City	Virginia Beach	7.9%	92.1%	100.0%
	Chesapeake	1.8%	98.2%	100.0%
	Norfolk	1.8%	98.2%	100.0%
	Newport News	2.0%	98.0%	100.0%
	Hampton	2.7%	97.3%	100.0%
	Portsmouth	6.6%	93.4%	100.0%
	Suffolk	1.5%	98.5%	100.0%
	Poquoson	1.3%	98.7%	100.0%
	Accomack	5.3%	94.7%	100.0%
	Northampton	1.4%	98.6%	100.0%
Total		3.6%	96.4%	100.0%

## COVID Impact Upon Household Income

### City \* COVID Impact Upon Household Income Crosstabulation

		COVID Impact Upon Household Income			
		Decreased	Increased	Stayed About the Same	Total
City	Virginia Beach	24.1%	6.7%	69.2%	100.0%
	Chesapeake	17.2%	6.7%	76.0%	100.0%
	Norfolk	20.2%	5.0%	74.8%	100.0%
	Newport News	24.3%	5.4%	70.3%	100.0%
	Hampton	27.6%	5.0%	67.4%	100.0%
	Portsmouth	23.9%	4.8%	71.3%	100.0%
	Suffolk	15.5%	2.1%	82.5%	100.0%
	Poquoson	16.0%	2.7%	81.3%	100.0%
	Accomack	22.7%	4.7%	72.7%	100.0%
	Northampton	16.9%	4.2%	78.9%	100.0%
	<b>Total</b>	<b>21.5%</b>	<b>5.1%</b>	<b>73.4%</b>	<b>100.0%</b>

Know a Person who has Died from COVID

**City \* Know a Person who has Died from COVID  
Crosstabulation**

		Know a Person who has Died from COVID		
		Yes	No	Total
City	Virginia Beach	27.9%	72.1%	100.0%
	Chesapeake	20.4%	79.6%	100.0%
	Norfolk	27.2%	72.8%	100.0%
	Newport News	26.8%	73.2%	100.0%
	Hampton	31.4%	68.6%	100.0%
	Portsmouth	24.2%	75.8%	100.0%
	Suffolk	31.2%	68.8%	100.0%
	Poquoson	25.3%	74.7%	100.0%
	Accomack	32.0%	68.0%	100.0%
	Northampton	28.8%	71.2%	100.0%
	<b>Total</b>	<b>27.3%</b>	<b>72.7%</b>	<b>100.0%</b>

Know a Person who has been Sick from COVID

**City \* Know a Person who has been Sick from COVID  
Crosstabulation**

		Know a Person who has been Sick from COVID		
		Yes	No	Total
City	Virginia Beach	58.3%	41.7%	100.0%
	Chesapeake	57.5%	42.5%	100.0%
	Norfolk	57.0%	43.0%	100.0%
	Newport News	51.8%	48.2%	100.0%
	Hampton	61.5%	38.5%	100.0%
	Portsmouth	55.9%	44.1%	100.0%
	Suffolk	65.0%	35.0%	100.0%
	Poquoson	48.6%	51.4%	100.0%
	Accomack	58.8%	41.2%	100.0%
	Northampton	58.6%	41.4%	100.0%
Total		57.7%	42.3%	100.0%

Person in Household has been Infected with COVID

**City \* Person in Household has been Infected with COVID  
Crosstabulation**

		Person in Household has been Infected with COVID		
		Yes	No	Total
City	Virginia Beach	14.3%	85.7%	100.0%
	Chesapeake	5.1%	94.9%	100.0%
	Norfolk	5.8%	94.2%	100.0%
	Newport News	7.8%	92.2%	100.0%
	Hampton	8.7%	91.3%	100.0%
	Portsmouth	10.4%	89.6%	100.0%
	Suffolk	12.2%	87.8%	100.0%
	Poquoson	8.1%	91.9%	100.0%
	Accomack	20.0%	80.0%	100.0%
	Northampton	10.3%	89.7%	100.0%
	<b>Total</b>	<b>10.1%</b>	<b>89.9%</b>	<b>100.0%</b>

## Frequency of Street Flooding

### City \* Frequency of Street Flooding Crosstabulation

		Frequency of Street Flooding			Total
		Frequent	Semi-Frequent	Infrequent	
City	Virginia Beach	13.0%	29.5%	57.5%	100.0%
	Chesapeake	7.3%	22.1%	70.6%	100.0%
	Norfolk	16.8%	27.1%	56.1%	100.0%
	Newport News	8.3%	17.5%	74.2%	100.0%
	Hampton	11.1%	30.4%	58.5%	100.0%
	Portsmouth	16.7%	20.8%	62.5%	100.0%
	Suffolk	5.2%	18.0%	76.8%	100.0%
	Poquoson	5.4%	29.7%	64.9%	100.0%
	Accomack	11.8%	30.7%	57.5%	100.0%
	Northampton	6.6%	20.4%	73.0%	100.0%
Total		10.9%	24.6%	64.5%	100.0%

## Part 18: Trust Variables x City (Crosstabulations)

This Part 18 revisits many of the previous “Trust” variables analyzed in Part 11, but reports these variables by locality, showing the variation across Hampton Roads.

These elicited data have been reported three ways:

1. Reporting all eleven scores (0-10),
2. Collapsing these eleven scores into three attributes of low (0-4), middle (5), and high (6-10), and
3. Collapsing these eleven scores into five attributes of no (0), low (1-3), moderate (4-6), high (7-9), and total (10).



## Trust (0-10 Score)

The following crosstabulations report the “Trust for Storm Information” variables using all eleven responses (0-10). These are the raw responses and are not collapsed into attributes.

### Trust for Storm Information: Local News

#### City \* Trust for Storm Information: Local News Crosstabulation

		Trust for Storm Information: Local News											Total
City		No Trust At All (0)	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Total Trust (10)	
Virginia Beach		5.1%	1.6%	1.1%	1.9%	2.1%	9.4%	5.9%	9.7%	20.1%	13.9%	29.2%	100.0%
Chesapeake		3.6%	0.4%	0.7%	1.1%	2.2%	10.2%	2.9%	7.7%	24.1%	9.1%	38.0%	100.0%
Norfolk		4.8%	0.4%	1.8%	1.8%	2.2%	10.3%	4.0%	10.3%	17.6%	8.8%	37.9%	100.0%
Newport News		4.1%	0.4%	1.2%		3.7%	9.4%	4.9%	10.6%	20.8%	10.6%	34.3%	100.0%
Hampton		4.6%	0.9%	1.4%		2.3%	9.2%	4.1%	9.7%	18.4%	12.4%	36.9%	100.0%
Portsmouth		3.2%	1.1%	1.1%	2.2%	1.6%	11.8%	2.7%	10.8%	23.7%	8.6%	33.3%	100.0%
Suffolk		2.5%	0.5%	0.5%	1.5%	2.0%	9.0%	4.0%	8.0%	28.0%	10.5%	33.5%	100.0%
Poquoson		4.0%	2.7%	2.7%			13.3%	2.7%	13.3%	25.3%	9.3%	26.7%	100.0%
Accomack		4.0%	0.8%	2.4%		0.8%	12.8%	6.4%	11.2%	18.4%	15.2%	28.0%	100.0%
Northampton		6.3%	1.4%	0.7%	2.1%	2.1%	12.6%	4.2%	7.0%	22.4%	8.4%	32.9%	100.0%
<b>Total</b>		<b>4.3%</b>	<b>0.9%</b>	<b>1.2%</b>	<b>1.2%</b>	<b>2.1%</b>	<b>10.3%</b>	<b>4.3%</b>	<b>9.6%</b>	<b>21.5%</b>	<b>10.9%</b>	<b>33.7%</b>	<b>100.0%</b>

Trust for Storm Information: Local Elected Officials

**City \* Trust for Storm Information: Local Elected Officials Crosstabulation**

		Trust for Storm Information: Local Elected Officials											Total
City		No Trust At All (0)	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Total Trust (10)	
Virginia Beach		6.9%	2.2%	4.7%	4.2%	5.8%	14.4%	8.0%	9.1%	16.9%	10.0%	17.7%	100.0%
Chesapeake		10.7%	0.7%	3.3%	5.2%	7.0%	17.3%	5.9%	8.5%	15.5%	6.3%	19.6%	100.0%
Norfolk		11.7%	2.3%	4.7%	3.5%	3.5%	17.6%	5.9%	12.9%	15.2%	7.4%	15.2%	100.0%
Newport News		11.8%	1.7%	5.9%	4.6%	4.2%	11.8%	9.7%	9.7%	13.0%	10.5%	17.2%	100.0%
Hampton		13.1%	2.3%	6.1%	3.7%	3.7%	15.4%	7.0%	8.9%	15.9%	8.4%	15.4%	100.0%
Portsmouth		11.6%	4.4%	3.3%	6.1%	4.4%	14.4%	5.5%	10.5%	19.9%	6.6%	13.3%	100.0%
Suffolk		11.2%	2.0%	4.6%	1.0%	2.0%	19.4%	10.7%	10.2%	15.3%	7.1%	16.3%	100.0%
Poquoson		12.3%	2.7%	1.4%	2.7%	5.5%	17.8%	4.1%	15.1%	20.5%	6.8%	11.0%	100.0%
Accomack		11.4%	3.3%	4.1%	5.7%	4.9%	15.4%	5.7%	12.2%	19.5%	8.1%	9.8%	100.0%
Northampton		17.3%	1.4%	5.8%	2.9%	2.9%	21.6%	5.0%	8.6%	13.7%	5.8%	15.1%	100.0%
<b>Total</b>		<b>11.2%</b>	<b>2.2%</b>	<b>4.6%</b>	<b>4.0%</b>	<b>4.5%</b>	<b>16.1%</b>	<b>7.1%</b>	<b>10.1%</b>	<b>16.1%</b>	<b>8.0%</b>	<b>15.9%</b>	<b>100.0%</b>

Trust for Storm Information: Local Emergency Officials

**City \* Trust for Storm Information: Local Emergency Officials Crosstabulation**

		Trust for Storm Information: Local Emergency Officials											Total
City		No Trust At All (0)	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Total Trust (10)	
Virginia Beach		2.5%	0.5%	1.4%	0.5%	1.6%	10.6%	2.5%	10.9%	16.3%	18.8%	34.3%	100.0%
Chesapeake		2.6%	0.4%	0.4%	0.4%	0.7%	7.3%	3.3%	8.8%	20.1%	12.8%	43.2%	100.0%
Norfolk		4.9%	0.4%	0.4%	1.1%	0.4%	7.1%	2.6%	9.0%	19.0%	16.8%	38.4%	100.0%
Newport News		2.9%			2.0%	1.2%	9.0%	1.2%	10.2%	17.2%	14.3%	41.8%	100.0%
Hampton		3.7%	0.5%	1.4%	0.5%	0.5%	6.5%	4.2%	6.1%	17.3%	15.4%	43.9%	100.0%
Portsmouth		3.3%	1.6%	1.1%	1.1%	0.5%	5.4%	5.4%	9.2%	20.1%	14.7%	37.5%	100.0%
Suffolk		2.0%	0.5%	1.0%	1.5%	1.0%	3.0%	6.1%	9.6%	20.8%	14.7%	39.6%	100.0%
Poquoson		5.3%			1.3%	2.7%	9.3%		4.0%	20.0%	20.0%	37.3%	100.0%
Accomack		3.4%	2.5%	1.7%	0.8%	1.7%	8.4%	4.2%	4.2%	22.7%	13.4%	37.0%	100.0%
Northampton		2.8%		0.7%	2.1%	1.4%	9.8%	5.6%	9.8%	23.1%	13.3%	31.5%	100.0%
<b>Total</b>		<b>3.2%</b>	<b>0.6%</b>	<b>0.8%</b>	<b>1.1%</b>	<b>1.1%</b>	<b>7.7%</b>	<b>3.5%</b>	<b>8.8%</b>	<b>19.1%</b>	<b>15.5%</b>	<b>38.7%</b>	<b>100.0%</b>

Trust for Storm Information: State Emergency Officials

**City \* Trust for Storm Information: State Emergency Officials Crosstabulation**

		Trust for Storm Information: State Emergency Officials											Total
City		No Trust At All (0)	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Total Trust (10)	
Virginia Beach		2.7%	0.5%	1.6%	1.6%	1.6%	10.5%	5.4%	11.3%	17.5%	16.7%	30.5%	100.0%
Chesapeake		3.3%	0.7%		1.1%	1.1%	8.4%	5.5%	10.3%	19.4%	12.1%	38.1%	100.0%
Norfolk		5.8%	1.2%	1.2%	0.8%	1.6%	8.5%	1.2%	13.6%	18.6%	14.3%	33.3%	100.0%
Newport News		3.3%		1.7%	0.8%	1.3%	12.1%	3.3%	9.2%	14.6%	16.7%	37.1%	100.0%
Hampton		6.1%		1.4%	0.9%	0.5%	10.8%	4.7%	5.2%	16.5%	15.6%	38.2%	100.0%
Portsmouth		3.3%	2.2%	1.1%	0.6%	2.8%	8.3%	4.4%	7.2%	21.0%	13.8%	35.4%	100.0%
Suffolk		2.5%	2.0%	0.5%		2.0%	8.1%	4.5%	8.1%	22.7%	16.7%	32.8%	100.0%
Poquoson		8.2%			4.1%	1.4%	13.7%	4.1%	8.2%	17.8%	15.1%	27.4%	100.0%
Accomack		2.5%	1.7%	2.5%	0.8%	2.5%	9.9%	4.1%	12.4%	20.7%	9.9%	33.1%	100.0%
Northampton		4.9%	1.4%	0.7%	2.8%	1.4%	10.5%	4.2%	15.4%	19.6%	11.2%	28.0%	100.0%
<b>Total</b>		<b>4.0%</b>	<b>0.9%</b>	<b>1.1%</b>	<b>1.2%</b>	<b>1.5%</b>	<b>9.9%</b>	<b>4.2%</b>	<b>10.1%</b>	<b>18.6%</b>	<b>14.6%</b>	<b>33.9%</b>	<b>100.0%</b>

Trust for Storm Information: Governor

**City \* Trust for Storm Information: Governor Crosstabulation**

		Trust for Storm Information: Governor											Total
City		No Trust At All (0)	One	Two	Three	Four	Five	Six	Seven	Eight	Nine	Total Trust (10)	
Virginia Beach		11.9%	1.6%	5.4%	2.4%	3.0%	8.1%	4.3%	12.2%	14.1%	11.1%	25.9%	100.0%
Chesapeake		16.4%	3.6%	2.2%	1.5%	2.6%	10.9%	5.5%	6.9%	11.3%	11.7%	27.4%	100.0%
Norfolk		10.6%	3.0%	3.0%	1.5%	1.9%	11.3%	4.5%	8.3%	15.1%	12.1%	28.7%	100.0%
Newport News		13.7%	2.6%	3.0%	2.1%	1.3%	10.7%	8.1%	7.7%	15.0%	11.5%	24.4%	100.0%
Hampton		13.9%	1.9%	3.8%	1.4%	1.9%	9.1%	3.8%	6.2%	16.7%	13.9%	27.3%	100.0%
Portsmouth		10.6%	2.2%	5.0%	4.4%	4.4%	8.3%	5.6%	8.3%	17.8%	7.8%	25.6%	100.0%
Suffolk		12.3%	5.6%	4.6%	2.1%	3.6%	8.2%	4.6%	8.2%	15.9%	12.3%	22.6%	100.0%
Poquoson		13.3%	8.0%	2.7%	2.7%	1.3%	14.7%	9.3%	4.0%	10.7%	13.3%	20.0%	100.0%
Accomack		10.6%	3.3%	4.9%	0.8%	4.9%	12.2%	7.3%	8.9%	10.6%	8.9%	27.6%	100.0%
Northampton		19.0%	1.4%	5.6%	0.7%	4.2%	9.2%	4.9%	9.2%	12.7%	8.5%	24.6%	100.0%
<b>Total</b>		<b>13.1%</b>	<b>3.0%</b>	<b>4.0%</b>	<b>2.0%</b>	<b>2.8%</b>	<b>9.9%</b>	<b>5.4%</b>	<b>8.5%</b>	<b>14.3%</b>	<b>11.2%</b>	<b>25.9%</b>	<b>100.0%</b>

## Trust (Above/Below Middle)

The following crosstabulations report the “Trust for Storm Information” variables collapsing these eleven scores into three attributes of low (0-4), middle (5), and high (6-10).

### Trust for Storm Information: Local News

#### City \* Trust for Storm Information: Local News Crosstabulation

		Trust for Storm Information: Local News			
		Lower Trust (Below Middle)	Middle Trust (Five)	Higher Trust (Above Middle)	Total
City	Virginia Beach	11.8%	9.4%	78.8%	100.0%
	Chesapeake	8.0%	10.2%	81.8%	100.0%
	Norfolk	11.0%	10.3%	78.7%	100.0%
	Newport News	9.4%	9.4%	81.2%	100.0%
	Hampton	9.2%	9.2%	81.6%	100.0%
	Portsmouth	9.1%	11.8%	79.0%	100.0%
	Suffolk	7.0%	9.0%	84.0%	100.0%
	Poquoson	9.3%	13.3%	77.3%	100.0%
	Accomack	8.0%	12.8%	79.2%	100.0%
	Northampton	12.6%	12.6%	74.8%	100.0%
	Total		9.7%	10.3%	80.0%

Trust for Storm Information: Local Elected Officials

**City \* Trust for Storm Information: Local Elected Officials  
Crosstabulation**

		Trust for Storm Information: Local Elected Officials			
		Lower Trust (Below Middle)	Middle Trust (Five)	Higher Trust (Above Middle)	Total
City	Virginia Beach	23.8%	14.4%	61.8%	100.0%
	Chesapeake	26.9%	17.3%	55.7%	100.0%
	Norfolk	25.8%	17.6%	56.6%	100.0%
	Newport News	28.2%	11.8%	60.1%	100.0%
	Hampton	29.0%	15.4%	55.6%	100.0%
	Portsmouth	29.8%	14.4%	55.8%	100.0%
	Suffolk	20.9%	19.4%	59.7%	100.0%
	Poquoson	24.7%	17.8%	57.5%	100.0%
	Accomack	29.3%	15.4%	55.3%	100.0%
	Northampton	30.2%	21.6%	48.2%	100.0%
	<b>Total</b>	<b>26.6%</b>	<b>16.1%</b>	<b>57.3%</b>	<b>100.0%</b>

Trust for Storm Information: Local Emergency Officials

**City \* Trust for Storm Information: Local Emergency Officials  
Crosstabulation**

		Trust for Storm Information: Local Emergency Officials			
		Lower Trust (Below Middle)	Middle Trust (Five)	Higher Trust (Above Middle)	Total
City	Virginia Beach	6.5%	10.6%	82.8%	100.0%
	Chesapeake	4.4%	7.3%	88.3%	100.0%
	Norfolk	7.1%	7.1%	85.8%	100.0%
	Newport News	6.1%	9.0%	84.8%	100.0%
	Hampton	6.5%	6.5%	86.9%	100.0%
	Portsmouth	7.6%	5.4%	87.0%	100.0%
	Suffolk	6.1%	3.0%	90.9%	100.0%
	Poquoson	9.3%	9.3%	81.3%	100.0%
	Accomack	10.1%	8.4%	81.5%	100.0%
	Northampton	7.0%	9.8%	83.2%	100.0%
	<b>Total</b>	<b>6.7%</b>	<b>7.7%</b>	<b>85.6%</b>	<b>100.0%</b>



Trust for Storm Information: State Emergency Officials

**City \* Trust for Storm Information: State Emergency Officials  
Crosstabulation**

		Trust for Storm Information: State Emergency Officials			
		Lower Trust (Below Middle)	Middle Trust (Five)	Higher Trust (Above Middle)	Total
City	Virginia Beach	8.1%	10.5%	81.4%	100.0%
	Chesapeake	6.2%	8.4%	85.3%	100.0%
	Norfolk	10.5%	8.5%	81.0%	100.0%
	Newport News	7.1%	12.1%	80.8%	100.0%
	Hampton	9.0%	10.8%	80.2%	100.0%
	Portsmouth	9.9%	8.3%	81.8%	100.0%
	Suffolk	7.1%	8.1%	84.8%	100.0%
	Poquoson	13.7%	13.7%	72.6%	100.0%
	Accomack	9.9%	9.9%	80.2%	100.0%
	Northampton	11.2%	10.5%	78.3%	100.0%
	<b>Total</b>	<b>8.7%</b>	<b>9.9%</b>	<b>81.4%</b>	<b>100.0%</b>

Trust for Storm Information: Governor

**City \* Trust for Storm Information: Governor Crosstabulation**

		Trust for Storm Information: Governor			
		Lower Trust (Below Middle)	Middle Trust (Five)	Higher Trust (Above Middle)	Total
City	Virginia Beach	24.3%	8.1%	67.6%	100.0%
	Chesapeake	26.3%	10.9%	62.8%	100.0%
	Norfolk	20.0%	11.3%	68.7%	100.0%
	Newport News	22.6%	10.7%	66.7%	100.0%
	Hampton	23.0%	9.1%	67.9%	100.0%
	Portsmouth	26.7%	8.3%	65.0%	100.0%
	Suffolk	28.2%	8.2%	63.6%	100.0%
	Poquoson	28.0%	14.7%	57.3%	100.0%
	Accomack	24.4%	12.2%	63.4%	100.0%
	Northampton	31.0%	9.2%	59.9%	100.0%
Total		24.9%	9.9%	65.3%	100.0%

## Trust (Low to High)

The following crosstabulations report the “Trust for Storm Information” variables collapsing these eleven scores into five attributes of no (0), low (1-3), moderate (4-6), high (7-9), and total (10).

### Trust for Storm Information: Local News

#### City \* Trust for Storm Information: Local News Crosstabulation

		Trust for Storm Information: Local News					
		No Trust	Low Trust	Moderate Trust	High Trust	Total Trust	Total
City	Virginia Beach	5.1%	4.6%	17.4%	43.7%	29.2%	100.0%
	Chesapeake	3.6%	2.2%	15.3%	40.9%	38.0%	100.0%
	Norfolk	4.8%	4.0%	16.5%	36.8%	37.9%	100.0%
	Newport News	4.1%	1.6%	18.0%	42.0%	34.3%	100.0%
	Hampton	4.6%	2.3%	15.7%	40.6%	36.9%	100.0%
	Portsmouth	3.2%	4.3%	16.1%	43.0%	33.3%	100.0%
	Suffolk	2.5%	2.5%	15.0%	46.5%	33.5%	100.0%
	Poquoson	4.0%	5.3%	16.0%	48.0%	26.7%	100.0%
	Accomack	4.0%	3.2%	20.0%	44.8%	28.0%	100.0%
	Northampton	6.3%	4.2%	18.9%	37.8%	32.9%	100.0%
Total		4.3%	3.3%	16.8%	41.9%	33.7%	100.0%

Trust for Storm Information: Local Elected Officials

**City \* Trust for Storm Information: Local Elected Officials Crosstabulation**

		Trust for Storm Information: Local Elected Officials					
		No Trust	Low Trust	Moderate Trust	High Trust	Total Trust	Total
City	Virginia Beach	6.9%	11.1%	28.3%	36.0%	17.7%	100.0%
	Chesapeake	10.7%	9.2%	30.3%	30.3%	19.6%	100.0%
	Norfolk	11.7%	10.5%	27.0%	35.5%	15.2%	100.0%
	Newport News	11.8%	12.2%	25.6%	33.2%	17.2%	100.0%
	Hampton	13.1%	12.1%	26.2%	33.2%	15.4%	100.0%
	Portsmouth	11.6%	13.8%	24.3%	37.0%	13.3%	100.0%
	Suffolk	11.2%	7.7%	32.1%	32.7%	16.3%	100.0%
	Poquoson	12.3%	6.8%	27.4%	42.5%	11.0%	100.0%
	Accomack	11.4%	13.0%	26.0%	39.8%	9.8%	100.0%
	Northampton	17.3%	10.1%	29.5%	28.1%	15.1%	100.0%
Total		11.2%	10.8%	27.8%	34.3%	15.9%	100.0%

Trust for Storm Information: Local Emergency Officials

**City \* Trust for Storm Information: Local Emergency Officials Crosstabulation**

		Trust for Storm Information: Local Emergency Officials					
		No Trust	Low Trust	Moderate Trust	High Trust	Total Trust	Total
City	Virginia Beach	2.5%	2.5%	14.7%	46.0%	34.3%	100.0%
	Chesapeake	2.6%	1.1%	11.4%	41.8%	43.2%	100.0%
	Norfolk	4.9%	1.9%	10.1%	44.8%	38.4%	100.0%
	Newport News	2.9%	2.0%	11.5%	41.8%	41.8%	100.0%
	Hampton	3.7%	2.3%	11.2%	38.8%	43.9%	100.0%
	Portsmouth	3.3%	3.8%	11.4%	44.0%	37.5%	100.0%
	Suffolk	2.0%	3.0%	10.2%	45.2%	39.6%	100.0%
	Poquoson	5.3%	1.3%	12.0%	44.0%	37.3%	100.0%
	Accomack	3.4%	5.0%	14.3%	40.3%	37.0%	100.0%
	Northampton	2.8%	2.8%	16.8%	46.2%	31.5%	100.0%
Total		3.2%	2.4%	12.2%	43.4%	38.7%	100.0%

Trust for Storm Information: State Emergency Officials

**City \* Trust for Storm Information: State Emergency Officials Crosstabulation**

		Trust for Storm Information: State Emergency Officials					
City		No Trust	Low Trust	Moderate Trust	High Trust	Total Trust	Total
Virginia Beach		2.7%	3.8%	17.5%	45.6%	30.5%	100.0%
Chesapeake		3.3%	1.8%	15.0%	41.8%	38.1%	100.0%
Norfolk		5.8%	3.1%	11.2%	46.5%	33.3%	100.0%
Newport News		3.3%	2.5%	16.7%	40.4%	37.1%	100.0%
Hampton		6.1%	2.4%	16.0%	37.3%	38.2%	100.0%
Portsmouth		3.3%	3.9%	15.5%	42.0%	35.4%	100.0%
Suffolk		2.5%	2.5%	14.6%	47.5%	32.8%	100.0%
Poquoson		8.2%	4.1%	19.2%	41.1%	27.4%	100.0%
Accomack		2.5%	5.0%	16.5%	43.0%	33.1%	100.0%
Northampton		4.9%	4.9%	16.1%	46.2%	28.0%	100.0%
<b>Total</b>		<b>4.0%</b>	<b>3.2%</b>	<b>15.6%</b>	<b>43.3%</b>	<b>33.9%</b>	<b>100.0%</b>

Trust for Storm Information: Governor

**City \* Trust for Storm Information: Governor Crosstabulation**

		Trust for Storm Information: Governor					
		No Trust	Low Trust	Moderate Trust	High Trust	Total Trust	Total
City	Virginia Beach	11.9%	9.5%	15.4%	37.3%	25.9%	100.0%
	Chesapeake	16.4%	7.3%	19.0%	29.9%	27.4%	100.0%
	Norfolk	10.6%	7.5%	17.7%	35.5%	28.7%	100.0%
	Newport News	13.7%	7.7%	20.1%	34.2%	24.4%	100.0%
	Hampton	13.9%	7.2%	14.8%	36.8%	27.3%	100.0%
	Portsmouth	10.6%	11.7%	18.3%	33.9%	25.6%	100.0%
	Suffolk	12.3%	12.3%	16.4%	36.4%	22.6%	100.0%
	Poquoson	13.3%	13.3%	25.3%	28.0%	20.0%	100.0%
	Accomack	10.6%	8.9%	24.4%	28.5%	27.6%	100.0%
	Northampton	19.0%	7.7%	18.3%	30.3%	24.6%	100.0%
Total		13.1%	9.0%	18.1%	34.0%	25.9%	100.0%

# Appendix A Survey Instrument

## Introduction

Hello, my name is \$I and I'm calling on behalf of Old Dominion University and the Virginia Department of Emergency Management. We are calling to interview you about this hurricane season and your thoughts about evacuation and sheltering. Your experiences can help officials better prepare. May I please speak to a household member who is at least 18 years old? Any experiences you share with us will remain completely confidential and your participation is voluntary. Do you have time to complete the interview with me now?

## **COMMON (C)**

Let's begin by talking about what you might do this Hurricane Season.

### CQ1

Currently, in this Hurricane Season, if a significant hurricane were to head for Hampton Roads, then would your household likely evacuate out of the Hampton Roads region?

- Yes ..... 01 GO TO BRANCH 3
- No ..... 02
- Don't know ..... 88
- Refuse ..... 99

### CQ2

Since your household is not likely to evacuate out of the region, what then will your household likely do? Will you: Stay in your home, Stay at somebody else's home, Go to a public shelter, or something else?

- Stay in own home ..... 01 GO TO BRANCH 1
- Stay in somebody else's home..... 02 GO TO BRANCH 1
- Go to a public shelter..... 03 GO TO BRANCH 2
  - Other: Military facility/base/asset..... 04 GO TO BRANCH 1
  - Other: Work-related facility (private/nonprofit)..... 05 GO TO BRANCH 1
  - Other: Work-related facility (government)..... 06 GO TO BRANCH 1
  - Other: Work-related facility (non-specific) ..... 07 GO TO BRANCH 1
  - Other: Hospital/medical facility..... 08 GO TO BRANCH 1
  - Other: Church/private school/nonprofit facility..... 09 GO TO BRANCH 1
  - Other..... OPEN GO TO BRANCH 1
- Don't know ..... 88
- Refuse ..... 99

## **BRANCH 1 (B1)** ("Stay in a Home" Branch)

### B1Q1

Tell me, yes or no, is one of the reasons your household is unlikely to evacuate out of the region is not having reliable transportation?

- Yes..... 01
- No ..... 02
- Don't know ..... 88
- Refuse ..... 99

### B1Q2

Is one of the reasons your household is unlikely to evacuate out of the region is to stay and take care of somebody else who does not want to leave or cannot leave the area?

- Yes..... 01
- No ..... 02
- Don't know ..... 88
- Refuse ..... 99



B1Q3

Is one of the reasons your household is unlikely to evacuate out of the region is that somebody in your home is being required to remain in the region to do a job?

Yes.....	01
No .....	02
Don't know .....	88
Refuse.....	99

B1Q4

Is one of the reasons your household is unlikely to evacuate out of the region is to care for a pet or livestock?

Yes.....	01
No .....	02
Don't know .....	88
Refuse.....	99

B1Q5

Is one of the reasons your household is unlikely to evacuate out of the region is concern about exposure to COVID?

Yes.....	01
No .....	02 SKIP TO B1Q7
Don't know .....	88
Refuse.....	99

B1Q6

Among all the reasons not to evacuate, would you say COVID is the PRIMARY reason your household is not likely to evacuate out of the region?

Yes.....	01
No .....	02
Don't know .....	88
Refuse.....	99

B1Q7

Your evacuation plan suggests you are unlikely to use a public shelter, tell me, is exposure to COVID one of the reasons for not going to a public shelter?

Yes.....	01
No .....	02 SKIP TO B1Q9
Don't know .....	88
Refuse.....	99

B1Q8

Among all the reasons not to go to a public shelter, would you say COVID is the PRIMARY reason you are not going to a public shelter?

Yes.....	01
No .....	02
Don't know .....	88
Refuse.....	99

B1Q9

If you knew the number of people allowed into a public shelter would be reduced due to social distancing, would this increase the likelihood you would use a public shelter?

- Yes..... 01
- No ..... 02
- Don't know ..... 88
- Refuse..... 99

B1Q10

If you knew regular, vigorous cleaning schedules are to be used within public shelters, would this increase the likelihood you would use a public shelter?

- Yes..... 01
- No ..... 02
- Don't know ..... 88
- Refuse..... 99

B1Q11

If you were provided by your city a hotel room as a shelter, rather than a centralized place such as a school shelter, would this increase the likelihood you would use a public shelter?

- Yes..... 01
- No ..... 02
- Don't know ..... 88
- Refuse..... 99

B1Q12

In the past, did you or your household ever shelter in a public shelter because of a storm?

- Yes..... 01
- No ..... 02
- Don't know ..... 88
- Refuse..... 99

B1Q13

In the past, did you or your household ever evacuate out of the region because of a storm?

- Yes..... 01 GO TO CQ3
- No ..... 02 GO TO CQ3
- Don't know ..... 88 GO TO CQ3
- Refuse..... 99 GO TO CQ3

**BRANCH 2 (B2)** (“Public Shelter” Branch)

B2Q1

Since you say your household is likely to go to a public shelter, how concerned are you about exposure to COVID while sheltering in the public shelter, very concerned, somewhat concerned, or not concerned?

- Very Concerned..... 01
- Somewhat Concerned..... 02
- Not Concerned..... 03
- Don't know ..... 88
- Refuse..... 99

B2Q2

Is one of the reasons your household is unlikely to evacuate out of the region is not having reliable transportation?

- Yes..... 01
- No ..... 02
- Don't know ..... 88
- Refuse..... 99

B2Q3

Is one of the reasons your household is unlikely to evacuate out of the region is to stay and take care of somebody else who does not want to leave or cannot leave the area?

- Yes..... 01
- No ..... 02
- Don't know ..... 88
- Refuse..... 99

B2Q4

Is one of the reasons your household is unlikely to evacuate out of the region is that a house member is essential personnel that must remain in the region to do a job?

- Yes..... 01
- No ..... 02
- Don't know ..... 88
- Refuse..... 99

B2Q5

Is one of the reasons your household is unlikely to evacuate out of the region is concern about exposure to COVID?

- Yes..... 01
- No ..... 02 SKIP TO B2Q7
- Don't know ..... 88
- Refuse..... 99

B2Q6

Among all the reasons not to evacuate, would you say COVID is the PRIMARY reason your household is not likely to evacuate out of the region?

- Yes..... 01
- No ..... 02
- Don't know ..... 88
- Refuse..... 99

B2Q7

If you were offered a free hotel room within Hampton Roads as a public shelter, would this increase the likelihood you will use a public shelter?

- Yes..... 01
- No ..... 02
- Don't know ..... 88
- Refuse..... 99

B2Q8

In the past, did you or your household ever *evacuate out of the region* because of a storm?

- Yes..... 01
- No ..... 02
- Don't know ..... 88
- Refuse..... 99

B2Q9

In the past, did you or your household ever *shelter* in a public shelter because of a storm?

- Yes..... 01 GO TO CQ3
- No ..... 02 GO TO CQ3
- Don't know ..... 88 GO TO CQ3
- Refuse..... 99 GO TO CQ3

**BRANCH 3 (B3)** (“Evacuation” Branch)

B3Q1

Since you say your household is likely to evacuate, how concerned are you about exposure to COVID while evacuating, very concerned, somewhat concerned, or not all that concerned?

- Very Concerned..... 01
- Somewhat Concerned ..... 02
- Not all that Concerned ..... 03
- Don't know ..... 88
- Refuse..... 99

B3Q2

Your indication that you are likely to evacuate suggests you are unlikely to use a public shelter, tell me, is exposure to COVID one of the reasons for not going to a public shelter?

- Yes..... 01
- No ..... 02 SKIP TO B3Q4
- Don't know ..... 88
- Refuse..... 99

B3Q3

Among all the reasons *not* to go to a public shelter, would you say COVID is the PRIMARY reason you are not going to a public shelter?

- Yes..... 01
- No ..... 02
- Don't know ..... 88
- Refuse..... 99

B3Q4

If you knew the number of people allowed into a public shelter would be reduced due to social distancing, would this increase the likelihood you would use a public shelter?

- Yes..... 01
- No ..... 02
- Don't know ..... 88
- Refuse..... 99

B3Q5

If you knew regular, vigorous cleaning schedules are to be used within the public shelter, would this increase the likelihood you would use a public shelter?

- Yes..... 01
- No ..... 02
- Don't know ..... 88
- Refuse..... 99

B3Q6

If you were offered a free hotel room within Hampton Roads as a shelter, would this change the likelihood of your household evacuating out of the region?

- Yes..... 01
- No ..... 02
- Don't know ..... 88
- Refuse..... 99

B3Q7

In the past, did you or your household ever *shelter* in a public shelter because of a storm?

- Yes..... 01
- No ..... 02
- Don't know ..... 88
- Refuse..... 99

**COMMON (C)**

CQ3

In this Hurricane Season, if your household had to evacuate out of the region for five days, does your household have enough cash or credit cards to support everyone in the household outside the region for five days including the cost of gas, food, and lodging?

- Yes..... 01
- No ..... 02
- Don't know ..... 88
- Refuse..... 99

CQ4

If your household were to lose a week's pay due to a storm, would that cause difficulty for you in making the next month's rent or mortgage payment?

- Yes..... 01
- No ..... 02
- Don't know ..... 88
- Refuse..... 99

CQ5

In any past severe weather events, have you or a family member suffered any injuries or property loss? Which type?

- Suffered injury..... 01
- Property loss ..... 02
- Both (injury & property loss) ..... 03
- No ..... 04
- Don't know ..... 88
- Refuse..... 99

CQ6

Has your overall household income decreased, increased, or stayed about the same due to COVID?

Decreased .....	01
Increased.....	02
Stayed About Same .....	03
Don't know .....	88
Refuse.....	99

CQ7

Do you or somebody in your household personally know a person who has died from COVID?

Yes.....	01
No .....	02
Don't know .....	88
Refuse.....	99

CQ8

Do you or somebody in your household personally know a person who has been sick with COVID but has not died?

Yes.....	01	
No .....	02	SKIP TO CQ10
Don't know .....	88	
Refuse.....	99	

CQ9

Has any member of your household been infected with COVID?

Yes.....	01
No .....	02
Don't know .....	88
Refuse.....	99

Now I am going to ask who you can trust for information about a storm heading towards Hampton Roads. Tell me, on a scale from zero to ten, with ten being total trust and zero being no trust at all, how much you trust the following persons.

	(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	Don't know (88)	Refuse (99)
Your local news? «CQ10»	•	•	•	•	•	•	•	•	•	•	•	•	•
Your local elected officials? «CQ11»	•	•	•	•	•	•	•	•	•	•	•	•	•
Your local emergency officials? «CQ12»	•	•	•	•	•	•	•	•	•	•	•	•	•
Your state emergency officials? «CQ13»	•	•	•	•	•	•	•	•	•	•	•	•	•
The Governor? «CQ14»	•	•	•	•	•	•	•	•	•	•	•	•	•

Now we would like to ask you a few questions about yourself so we know we are getting views from all types of people and families from across Hampton Roads.

**CQ15**

How many years has your household lived in Hampton Roads?

Less than 1 year .....	0
YEARS .....	1 – 87
Don't know .....	88
Refuse .....	99

**CQ16**

Are you or anyone in your household active duty military?

Yes.....	01
No .....	02
Don't know .....	88
Refuse .....	99

**CQ17**

How often do either the street in front of your home or streets very near your home flood. More than once a month, once a month, couple of times a year, once a year, once every couple of years, or rarely if ever?

More than once a month .....	01
Once a month.....	02
Couple times a year .....	03
Once a year .....	04
Once every couple of years.....	05
Rarely, if ever .....	06
Don't know .....	88
Refused .....	99

State emergency planners want to know where you are located as well as your household makeup for storm assistance purposes only. We assure you this information is strictly confidential.

CQ18a

Could you tell me what street you live on? Just the street name please. We don't need the number.

PLEASE CONFIRM THE STREET SPELLING IS CORRECT

Enter Street Name..... TEXT ONLY  
Don't know ..... 88  
Refuse ..... 99

CQ18b

What is the nearest cross street to your house?

PLEASE CONFIRM THE STREET SPELLING IS CORRECT

Enter Cross Street Name..... TEXT ONLY  
Don't know ..... 88  
Refuse ..... 99

CQ19

The government has established evacuation zones A, B, C, and D in your city. Some areas may not be in an evacuation zone. Do you know which, if at all, evacuation zone your house is in?

Zone A ..... 01  
Zone B ..... 02  
Zone C ..... 03  
Zone D ..... 04  
Not in an Evac Zone ..... 05  
Don't know/Not Sure ..... 88  
Refuse ..... 99

CQ20

How many people, including yourself, live in your household?

Enter Number ..... 1-20 IF 1, SKIP TO CQ23  
Don't know ..... 88  
Refuse ..... 99

CQ21

How many children under 18 live in your household?

Enter Number ..... 0-10  
Don't know ..... 88  
Refuse ..... 99

CQ22 Ask only ask if CQ20 = 3 or more

Does your household, under one roof, include both grandparents and grandkids?

Yes ..... 01  
No ..... 02  
Don't know ..... 88  
Refuse ..... 99



Now I have a few questions about members of your household who may need assistance during the time of the storm.

CQ23

How many ADULTS living in your home are dependent upon others to help with normal daily activities such as bathing, getting dressed, feeding, or following medication schedules?

Enter Number ..... 0-5  
Don't know ..... 88  
Refuse ..... 99

CQ24

How many ADULTS in your household have a hearing disability?

Enter Number ..... 0-5  
Don't know ..... 88  
Refuse ..... 99

CQ25

How many ADULTS in your household have a seeing disability that interferes with normal daily activities?

Enter Number ..... 0-5  
Don't know ..... 88  
Refuse ..... 99

CQ26

How many ADULTS in your household have a limiting mental or cognitive disability such as dementia or Alzheimer's?

Enter Number ..... 0-5  
Don't know ..... 88  
Refuse ..... 99

CQ27 Ask only ask if CQ21 = 1 or more

Are there any severely disabled or handicapped CHILDREN within your household?

Yes..... 01  
No ..... 02  
Don't know ..... 88  
Refuse ..... 99

CQ28

How would you describe the race or ethnicity of your household?

**DO NOT READ**

White .....	01
Anglo .....	02
European.....	03
Caucasian.....	04
North African.....	05
Middle Eastern.....	06
African American .....	07
Black.....	08
Saharan or Sub-Saharan African .....	09
Caribbean.....	10
Islands.....	11
American Indian .....	12
Central American.....	13
Alaskan Native .....	14
Asian.....	15
Far Eastern.....	16
Southeastern Asian .....	17
Subcontinent Indian.....	18
Filipino .....	19
Native Hawaiian .....	20
Pacific Islander .....	21
Hispanic.....	22
Latino.....	23
Latina .....	24
Latinx.....	25
Other .....	Open
Don't Know .....	88
Refuse.....	99

CQ29

What is your annual household income? I will read a list and you can stop me when I get to the category that includes your household income.

Would you say, less than \$10,000 .....	01
\$10,001 up to \$25,000 .....	02
\$25,001 up to \$35,000 .....	03
\$35,001 up to \$45,000 .....	04
\$45,001 up to \$55,000 .....	05
\$55,001 up to \$65,000 .....	06
\$65,001 up to \$75,000 .....	07
\$75,001 up to \$85,000 .....	08
\$85,001 up to \$95,000 .....	09
\$95,001 up to \$105,000 .....	10
\$105,001 up to \$115,000 .....	11
\$115,001 up to \$125,000 .....	12
More than \$125,000.....	13
Don't know .....	88
Refuse.....	99

CQ30

And now the last question. What is your gender?

Female .....	01
Male.....	02
Transgender .....	03
Other .....	04
Don't know .....	88
Refuse.....	99

Thank you so much for your time and participating in our interview. Have a good evening.

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