

WEBVTT

1 00:00:00.000 --> 00:00:01.290 <v Dr. Chen>Hi everyone thanks for coming.</v>  
2 00:00:01.290 --> 00:00:04.438 And this will be  
3 00:00:04.438 --> 00:00:09.200 our last seminar of this Spring semester (indistinct)  
4 00:00:09.200 --> 00:00:13.560 in the house and I'm very pleased to introduce you  
5 00:00:13.560 --> 00:00:16.873 to our today's speaker, Dr. Jaime Madrigano.  
6 00:00:18.053 --> 00:00:22.200 Dr. Madrigano is currently associate professor  
7 00:00:22.200 --> 00:00:24.925 at Departments of house and engineering  
8 00:00:24.925 --> 00:00:29.442 at John Hopkins Bloomberg state.  
9 00:00:29.442 --> 00:00:33.472 Jaime has made her research focus is environmental  
10 00:00:33.472 --> 00:00:35.446 and social determinants of health,  
11 00:00:35.446 --> 00:00:38.550 improving climate change and all environmental  
12 00:00:38.550 --> 00:00:43.550 and the drilling part is abcess on the environmental justice  
13 00:00:44.460 --> 00:00:47.460 Jaime uses logical method to report policy  
14 00:00:47.460 --> 00:00:51.570 her research was informing the development  
15 00:00:51.570 --> 00:00:54.877 of the 2017 New York City meters  
16 00:00:54.877 --> 00:00:57.410 \$106 million here adaptation,  
17 00:00:58.770 --> 00:01:01.740 which I talk a lot about in my own class.  
18 00:01:01.740 --> 00:01:06.574 So you'll see to see behind the core neighborhoods  
19 00:01:06.574 --> 00:01:08.407 New York City project,  
20 00:01:09.255 --> 00:01:13.255 she also serves on the USEBA board of counselors  
21 00:01:14.794 --> 00:01:17.294 and the International Society.  
22 00:01:20.317 --> 00:01:22.485 <v ->It sounds like they're having a hard time hearing you.</v>  
23 00:01:22.485 --> 00:01:24.750 <v ->Oh, if I'm going to wait,</v>  
24 00:01:24.750 --> 00:01:26.403 can you hear us now?

25 00:01:27.900 --> 00:01:29.400 <v Mauro>That's better, Kai thank you.</v>

26 00:01:29.400 --> 00:01:31.748 <v ->Okay then maybe you need to stay here.</v>

27 00:01:31.748 --> 00:01:32.907 <v ->Okay that's okay.</v>

28 00:01:32.907 --> 00:01:35.609 <v ->So without further ado,</v>

29 00:01:35.609 --> 00:01:38.026 lets welcome Dr. J Madrigano.

30 00:01:42.310 --> 00:01:44.100 <v ->Thank you so much Dr. Chen</v>

31 00:01:44.100 --> 00:01:46.143 and it's really great to be here.

32 00:01:47.520 --> 00:01:49.500 I really appreciate the invitation.

33 00:01:49.500 --> 00:01:52.310 It's been a wonderful morning so far,

34 00:01:52.310 --> 00:01:56.150 meeting some faculty and trainees and I really appreciate

35 00:01:56.150 --> 00:01:59.490 having the chance to talk a little bit about my work.

36 00:01:59.490 --> 00:02:02.670 So as Dr. Chen said, I'm Jaime Madrigano,

37 00:02:02.670 --> 00:02:04.740 I'm currently at the Johns Hopkins Bloomberg

38 00:02:04.740 --> 00:02:06.540 School of Public Health.

39 00:02:06.540 --> 00:02:08.528 And there I'm in the Department of Environmental Health

40 00:02:08.528 --> 00:02:09.600 and Engineering.

41 00:02:09.600 --> 00:02:13.980 And I also lead the environmental challenges focused area of

42 00:02:13.980 --> 00:02:15.280 the Bloomberg American Health Initiative,

43 00:02:15.280 --> 00:02:20.280 which is really working to integrate our research practice

44 00:02:20.400 --> 00:02:24.630 policy and education at the school and in kind of five

45 00:02:24.630 --> 00:02:29.630 leading health areas that are that, that America is facing.

46 00:02:30.330 --> 00:02:33.120 So today I'm gonna talk about my work

47 00:02:33.120 --> 00:02:34.800 in climate change and health,

48 00:02:34.800 --> 00:02:38.550 how some of this work has been used to inform policy

49 00:02:38.550 --> 00:02:42.630 and just a couple of points broadly about how I think we can

50 00:02:42.630 --> 00:02:44.935 think about climate and health research

51 00:02:44.935 --> 00:02:47.043 being used to inform policy.

52 00:02:49.320 --> 00:02:53.580 Okay so please feel free online,

53 00:02:53.580 --> 00:02:56.130 I'm trying to stand close to the computer

54 00:02:56.130 --> 00:02:57.180 so that you can hear me well.

55 00:02:57.180 --> 00:03:00.213 But just let us know if there's any issues that come up.

56 00:03:05.880 --> 00:03:06.713 Okay.

57 00:03:06.713 --> 00:03:10.761 So I often like to start out my lectures

58 00:03:10.761 --> 00:03:12.960 with this motivating slide.

59 00:03:12.960 --> 00:03:15.460 And I realized when I was looking at it this morning,

60 00:03:15.460 --> 00:03:17.760 it's actually quite dated.

61 00:03:17.760 --> 00:03:19.680 So it makes me feel kind of old,

62 00:03:19.680 --> 00:03:23.760 but I actually think it is still very relevant

63 00:03:23.760 --> 00:03:28.050 and still very valid that climate change is the biggest

64 00:03:28.050 --> 00:03:30.120 global health threat of this century.

65 00:03:30.120 --> 00:03:32.280 And I strongly believe that and you know,

66 00:03:32.280 --> 00:03:35.820 we certainly have been facing many global health threats,

67 00:03:35.820 --> 00:03:38.160 but I think the thing about climate change is it really

68 00:03:38.160 --> 00:03:40.980 spans across all kinds of disease outcomes.

69 00:03:40.980 --> 00:03:41.850 So, you know,

70 00:03:41.850 --> 00:03:46.282 we really have been dealing with the COVID pandemic

71 00:03:46.282 --> 00:03:47.760 and infectious disease,

72 00:03:47.760 --> 00:03:51.060 but we know that climate change is changing

73 00:03:51.060 --> 00:03:53.508 the spread of vectors and changing the prevalence

74 00:03:53.508 --> 00:03:56.730 of infectious diseases around the world.

75 00:03:56.730 --> 00:03:59.850 But not just that we know that climate change is impacting

76 00:03:59.850 --> 00:04:02.160 chronic diseases in the elderly.

77 00:04:02.160 --> 00:04:05.970 We're seeing pediatric populations dealing with the brunt of

78 00:04:05.970 --> 00:04:08.850 climate change in ways we've never seen before.

79 00:04:08.850 --> 00:04:11.860 So I'm sure you've had a lot of great discussions in this

80 00:04:11.860 --> 00:04:15.900 seminar about all the broad range of health effects of

81 00:04:15.900 --> 00:04:17.040 climate change.

82 00:04:17.040 --> 00:04:19.350 I'm not gonna bill to cover that all today,

83 00:04:19.350 --> 00:04:22.740 but I'm gonna specifically talk about some of my work

84 00:04:22.740 --> 00:04:25.410 related to heat and health impacts of heat

85 00:04:25.410 --> 00:04:28.383 and then environmental health disparities related to heat.

86 00:04:30.390 --> 00:04:33.720 So speaking of heat as an epidemiologist,

87 00:04:33.720 --> 00:04:37.110 I generally look at historical heat waves

88 00:04:37.110 --> 00:04:40.290 and occurrences of temperature fluctuations

89 00:04:40.290 --> 00:04:42.720 and compare those to health outcomes

90 00:04:42.720 --> 00:04:46.830 and see associations between those weather phenomena

91 00:04:46.830 --> 00:04:48.950 and adverse health consequences.

92 00:04:48.950 --> 00:04:51.720 But what does that mean really for climate change

93 00:04:51.720 --> 00:04:54.000 and thinking ahead and into the future?

94 00:04:54.000 --> 00:04:57.990 Well we know that these weather phenomena,

95 00:04:57.990 --> 00:05:00.930 they have been changing over the last several decades.

96 00:05:00.930 --> 00:05:04.890 So this is data from the US Global Change Research Program

97 00:05:04.890 --> 00:05:08.430 and this shows that over the last six decades

98 00:05:08.430 --> 00:05:11.580 we've seen a very consistent increase.

99 00:05:11.580 --> 00:05:14.318 This is data from 40 large cities within the US

100 00:05:14.318 --> 00:05:18.150 of kind of characteristics of the heat season.

101 00:05:18.150 --> 00:05:21.060 So we've seen that the average number of heat waves

102 00:05:21.060 --> 00:05:24.870 have gone from about two on average per year

103 00:05:24.870 --> 00:05:28.500 to about six or more per year.

104 00:05:28.500 --> 00:05:30.540 And the same kind of pattern with the length

105 00:05:30.540 --> 00:05:31.470 of the heat season.

106 00:05:31.470 --> 00:05:33.960 We're seeing just a longer duration

107 00:05:33.960 --> 00:05:37.620 of when we might have these very extreme heat events.

108 00:05:37.620 --> 00:05:41.940 And so what we we know is that those patterns are continuing

109 00:05:41.940 --> 00:05:45.150 to get to worsen and when we can look at historical data

110 00:05:45.150 --> 00:05:47.100 and see the adverse health consequences

111 00:05:47.100 --> 00:05:48.868 associated with extreme heat events,

112 00:05:48.868 --> 00:05:51.390 then we can kind of project into the future

113 00:05:51.390 --> 00:05:53.400 about what we might continue to expect

114 00:05:53.400 --> 00:05:56.823 as these weather phenomenon patterns continue to change.

115 00:05:59.280 --> 00:06:04.280 We're really already seeing that the health impacts,

116 00:06:04.770 --> 00:06:06.310 particularly mortality,

117 00:06:06.310 --> 00:06:09.690 which has been studied a lot that are associated with these

118 00:06:09.690 --> 00:06:11.890 extreme heat events, they've already been,

119 00:06:11.890 --> 00:06:13.310 IM impacted by climate change.

120 00:06:13.310 --> 00:06:18.310 And this is a referenced from the multi-country,

121 00:06:18.330 --> 00:06:20.220 multi-city collaborative research network.

122 00:06:20.220 --> 00:06:21.900 I think Dr. Chen is involved in that.

123 00:06:21.900 --> 00:06:24.000 Some other faculty at Yale.

124 00:06:24.000 --> 00:06:25.320 And I just thought this,

125 00:06:25.320 --> 00:06:27.330 I don't know if you actually were involved in this paper,

126 00:06:27.330 --> 00:06:30.390 but this is a really nice paper that came out a year or two

127 00:06:30.390 --> 00:06:33.870 ago and again, it's not one of my studies,

128 00:06:33.870 --> 00:06:35.070 but I like to show this

129 00:06:35.070 --> 00:06:37.110 because I think it was a great paper.

130 00:06:37.110 --> 00:06:40.380 One of the first to really show attribution.

131 00:06:40.380 --> 00:06:45.380 So what was shown in this paper is they looked at,

132 00:06:45.990 --> 00:06:50.150 I think about the last three decades of changes in

133 00:06:50.150 --> 00:06:53.820 temperature and kind of disentangled what the temperature

134 00:06:53.820 --> 00:06:57.360 would've been had we not been undergoing climate change

135 00:06:57.360 --> 00:07:00.000 and what the temperature really was

136 00:07:00.000 --> 00:07:02.190 according to the historical record.

137 00:07:02.190 --> 00:07:04.470 That's the difference between those red and orange lines,

138 00:07:04.470 --> 00:07:05.303 you can see there.

139 00:07:05.303 --> 00:07:07.950 And then they were able to kind of parse out

140 00:07:07.950 --> 00:07:10.020 how much of the deaths that we see

141 00:07:10.020 --> 00:07:13.470 during these heat wave events over the last few decades

142 00:07:13.470 --> 00:07:15.150 in many countries around the world.

143 00:07:15.150 --> 00:07:18.390 You can see the map where data were pulled from,

144 00:07:18.390 --> 00:07:22.620 how much of those were due to that differential,

145 00:07:22.620 --> 00:07:26.350 to that temperature change that is associated with an

146 00:07:26.350 --> 00:07:27.810 anthropogenic climate change.

147 00:07:27.810 --> 00:07:32.810 And they showed that there were about 37% of the deaths in

148 00:07:32.850 --> 00:07:35.460 the warm season were attributable

149 00:07:35.460 --> 00:07:37.470 to that anthropogenic climate change.

150 00:07:37.470 --> 00:07:40.590 So the point I just wanted to make with this slide

151 00:07:40.590 --> 00:07:43.080 is to say that this isn't just a future problem,

152 00:07:43.080 --> 00:07:46.890 this is a problem that is impacting us has been for decades,

153 00:07:46.890 --> 00:07:50.370 people die every year from extreme heat and this is already

154 00:07:50.370 --> 00:07:52.470 worsened because of climate change.

155 00:07:52.470 --> 00:07:56.670 And you know, without kind of mitigation and adaptation,

156 00:07:56.670 --> 00:07:58.803 we expect that to continue to worsen.

157 00:08:01.140 --> 00:08:04.100 Okay, so now that everyone may be depressed,

158 00:08:04.100 --> 00:08:06.210 what can we do about it?

159 00:08:06.210 --> 00:08:08.610 So we know that, you know,

160 00:08:08.610 --> 00:08:11.850 as I've shown plenty of other studies have shown heat waves

161 00:08:11.850 --> 00:08:12.683 are deadly.

162 00:08:12.683 --> 00:08:16.650 But there are some things that we can try to do to mitigate

163 00:08:16.650 --> 00:08:18.420 those health impacts.

164 00:08:18.420 --> 00:08:20.130 So there are heat warning systems.

165 00:08:20.130 --> 00:08:24.100 Many communities implement these to put into place a wide

166 00:08:24.100 --> 00:08:26.100 variety of measures.

167 00:08:26.100 --> 00:08:29.520 Now the studies that have looked at these in a rigorous way

168 00:08:29.520 --> 00:08:33.150 have really shown mixed, mixed results.

169 00:08:33.150 --> 00:08:36.270 We don't know really if these are really effective in saving

170 00:08:36.270 --> 00:08:37.980 lives during heat waves.

171 00:08:37.980 --> 00:08:41.190 There's been kind of mixed data in some locations it seems

172 00:08:41.190 --> 00:08:43.890 they have been effective and others they haven't been.

173 00:08:43.890 --> 00:08:46.860 And there's, there's discussion around this discuss like,

174 00:08:46.860 --> 00:08:48.690 why limelight did that be the case?

175 00:08:48.690 --> 00:08:51.900 Well one reason is implementation after heat warnings

176 00:08:51.900 --> 00:08:54.450 is very different from community to community.

177 00:08:54.450 --> 00:08:55.980 What's actually done?

178 00:08:55.980 --> 00:08:57.294 But another question is,

179 00:08:57.294 --> 00:09:00.720 is the temperature threshold that triggers that warning,

180 00:09:00.720 --> 00:09:02.850 is it really appropriate to that local community?

181 00:09:02.850 --> 00:09:05.880 Sometimes it's based on a regional forecast.

182 00:09:05.880 --> 00:09:09.820 And so in some places people have used the epidemiologic

183 00:09:09.820 --> 00:09:11.340 data from that community.

184 00:09:11.340 --> 00:09:13.470 So particularly in New York City they did this

185 00:09:13.470 --> 00:09:16.290 where they actually changed the threshold

186 00:09:16.290 --> 00:09:19.800 to trigger that warning based on epidemiologic study

187 00:09:19.800 --> 00:09:22.020 and they showed that that did help

188 00:09:22.020 --> 00:09:26.490 to prevent hospitalization after that change was made.

189 00:09:26.490 --> 00:09:29.400 So that's something we can do in terms of public health

190 00:09:29.400 --> 00:09:33.090 research where we can try and use local contextual data to



191 00:09:33.090 --> 00:09:35.340 better understand what are appropriate thresholds

192 00:09:35.340 --> 00:09:37.050 to trigger warnings.

193 00:09:37.050 --> 00:09:39.600 We can also think about urban form.

194 00:09:39.600 --> 00:09:41.850 Where should we implement more green space

195 00:09:41.850 --> 00:09:44.250 or think about reflective groups to maybe lessen

196 00:09:44.250 --> 00:09:46.660 that urban heat island.

197 00:09:46.660 --> 00:09:48.840 But the question is where to target those?

198 00:09:48.840 --> 00:09:51.420 You know, there's only a finite amount of money usually.

199 00:09:51.420 --> 00:09:54.210 And so we wanna target those in the places that could most

200 00:09:54.210 --> 00:09:56.790 benefit and seek to gain the most

201 00:09:56.790 --> 00:09:58.770 health benefit in particular.

202 00:09:58.770 --> 00:10:02.160 It might be in the parts of the city that are hottest,

203 00:10:02.160 --> 00:10:04.560 but that might not be where people are living.

204 00:10:04.560 --> 00:10:07.200 So we really need to know where people

205 00:10:07.200 --> 00:10:09.300 are impacted the most.

206 00:10:09.300 --> 00:10:12.210 And the same thing with other types of, you know,

207 00:10:12.210 --> 00:10:13.950 social and financial supports.

208 00:10:13.950 --> 00:10:17.040 We really wanna think about who can benefit most from these

209 00:10:17.040 --> 00:10:20.370 types of programs and how we can get resources to those

210 00:10:20.370 --> 00:10:22.560 populations and neighborhoods.

211 00:10:23.770 --> 00:10:25.940 So that brings me to some of the work I wanted to talk about

212 00:10:25.940 --> 00:10:27.750 that I've done in New York City.

213 00:10:27.750 --> 00:10:30.210 And this was a study that I did quite a while ago,

214 00:10:30.210 --> 00:10:33.720 but it really has informed a lot of work that I've done

215 00:10:33.720 --> 00:10:35.850 since then and continue to do,

216 00:10:35.850 --> 00:10:37.860 which I'll talk about a little bit after that.

217 00:10:37.860 --> 00:10:40.320 But I wanted to set the stage with the study

218 00:10:40.320 --> 00:10:44.163 and this was a study on heat vulnerability in New York City.

219 00:10:45.520 --> 00:10:49.860 So when I started this work, what was noon already

220 00:10:49.860 --> 00:10:52.620 I was collaborating with people at Columbia University as

221 00:10:52.620 --> 00:10:54.510 well as the New York City Department of Health

222 00:10:54.510 --> 00:10:55.950 and Mental Hygiene.

223 00:10:55.950 --> 00:10:58.980 And with those collaborators at the New York City Department

224 00:10:58.980 --> 00:11:02.490 of Health, they had already really looked at the burden

225 00:11:02.490 --> 00:11:05.400 of heat on health in New York City.

226 00:11:05.400 --> 00:11:07.840 And they had found that they really started to see severe

227 00:11:07.840 --> 00:11:10.849 health impacts of heat so rises in mortality

228 00:11:10.849 --> 00:11:13.710 when the heat index,

229 00:11:13.710 --> 00:11:17.280 which is a combined temperature and humidity metric,

230 00:11:17.280 --> 00:11:20.520 exceeded 95 degrees Fahrenheit over a couple of days.

231 00:11:20.520 --> 00:11:23.640 So a prolonged period of that high heat index.

232 00:11:23.640 --> 00:11:26.520 So they kind of knew where they wanted to start thinking

233 00:11:26.520 --> 00:11:28.110 about that was their threshold

234 00:11:28.110 --> 00:11:29.910 where they're seeing health impacts.

235 00:11:30.810 --> 00:11:33.750 But what they didn't know was where specifically within

236 00:11:33.750 --> 00:11:37.080 New York City, which is very large and diverse city,

237 00:11:37.080 --> 00:11:39.090 should they be targeting resources

238 00:11:39.090 --> 00:11:41.373 and what populations were most at risk.

239 00:11:42.720 --> 00:11:45.060 That was where our collaboration came in

240 00:11:45.060 --> 00:11:46.680 and we really wanted to again,

241 00:11:46.680 --> 00:11:49.890 determine individual and neighborhood characteristics that

242 00:11:49.890 --> 00:11:53.040 increased the likelihood of dying during a heat wave

243 00:11:53.040 --> 00:11:55.560 and then use that epidemiologic data,

244 00:11:55.560 --> 00:11:58.890 that health informed data to create a heat vulnerability

245 00:11:58.890 --> 00:12:00.387 index for New York City.

246 00:12:00.387 --> 00:12:03.630 And we felt that we could really make the strongest case for

247 00:12:03.630 --> 00:12:06.660 policymakers to use that if we had the health data

248 00:12:06.660 --> 00:12:10.023 to back up our recommendations.

249 00:12:11.250 --> 00:12:14.670 So we did that with a case only study,

250 00:12:14.670 --> 00:12:18.600 a case only design is a kind of a nice efficient way

251 00:12:18.600 --> 00:12:21.270 to look at an effect modifier.

252 00:12:21.270 --> 00:12:25.440 So if you've already understand the relationship between an

253 00:12:25.440 --> 00:12:28.290 exposure and an outcome as I said,

254 00:12:28.290 --> 00:12:31.260 this relationship between heat and mortality was already

255 00:12:31.260 --> 00:12:35.790 pretty well characterized in this community,

256 00:12:35.790 --> 00:12:38.400 but you really wanna look at some of those third variables

257 00:12:38.400 --> 00:12:41.133 that might tighten that relationship.

258 00:12:42.180 --> 00:12:45.210 You can use a case only design and really look at the

259 00:12:45.210 --> 00:12:47.230 modification piece.

260 00:12:47.230 --> 00:12:52.230 So we were able to do that with about over 200,000 deaths in

261 00:12:52.380 --> 00:12:55.860 New York City over a period of just over 10 years

262 00:12:55.860 --> 00:12:57.240 where we looked at all of the deaths

263 00:12:57.240 --> 00:12:59.140 that occurred in the warm season

264 00:13:00.210 --> 00:13:03.360 and we tried to understand what factors

265 00:13:03.360 --> 00:13:04.590 were increasing vulnerability.

266 00:13:04.590 --> 00:13:09.510 We defined heat waves as according to this definition that

267 00:13:09.510 --> 00:13:11.970 was already established by the New York City Department

268 00:13:11.970 --> 00:13:16.320 of Health times when the heat index heated 95 degrees

269 00:13:16.320 --> 00:13:18.123 Fahrenheit for at least two days.

270 00:13:20.310 --> 00:13:21.360 And then we tried to think about,

271 00:13:21.360 --> 00:13:23.810 okay, how do we define vulnerability?

272 00:13:23.810 --> 00:13:27.690 We like to think about three components of vulnerability,

273 00:13:27.690 --> 00:13:29.523 what's increasing exposure?

274 00:13:30.720 --> 00:13:34.260 This might be something in the neighborhood that maybe makes

275 00:13:34.260 --> 00:13:38.640 the heat greater in one part of the city versus another.

276 00:13:38.640 --> 00:13:40.030 What might make a person more sensitive,

277 00:13:40.030 --> 00:13:43.650 maybe their their age or medications that they're on

278 00:13:43.650 --> 00:13:46.890 and what could give a person adaptive capacity

279 00:13:46.890 --> 00:13:48.840 so that they could withstand the heat.

280 00:13:48.840 --> 00:13:51.786 And that gets into things like maybe financial resources

281 00:13:51.786 --> 00:13:53.820 or other things.

282 00:13:53.820 --> 00:13:56.910 The problem is of course we didn't have all the ideal data

283 00:13:56.910 --> 00:13:59.710 that we wish we would in any study.

284 00:13:59.710 --> 00:14:02.190 So we were working with death certificates.

285 00:14:02.190 --> 00:14:04.050 So we would have to really,

286 00:14:04.050 --> 00:14:06.120 we were just constrained by what we could understand

287 00:14:06.120 --> 00:14:08.370 from the death certificate data.

288 00:14:08.370 --> 00:14:11.260 So the things we were able to look at are individual factors

289 00:14:11.260 --> 00:14:13.620 that I've listed here that are readily available

290 00:14:13.620 --> 00:14:14.870 on the death certificate.

291 00:14:16.260 --> 00:14:18.430 Then what was also available on the death certificate was

292 00:14:18.430 --> 00:14:21.300 the person's census tract of residence.

293 00:14:21.300 --> 00:14:24.090 And we could match that with other geospatial data sets to

294 00:14:24.090 --> 00:14:25.230 look at, you know,

295 00:14:25.230 --> 00:14:28.830 how much green space surrounds the person's...

296 00:14:28.830 --> 00:14:30.030 Is in the person's neighborhood,

297 00:14:30.030 --> 00:14:33.150 where in which they live using some satellite data

298 00:14:33.150 --> 00:14:36.240 to understand how temperature varied across the city

299 00:14:36.240 --> 00:14:38.880 and some other census data characteristics.

300 00:14:38.880 --> 00:14:40.810 So we looked at all of these factors

301 00:14:42.330 --> 00:14:47.220 and we found several factors came up as statistically

302 00:14:47.220 --> 00:14:48.810 significant modifiers.

303 00:14:48.810 --> 00:14:53.760 And so where we found that non-Hispanic black New Yorkers

304 00:14:53.760 --> 00:14:57.120 were much more likely to die during heatwave days

305 00:14:57.120 --> 00:14:59.270 versus non heatwave days

306 00:14:59.270 --> 00:15:01.920 in that same warm period than any other race

307 00:15:01.920 --> 00:15:03.510 or ethnic group.

308 00:15:03.510 --> 00:15:06.420 We also found that people were more likely to die at home

309 00:15:06.420 --> 00:15:08.523 than in hospitals or institutions.

310 00:15:08.523 --> 00:15:13.500 This could potentially be a marker of social isolation,

311 00:15:13.500 --> 00:15:17.220 although we weren't able to specifically measure that.

312 00:15:17.220 --> 00:15:22.220 And then we found that people that died during heat wave

313 00:15:22.260 --> 00:15:25.380 days versus non heatwave days over this warm period,

314 00:15:25.380 --> 00:15:29.070 relatively more of them looped in neighborhoods

315 00:15:29.070 --> 00:15:31.200 that were receiving more public assistance,

316 00:15:31.200 --> 00:15:34.890 general marker of poverty and in parts of the city

317 00:15:34.890 --> 00:15:37.290 that had less vegetation and consequently,

318 00:15:37.290 --> 00:15:38.690 higher surface temperatures.

319 00:15:40.110 --> 00:15:44.450 So we were able to look at all of those factors that were,

320 00:15:44.450 --> 00:15:48.030 again from the epidemiologic analysis came out as

321 00:15:48.030 --> 00:15:52.470 significant modifiers and characterized their distribution

322 00:15:52.470 --> 00:15:53.303 across the city.

323 00:15:53.303 --> 00:15:55.920 We looked at every census tract and the prevalence of these

324 00:15:55.920 --> 00:16:00.400 factors and we created Z-score to combine those factors

325 00:16:00.400 --> 00:16:02.703 into an index.

326 00:16:03.900 --> 00:16:05.730 And then we mapped the index.

327 00:16:05.730 --> 00:16:10.140 And so you can see on this map the red portions

328 00:16:10.140 --> 00:16:12.290 indicate a higher index score.

329 00:16:12.290 --> 00:16:15.690 Those are the areas that we found were the most heat

330 00:16:15.690 --> 00:16:19.380 vulnerable where a lot of these factors tend to cluster.

331 00:16:19.380 --> 00:16:22.260 And if you're familiar or not familiar

332 00:16:22.260 --> 00:16:23.093 with the New York City,

333 00:16:23.093 --> 00:16:25.350 those were in areas of upper Manhattan,

334 00:16:25.350 --> 00:16:27.963 the Bronx and central Brooklyn.

335 00:16:28.830 --> 00:16:30.300 And then of course,

336 00:16:30.300 --> 00:16:33.690 it's not to say that deaths during heat waves are not

337 00:16:33.690 --> 00:16:34.950 occurring in other areas,

338 00:16:34.950 --> 00:16:38.100 but relatively there are less in other areas.

339 00:16:38.100 --> 00:16:41.627 So we had that combined next just to see,

340 00:16:41.627 --> 00:16:43.920 'cause we did a very simple,

341 00:16:43.920 --> 00:16:46.230 we didn't really do a complicated weighting scheme.

342 00:16:46.230 --> 00:16:49.020 We actually wanted purposely to keep it simple so that the

343 00:16:49.020 --> 00:16:52.500 Department of Health could continue to update this index

344 00:16:52.500 --> 00:16:56.620 and, and you know, make it sort of an ever-green tool.

345 00:16:56.620 --> 00:17:01.560 So we just summed those factors to create the index,

346 00:17:01.560 --> 00:17:04.710 but we found that this is the relative odds.

347 00:17:04.710 --> 00:17:07.890 This graph on the left is the relative odds of dying during

348 00:17:07.890 --> 00:17:10.140 heat wave by quintile of the index.

349 00:17:10.140 --> 00:17:13.680 And we do see that it actually predicts pretty well with

350 00:17:13.680 --> 00:17:16.380 each increasing quintile leading to an increase  
odds

351 00:17:16.380 --> 00:17:17.780 of dying during a heat wave.

352 00:17:19.350 --> 00:17:22.140 So this was a very useful tool

353 00:17:22.140 --> 00:17:23.430 for the city health department

354 00:17:23.430 --> 00:17:25.590 and I'll talk a little bit

355 00:17:25.590 --> 00:17:29.220 about how this index was eventually used by  
the city,

356 00:17:29.220 --> 00:17:31.650 but of course I do wanna mention some limi-  
tations

357 00:17:31.650 --> 00:17:34.440 from this work and how it kinda got us think-  
ing

358 00:17:34.440 --> 00:17:38.127 about other aspects of things to look into.

359 00:17:38.127 --> 00:17:42.360 The case only study is limited in that

360 00:17:42.360 --> 00:17:45.090 you're really looking at one modifier at a time

361 00:17:45.090 --> 00:17:48.540 and so many of these things are highly corre-  
lated.

362 00:17:48.540 --> 00:17:51.540 So we really couldn't tease out what is the  
most important

363 00:17:51.540 --> 00:17:55.020 risk factor, but that that wasn't really our  
goal

364 00:17:55.020 --> 00:17:58.050 in this work we really wanted to identify areas

365 00:17:58.050 --> 00:17:59.400 of most vulnerability.

366 00:17:59.400 --> 00:18:00.925 But if you are interested in that,

367 00:18:00.925 --> 00:18:04.323 this study design is limited in that way.

368 00:18:05.220 --> 00:18:08.880 We didn't have in information on individual  
socioeconomic

369 00:18:08.880 --> 00:18:12.870 position or measures. We used the a neigh-  
borhood measure,

370 00:18:12.870 --> 00:18:15.960 but of course both of those really play an  
important role

371 00:18:15.960 --> 00:18:18.207 in the ability to adapt to heat.

372 00:18:18.207 --> 00:18:19.623 And we did not have that.



373 00:18:20.640 --> 00:18:23.670 And of course like most big epidemiologic studies,

374 00:18:23.670 --> 00:18:27.870 we used outdoor temperatures of proxy for personal exposure.

375 00:18:27.870 --> 00:18:30.870 This can be a poor proxy in a lot of cases,

376 00:18:30.870 --> 00:18:34.020 particularly when you're talking about having air

377 00:18:34.020 --> 00:18:36.510 conditioning or not having air conditioning.

378 00:18:36.510 --> 00:18:38.580 And so, you know,

379 00:18:38.580 --> 00:18:41.910 when we think about the sort of relative different changes

380 00:18:41.910 --> 00:18:43.080 day to day,

381 00:18:43.080 --> 00:18:46.380 we still think it's useful but it's worth mentioning that

382 00:18:46.380 --> 00:18:47.880 that is a limitation of this study.

383 00:18:47.880 --> 00:18:50.250 And you know, correspondingly,

384 00:18:50.250 --> 00:18:52.830 no information on the indoor residential environment.

385 00:18:52.830 --> 00:18:54.510 So no information on air conditioning,

386 00:18:54.510 --> 00:18:56.550 no other information on the home.

387 00:18:56.550 --> 00:18:58.620 Again, pretty pretty par for the course

388 00:18:58.620 --> 00:19:00.750 for a large epidemiologic study,

389 00:19:00.750 --> 00:19:03.453 but left a lot of open questions for us.

390 00:19:05.910 --> 00:19:09.510 The one thing we decided to do after that work was complete

391 00:19:09.510 --> 00:19:13.200 was to try to understand some of those open questions

392 00:19:13.200 --> 00:19:14.460 a little bit more.

393 00:19:14.460 --> 00:19:16.020 And what we did is we conducted

394 00:19:16.020 --> 00:19:18.270 a follow-up telephone survey.

395 00:19:18.270 --> 00:19:21.300 So I'm not gonna get into all the details of this study,

396 00:19:21.300 --> 00:19:23.970 but I'll just say that we ended up

397 00:19:23.970 --> 00:19:25.350 doing telephone interviews.

398 00:19:25.350 --> 00:19:29.310 It was a landline plus cell phones sample  
399 00:19:29.310 --> 00:19:31.710 and we did about over 700 interviews  
400 00:19:31.710 --> 00:19:34.173 conducted in English and Spanish of New Yorkers.  
401 00:19:35.010 --> 00:19:38.980 I think there were about 15 questions kind of ranging from  
402 00:19:38.980 --> 00:19:41.390 some information about characteristics of people's homes,  
403 00:19:41.390 --> 00:19:43.110 whether or not they had air conditioning,  
404 00:19:43.110 --> 00:19:47.310 whether they used it from some demographic information  
405 00:19:47.310 --> 00:19:51.060 and also some questions on what they did during heat waves.  
406 00:19:51.060 --> 00:19:52.650 If they hand staple at home,  
407 00:19:52.650 --> 00:19:56.220 what were their options, how did they protect themselves?  
408 00:19:56.220 --> 00:20:00.120 So you can always pull up the study  
409 00:20:00.120 --> 00:20:02.730 if you really wanna know a lot more about it.  
410 00:20:02.730 --> 00:20:05.160 But I'll just highlight a couple of the key findings  
411 00:20:05.160 --> 00:20:09.900 which were that we found that over a quarter of New Yorkers  
412 00:20:09.900 --> 00:20:12.630 did not have access to functioning air conditioning  
413 00:20:12.630 --> 00:20:15.570 or used it less than half the time  
414 00:20:15.570 --> 00:20:18.240 when they noted that it was very,  
415 00:20:18.240 --> 00:20:20.400 very hot outside.  
416 00:20:20.400 --> 00:20:23.400 So that's really telling us that, you know,  
417 00:20:23.400 --> 00:20:27.270 in general we think kinda air conditioning coverage  
418 00:20:27.270 --> 00:20:29.460 or penetrance is pretty high,  
419 00:20:29.460 --> 00:20:34.290 but there are a lot of people in vulnerable communities  
420 00:20:34.290 --> 00:20:36.630 who do either don't have access or are not running it.

421 00:20:36.630 --> 00:20:38.340 And a lot of times, you know,  
422 00:20:38.340 --> 00:20:39.960 that may be due to financial constraints  
423 00:20:39.960 --> 00:20:41.433 for electricity bills.  
424 00:20:43.170 --> 00:20:46.830 We also found that non-Hispanic black respondents,  
425 00:20:46.830 --> 00:20:47.663 you know,  
426 00:20:47.663 --> 00:20:49.290 which was again a priority population  
427 00:20:49.290 --> 00:20:51.990 since we found they were dying much more during heat waves  
428 00:20:51.990 --> 00:20:54.270 than other groups in New York  
429 00:20:54.270 --> 00:20:56.430 were less likely to own air conditioning  
430 00:20:56.430 --> 00:20:58.623 even when adjusting for household income.  
431 00:20:59.490 --> 00:21:02.915 Now our household income measures are still somewhat crude,  
432 00:21:02.915 --> 00:21:04.950 but I think what this points to is that  
433 00:21:04.950 --> 00:21:08.056 there are other potentially systemic factors  
434 00:21:08.056 --> 00:21:10.443 that really need to be accounted for.  
435 00:21:11.940 --> 00:21:14.970 When we sort of do these epidemiologist studies,  
436 00:21:14.970 --> 00:21:17.130 a lot of the things we're measuring there are things that go  
437 00:21:17.130 --> 00:21:17.970 way beyond that.  
438 00:21:17.970 --> 00:21:20.650 So this may be related to certain types of housing  
439 00:21:20.650 --> 00:21:25.380 conditions that can't support air conditioning use  
440 00:21:25.380 --> 00:21:27.750 or other things that might just not,  
441 00:21:27.750 --> 00:21:30.960 not be solely due to the current household's income.  
442 00:21:30.960 --> 00:21:32.940 And we need to think about those, you know,  
443 00:21:32.940 --> 00:21:36.960 potentially systemic and structural factors that have played  
444 00:21:36.960 --> 00:21:40.590 a role in putting populations at a higher increased risk

445 00:21:40.590 --> 00:21:42.633 for all kinds of climate events.  
 446 00:21:43.860 --> 00:21:44.700 And then lastly,  
 447 00:21:44.700 --> 00:21:47.160 we found that participants stay at home  
 448 00:21:47.160 --> 00:21:49.170 even when they can't keep cool.  
 449 00:21:49.170 --> 00:21:51.660 So when we asked the question about what  
 do you do  
 450 00:21:51.660 --> 00:21:54.930 when you can't keep cool at home during very  
 hot weather,  
 451 00:21:54.930 --> 00:21:57.180 I think it was either the top response  
 452 00:21:57.180 --> 00:22:00.210 or maybe it was the second response was just  
 stay home.  
 453 00:22:00.210 --> 00:22:03.900 And this is, I don't know,  
 454 00:22:03.900 --> 00:22:06.120 is it intuitive or counterintuitive?  
 455 00:22:06.120 --> 00:22:07.313 What do people think?  
 456 00:22:11.149 --> 00:22:12.438 <v ->I think it's counterintuitive</v>  
 457 00:22:12.438 --> 00:22:14.790 'cause we would think people it's too hot  
 458 00:22:14.790 --> 00:22:19.790 and go out to public library or (indistinct).  
 459 00:22:20.790 --> 00:22:24.060 <v ->Yeah, I mean I think that's what a lot  
 of us think</v>  
 460 00:22:24.060 --> 00:22:27.990 when we're thinking about potential solutions,  
 right?  
 461 00:22:27.990 --> 00:22:30.390 We suggest operating cooling centers  
 462 00:22:30.390 --> 00:22:31.980 and you know,  
 463 00:22:31.980 --> 00:22:33.060 having people come to them.  
 464 00:22:33.060 --> 00:22:35.760 But I think if you also think about it,  
 465 00:22:35.760 --> 00:22:37.530 you can also see the perspective  
 466 00:22:37.530 --> 00:22:39.510 that it could be intuitive as well  
 467 00:22:39.510 --> 00:22:44.280 because do you really wanna leave your home  
 468 00:22:44.280 --> 00:22:47.550 where you tend to be comfortable and just go  
 469 00:22:47.550 --> 00:22:49.560 sit somewhere with strangers?  
 470 00:22:49.560 --> 00:22:50.580 So it's, you know,  
 471 00:22:50.580 --> 00:22:55.341 I think it's something to keep in mind in terms  
 of

472 00:22:55.341 --> 00:22:58.020 the solutions that we're implementing  
 473 00:22:58.020 --> 00:23:01.530 because we need to think about how can we...  
 474 00:23:01.530 --> 00:23:04.350 I think cooling centers are an important mea-  
 sure,  
 475 00:23:04.350 --> 00:23:07.890 but also how can we keep people cool at home?  
 476 00:23:07.890 --> 00:23:11.580 And in particular, I think we thought a lot  
 about this  
 477 00:23:11.580 --> 00:23:13.170 during the Coronavirus pandemic  
 478 00:23:13.170 --> 00:23:15.390 and New York City was one of the places  
 479 00:23:15.390 --> 00:23:18.990 that actually was able to get enough resources  
 together  
 480 00:23:18.990 --> 00:23:21.870 to provide air conditioning at home  
 481 00:23:21.870 --> 00:23:23.850 and subsidize that for individuals  
 482 00:23:23.850 --> 00:23:26.243 because it was dangerous to go home and...  
 483 00:23:27.547 --> 00:23:28.384 Yeah?  
 484 00:23:28.384 --> 00:23:33.384 <v Student>Is there any laws that (indis-  
 tinct)</v>  
 485 00:23:37.660 --> 00:23:39.660 That's actually, that's a good question.  
 486 00:23:39.660 --> 00:23:43.800 So I don't, I mean I'm sure there are,  
 487 00:23:43.800 --> 00:23:46.680 I mean maybe not in like public libraries,  
 488 00:23:46.680 --> 00:23:49.860 which are often used, but I think,  
 489 00:23:49.860 --> 00:23:54.760 I've heard sort of anecdotally that there are  
 also concerns  
 490 00:23:54.760 --> 00:23:59.060 in some communities about sort of going to  
 government  
 491 00:23:59.060 --> 00:24:03.900 sponsored places because of fears around other  
 things,  
 492 00:24:03.900 --> 00:24:06.210 immigration status or other other things.  
 493 00:24:06.210 --> 00:24:08.880 So yeah, I think there's kind of like  
 494 00:24:08.880 --> 00:24:12.600 a lot of broad implications that need to be  
 kept in mind  
 495 00:24:12.600 --> 00:24:16.260 in terms of putting this protective measure  
 496 00:24:16.260 --> 00:24:17.343 in a public space.

497 00:24:18.330 --> 00:24:19.410 Good question.  
 498 00:24:19.410 --> 00:24:20.243 Yeah?  
 499 00:24:21.214 --> 00:24:23.631 (indistinct)  
 500 00:24:28.500 --> 00:24:29.730 No it wasn't.  
 501 00:24:29.730 --> 00:24:33.810 So it was just a representative telephone survey  
 502 00:24:33.810 --> 00:24:36.330 of New York City, so.  
 503 00:24:36.330 --> 00:24:38.400 Oh, sorry, yeah,  
 504 00:24:38.400 --> 00:24:40.950 yeah it was a random digit telephone survey.  
 505 00:24:40.950 --> 00:24:43.050 So yeah, so I don't know if everyone heard that,  
 506 00:24:43.050 --> 00:24:44.677 but the question was,  
 507 00:24:44.677 --> 00:24:49.023 "Did this telephone survey sort of target a group residents  
 508 00:24:50.010 --> 00:24:54.000 living in an HVI area and that wasn't something  
 509 00:24:54.000 --> 00:24:54.930 we were able to do,  
 510 00:24:54.930 --> 00:24:58.023 it was a random digit dial of all New Yorkers.  
 511 00:25:01.290 --> 00:25:04.470 So, you know, so we potentially answered  
 512 00:25:04.470 --> 00:25:06.180 some of our questions but probably  
 513 00:25:06.180 --> 00:25:08.220 just ended up having more questions  
 514 00:25:08.220 --> 00:25:11.370 and I guess maybe that's good for us as researchers  
 515 00:25:11.370 --> 00:25:12.780 'cause we have more things to look at.  
 516 00:25:12.780 --> 00:25:14.130 But, you know,  
 517 00:25:14.130 --> 00:25:18.330 I think it's helpful to sometimes think about different ways  
 518 00:25:18.330 --> 00:25:22.170 of study quantitative methods, survey methods,  
 519 00:25:22.170 --> 00:25:24.600 qualitative methods to tackle different,  
 520 00:25:24.600 --> 00:25:27.243 different pieces of this complex problem.  
 521 00:25:28.560 --> 00:25:30.930 So I wanna talk a little bit about some of the impact that

522 00:25:30.930 --> 00:25:35.930 this work had before I move on in the discussion.

523 00:25:38.400 --> 00:25:41.550 So, you know, we were able...

524 00:25:41.550 --> 00:25:45.840 I think the findings from the epidemiologic study

525 00:25:45.840 --> 00:25:47.680 supported by this telephone survey

526 00:25:48.810 --> 00:25:50.370 and because we're working very

527 00:25:50.370 --> 00:25:52.530 collaboratively with the New York City Department of Health,

528 00:25:52.530 --> 00:25:54.780 were able to be used right away,

529 00:25:54.780 --> 00:25:59.280 which was a really nice, and this is...

530 00:25:59.280 --> 00:26:01.650 So a couple of years after the study was published,

531 00:26:01.650 --> 00:26:03.810 the New York City mayor implemented

532 00:26:03.810 --> 00:26:06.093 a cool neighborhoods NYC program.

533 00:26:06.093 --> 00:26:10.320 And this is, you know, what Kai was mentioning in the intro,

534 00:26:10.320 --> 00:26:11.940 this was a very,

535 00:26:11.940 --> 00:26:16.140 a lot of resources devoted to thinking about curbing the

536 00:26:16.140 --> 00:26:18.840 effects of extreme heat in New York City.

537 00:26:18.840 --> 00:26:22.500 And throughout the plan and through, you know,

538 00:26:22.500 --> 00:26:24.810 this is some language from the press release,

539 00:26:24.810 --> 00:26:27.870 you can see that the heat vulnerability index has mentioned

540 00:26:27.870 --> 00:26:29.400 quite a lot.

541 00:26:29.400 --> 00:26:31.430 And so I think, you know,

542 00:26:31.430 --> 00:26:35.340 what was really nice is this study had a very like,

543 00:26:35.340 --> 00:26:38.100 practical implication is that policymakers

544 00:26:38.100 --> 00:26:39.150 could take the results,

545 00:26:39.150 --> 00:26:41.174 look at a map pretty easily,

546 00:26:41.174 --> 00:26:45.210 and use this to target resources in this plan.

547 00:26:45.210 --> 00:26:48.870 So this part of the press release is talking  
about where

548 00:26:48.870 --> 00:26:51.000 they were doing some street tree plantings

549 00:26:51.000 --> 00:26:53.640 and cool roofs implementation,

550 00:26:53.640 --> 00:26:54.780 and you can see pretty clearly

551 00:26:54.780 --> 00:26:56.850 that they talk about the South Bronx,

552 00:26:56.850 --> 00:26:59.156 Northern Manhattan and central Brooklyn.

553 00:26:59.156 --> 00:27:01.410 Those were those red areas on the map

554 00:27:01.410 --> 00:27:03.180 and they specifically mentioned

555 00:27:03.180 --> 00:27:05.280 how the heat vulnerability index,

556 00:27:05.280 --> 00:27:06.907 those areas are ranked high according to the  
city's

557 00:27:06.907 --> 00:27:08.880 heat vulnerability index

558 00:27:08.880 --> 00:27:10.710 and that's why the resources

559 00:27:10.710 --> 00:27:12.483 are being targeted to those areas.

560 00:27:14.010 --> 00:27:17.347 The city also implemented a pilot program  
called,

561 00:27:17.347 --> 00:27:18.917 "Be a Buddy".

562 00:27:18.917 --> 00:27:21.420 And this program was also piloted

563 00:27:21.420 --> 00:27:24.360 in some of those high HVI neighborhoods.

564 00:27:24.360 --> 00:27:25.350 And in this program,

565 00:27:25.350 --> 00:27:27.990 this is specifically trying to get at those people

566 00:27:27.990 --> 00:27:29.220 who won't leave their home.

567 00:27:29.220 --> 00:27:31.350 This was a program to encourage neighbors

568 00:27:31.350 --> 00:27:34.473 to check in on others during extreme heat  
events.

569 00:27:36.180 --> 00:27:39.480 The city chooses to use the heat vulnerability  
index.

570 00:27:39.480 --> 00:27:42.660 So in 2020 during the Coronavirus pandemic,

571 00:27:42.660 --> 00:27:45.840 when again, we couldn't bring people to public  
spaces,

572 00:27:45.840 --> 00:27:47.070 there were some other initiatives,



573 00:27:47.070 --> 00:27:49.723 the cool streets initiative, and this was, you know,

574 00:27:49.723 --> 00:27:52.940 where they were opening fire hydrants and spray caps

575 00:27:52.940 --> 00:27:57.180 trying to create some mitigating effects of extreme heat in

576 00:27:57.180 --> 00:27:59.130 the outdoor environment,.

577 00:27:59.130 --> 00:28:02.220 And again, the city used the HVI

578 00:28:02.220 --> 00:28:06.720 to kind of target those where those measures

579 00:28:06.720 --> 00:28:07.720 should be collected.

580 00:28:09.960 --> 00:28:13.810 So a couple of takeaways from this collective work

581 00:28:15.180 --> 00:28:16.710 in terms of the findings, again,

582 00:28:16.710 --> 00:28:21.710 I wanna highlight that our study,

583 00:28:22.740 --> 00:28:25.020 like many, many other studies in the US

584 00:28:25.020 --> 00:28:28.770 has showed that black New Yorkers were much more at risk

585 00:28:28.770 --> 00:28:32.505 during heat wave events than other race ethnic groups.

586 00:28:32.505 --> 00:28:35.877 We see that pretty consistently in studies of heat

587 00:28:35.877 --> 00:28:38.812 and in studies of a lot of environmental stressors.

588 00:28:38.812 --> 00:28:43.350 But, you know, our research team tried

589 00:28:43.350 --> 00:28:44.700 to delve into that a little bit,

590 00:28:44.700 --> 00:28:47.370 but we really felt like there were a lot of unmeasured

591 00:28:47.370 --> 00:28:51.630 factors and this really points to kind of the potential for

592 00:28:51.630 --> 00:28:54.270 systemic discrimination that has been, you know,

593 00:28:54.270 --> 00:28:56.880 happening for years that may be at play here

594 00:28:56.880 --> 00:28:58.860 and in a lot of this work.

595 00:28:58.860 --> 00:29:00.863 And I'm gonna talk about some continuation

596 00:29:00.863 --> 00:29:02.610 of this work next.

597 00:29:03.470 --> 00:29:06.710 And I think that's an important thing to highlight.

598 00:29:06.710 --> 00:29:11.430 We also really feel that there's a lot more to learn about

599 00:29:11.430 --> 00:29:12.530 housing in the indoor environment.

600 00:29:12.530 --> 00:29:17.370 And I think this is probably one of the major areas

601 00:29:17.370 --> 00:29:19.890 of potential future research for people

602 00:29:19.890 --> 00:29:21.210 that are interested in heat,

603 00:29:21.210 --> 00:29:23.520 is really getting a better understanding

604 00:29:23.520 --> 00:29:26.280 and characterization of where people spend the majority

605 00:29:26.280 --> 00:29:28.260 of their time and the indoor environment

606 00:29:28.260 --> 00:29:30.450 and the kind of the range of health impacts

607 00:29:30.450 --> 00:29:34.893 that might be mitigated within that indoor environment.

608 00:29:36.330 --> 00:29:39.015 And in terms of process,

609 00:29:39.015 --> 00:29:42.480 we're really critical to work with stakeholders

610 00:29:42.480 --> 00:29:44.820 from the beginning so that this research

611 00:29:44.820 --> 00:29:45.750 could inform policy.

612 00:29:45.750 --> 00:29:48.930 And that was really one of the things I was very fortunate

613 00:29:48.930 --> 00:29:51.390 to work directly with the New York City Department of Health

614 00:29:51.390 --> 00:29:54.880 because they were able to help define the question and help

615 00:29:54.880 --> 00:29:58.800 and that made research able to be used.

616 00:29:58.800 --> 00:30:03.420 And so in future work I continue or current in future work,

617 00:30:03.420 --> 00:30:06.660 I continue to try to work with policymakers,

618 00:30:06.660 --> 00:30:09.390 with grassroots organizers to try to incorporate

619 00:30:09.390 --> 00:30:10.650 their ideas early on.

620 00:30:10.650 --> 00:30:13.230 And I think that's something that's always useful

621 00:30:13.230 --> 00:30:15.275 if you can find those connections

622 00:30:15.275 --> 00:30:17.943 to make your research relevant.

623 00:30:19.770 --> 00:30:22.500 And then also just the utility of maps.

624 00:30:22.500 --> 00:30:26.400 It seems very simple, but I think the fact that we had

625 00:30:26.400 --> 00:30:30.000 a nice easy to understand map really helped

626 00:30:30.000 --> 00:30:33.310 our vulnerability index again, to be used.

627 00:30:33.310 --> 00:30:36.990 It could tell a story right away to, you know,

628 00:30:36.990 --> 00:30:40.350 somebody that doesn't know a thing about epidemiology,

629 00:30:40.350 --> 00:30:44.580 but if it's very easy to it to look at a pretty map

630 00:30:44.580 --> 00:30:46.410 and kind of understand it.

631 00:30:46.410 --> 00:30:47.550 So I think, you know,

632 00:30:47.550 --> 00:30:50.400 that again is kind of continue on

633 00:30:50.400 --> 00:30:51.800 in that thread a little bit.

634 00:30:53.310 --> 00:30:57.173 So I wanna talk a little bit about some work I've been doing

635 00:30:57.173 --> 00:30:59.673 a little last couple of years,

636 00:30:59.673 --> 00:31:03.510 That flowed outta that New York City work

637 00:31:03.510 --> 00:31:07.020 to some extent and also just reflected a lot of other

638 00:31:07.020 --> 00:31:09.090 current thinking at the time.

639 00:31:09.090 --> 00:31:12.900 And this is some work that I was doing before I moved over

640 00:31:12.900 --> 00:31:13.733 to Johns Hopkins.

641 00:31:13.733 --> 00:31:16.680 About a year ago I was at a public policy research institute

642 00:31:16.680 --> 00:31:19.023 called RAND. And so this is where I started there

643 00:31:19.023 --> 00:31:21.420 with some collaborators,

644 00:31:21.420 --> 00:31:25.140 myself and the other lead investigator Ben Preston.

645 00:31:25.140 --> 00:31:28.924 And I'm continuing to work with my RAND collaborators

646 00:31:28.924 --> 00:31:31.080 on some of this stuff.

647 00:31:31.080 --> 00:31:34.050 And so this was kind of thinking about, you know,

648 00:31:34.050 --> 00:31:38.190 we see environmental health studies of environmental health

649 00:31:38.190 --> 00:31:40.260 and racial disparities over and over

650 00:31:40.260 --> 00:31:42.780 kinda pointing to the same factors.

651 00:31:42.780 --> 00:31:45.930 And in some ways it's very unsatisfying

652 00:31:45.930 --> 00:31:50.670 to talk about things like certain race or ethnic groups

653 00:31:50.670 --> 00:31:54.180 as being more vulnerable because this isn't an inherent,

654 00:31:54.180 --> 00:31:55.320 this is a construct, right?

655 00:31:55.320 --> 00:31:57.780 This isn't an inherent characteristic

656 00:31:57.780 --> 00:32:02.070 that makes someone more more vulnerable.

657 00:32:02.070 --> 00:32:05.250 There's a lot of systemic factors that have gone into this.

658 00:32:05.250 --> 00:32:08.910 So what we wanted to do was kind of delve into a little bit

659 00:32:08.910 --> 00:32:13.910 more of that systemic and structural factors that have led

660 00:32:14.220 --> 00:32:17.913 to the environmental health disparities that we see today.

661 00:32:18.900 --> 00:32:22.200 And so I will just briefly,

662 00:32:22.200 --> 00:32:23.200 let's see, should I,

663 00:32:29.650 --> 00:32:33.630 so I don't, so just for some,

664 00:32:33.630 --> 00:32:36.210 some added context and background,

665 00:32:36.210 --> 00:32:37.680 and I think, you know,

666 00:32:37.680 --> 00:32:39.300 in the last few years the literature's

667 00:32:39.300 --> 00:32:40.610 kinda exploded in this area.

668 00:32:40.610 --> 00:32:42.810 So I probably don't need to give this background,  
669 00:32:42.810 --> 00:32:45.837 but I'll briefly say that one of the measures  
670 00:32:45.837 --> 00:32:49.110 that we started looking at as well as many other researchers  
671 00:32:49.110 --> 00:32:52.855 have been looking at is these historical maps  
672 00:32:52.855 --> 00:32:56.790 that have characterized a discriminatory practice  
673 00:32:56.790 --> 00:32:57.990 called redlining.  
674 00:32:57.990 --> 00:33:02.990 And this was a practice that happened in the US in the 1930s  
675 00:33:04.170 --> 00:33:07.590 that kind of basically codified discriminatory lending.  
676 00:33:07.590 --> 00:33:10.790 And this is a map of Baltimore where you could see that  
677 00:33:10.790 --> 00:33:14.360 areas in the center of the city were what we call redlined.  
678 00:33:14.360 --> 00:33:17.560 And those were areas that were marked as being pretty risky  
679 00:33:17.560 --> 00:33:19.710 for mortgage investment,  
680 00:33:19.710 --> 00:33:21.990 whereas other of the surrounding areas,  
681 00:33:21.990 --> 00:33:24.930 the kinda green and blue areas were areas that were deemed  
682 00:33:24.930 --> 00:33:25.770 not as risky.  
683 00:33:25.770 --> 00:33:27.385 So mortgage lending could, you know,  
684 00:33:27.385 --> 00:33:29.100 more freely happened now.  
685 00:33:29.100 --> 00:33:33.630 And the thought is that, you know,  
686 00:33:33.630 --> 00:33:35.640 where this occurred,  
687 00:33:35.640 --> 00:33:40.640 this sort of created both segregation and economic inequity  
688 00:33:41.010 --> 00:33:43.800 that has lasted for generations.  
689 00:33:43.800 --> 00:33:45.930 You know, creating real,  
690 00:33:45.930 --> 00:33:49.740 real wealth gaps in communities because of these

691 00:33:49.740 --> 00:33:52.470 discriminatory practices that happened  
 692 00:33:52.470 --> 00:33:54.306 about a hundred years ago, right?  
 693 00:33:54.306 --> 00:33:57.390 Because people could not get mortgages,  
 694 00:33:57.390 --> 00:33:59.130 they couldn't accumulate wealth over time,  
 695 00:33:59.130 --> 00:34:01.365 they couldn't pass it on intergenerationally.  
 696 00:34:01.365 --> 00:34:03.540 And I think the key thing  
 697 00:34:03.540 --> 00:34:07.440 to think about there is some historical  
 archives.  
 698 00:34:07.440 --> 00:34:09.629 We can see the language that was used  
 699 00:34:09.629 --> 00:34:12.060 to make some of these determinations.  
 700 00:34:12.060 --> 00:34:15.990 Now it wasn't a hundred percent always based  
 on race  
 701 00:34:15.990 --> 00:34:19.110 or whether the residents were foreign born or  
 not,  
 702 00:34:19.110 --> 00:34:23.610 but in many, many cases it was very explicit  
 703 00:34:23.610 --> 00:34:26.310 in terms of how they made these characteri-  
 zations.  
 704 00:34:26.310 --> 00:34:27.150 So I think, you know,  
 705 00:34:27.150 --> 00:34:32.150 it's a pretty clear example of a discriminatory  
 practice  
 706 00:34:32.520 --> 00:34:35.760 that was pretty embedded throughout the US.  
 707 00:34:35.760 --> 00:34:37.770 Now there's been also,  
 708 00:34:37.770 --> 00:34:40.130 I do wanna mention discussion in the literature  
 709 00:34:40.130 --> 00:34:42.000 as sort of whether this is,  
 710 00:34:42.000 --> 00:34:44.520 you know, was it this redlining practice  
 711 00:34:44.520 --> 00:34:48.570 and these maps or was it other types of dis-  
 crimination  
 712 00:34:48.570 --> 00:34:50.670 and segregation that was happening before  
 that?  
 713 00:34:50.670 --> 00:34:52.980 And this was sort of a result of that?  
 714 00:34:52.980 --> 00:34:54.880 I think for our purposes is, you know,  
 715 00:34:54.880 --> 00:34:57.690 a lot of epidemiologists and geographers  
 716 00:34:57.690 --> 00:34:59.820 have become interested in this.

717 00:34:59.820 --> 00:35:02.310 We know there were lots of discriminatory practices

718 00:35:02.310 --> 00:35:03.690 happening at that time.

719 00:35:03.690 --> 00:35:06.450 So I don't think we need to necessarily know

720 00:35:06.450 --> 00:35:08.400 that this was the be all and end all,

721 00:35:08.400 --> 00:35:11.880 but I think we can use this as a very good measure

722 00:35:11.880 --> 00:35:13.350 of the things that were happening.

723 00:35:13.350 --> 00:35:16.023 And so that's how many people have been using it.

724 00:35:16.023 --> 00:35:20.660 And that's how we used it in study where we really again

725 00:35:20.660 --> 00:35:23.760 wanted to think about how to change the dialogue,

726 00:35:23.760 --> 00:35:27.900 one that focuses explicitly on race and racial disparities

727 00:35:27.900 --> 00:35:32.343 to one that focuses on practices and policies and racism.

728 00:35:34.080 --> 00:35:36.270 At the time when we started this study,

729 00:35:36.270 --> 00:35:39.060 there was a little bit of work being done in this area.

730 00:35:39.060 --> 00:35:42.840 As I said, it really has exploded over the last few years,

731 00:35:42.840 --> 00:35:45.150 but there was a really nice paper by Jeremy Hoffman

732 00:35:45.150 --> 00:35:48.750 and colleagues that looked at heat islands

733 00:35:48.750 --> 00:35:53.130 across the US and how the spatial distribution of heat

734 00:35:53.130 --> 00:35:56.610 really varied within cities and mapped those

735 00:35:56.610 --> 00:35:58.920 pouring to these redlining maps

736 00:35:58.920 --> 00:36:01.080 and showed very high correlations

737 00:36:01.080 --> 00:36:03.060 between areas that were previously redlined

738 00:36:03.060 --> 00:36:07.029 and those being the areas that still retain the most heat.

739 00:36:07.029 --> 00:36:09.660 We kind of knew that this was the case,

740 00:36:09.660 --> 00:36:11.130 not just with heat, right?

741 00:36:11.130 --> 00:36:14.298 There's so many environmental aspects that we see

742 00:36:14.298 --> 00:36:15.628 in these sort of,

743 00:36:15.628 --> 00:36:18.720 that play a role in these environmental health disparities.

744 00:36:18.720 --> 00:36:22.410 So goal of this project is really to kinda bring a lot more

745 00:36:22.410 --> 00:36:23.580 data into the picture,

746 00:36:23.580 --> 00:36:26.790 look at a broad range of environmental hazards

747 00:36:26.790 --> 00:36:29.550 and see if we could make that data available

748 00:36:29.550 --> 00:36:31.890 for people to use it and kind of look at

749 00:36:31.890 --> 00:36:33.513 these associations more closely.

750 00:36:34.620 --> 00:36:37.830 Other goal of this topic was to think about solutions

751 00:36:37.830 --> 00:36:41.580 and what communities are currently doing to kind of mitigate

752 00:36:41.580 --> 00:36:44.624 these long-term systemic problems.

753 00:36:44.624 --> 00:36:49.624 So we did that by taking data from multiple sources.

754 00:36:51.000 --> 00:36:53.130 So we took some of that temperature data,

755 00:36:53.130 --> 00:36:55.320 but we also took data on air quality,

756 00:36:55.320 --> 00:36:56.280 hazardous waste sites,

757 00:36:56.280 --> 00:36:57.663 a lot of EPA data,

758 00:36:58.680 --> 00:37:01.980 the redlining maps that were digitized

759 00:37:01.980 --> 00:37:03.360 by the University of Richmond.

760 00:37:03.360 --> 00:37:05.970 We wouldn't have been able to do this project without that,

761 00:37:05.970 --> 00:37:08.180 as well as some land cover data.

762 00:37:08.180 --> 00:37:11.340 We took all of that data for our quantitative piece.

763 00:37:11.340 --> 00:37:14.310 The other thing we did was we worked and partnered



764 00:37:14.310 --> 00:37:17.670 with a grassroots organization called Groundwork USA.

765 00:37:17.670 --> 00:37:20.820 Groundwork USA is a network of trusts,

766 00:37:20.820 --> 00:37:23.850 environmental justice organizations across the country

767 00:37:23.850 --> 00:37:28.740 working specifically on kind of mitigating these issues of

768 00:37:28.740 --> 00:37:31.620 environmental inequities and communities.

769 00:37:31.620 --> 00:37:34.470 And we interviewed the groundwork trusts

770 00:37:34.470 --> 00:37:36.420 and we interviewed the policymakers

771 00:37:36.420 --> 00:37:38.400 that they're working with to find out

772 00:37:38.400 --> 00:37:39.780 what are they doing now,

773 00:37:39.780 --> 00:37:41.790 how are they trying to rectify this issue,

774 00:37:41.790 --> 00:37:43.623 what are the barriers they faced?

775 00:37:45.720 --> 00:37:48.480 So in terms of this study,

776 00:37:48.480 --> 00:37:51.300 well the first thing we did was put a publicly available

777 00:37:51.300 --> 00:37:52.560 tool together.

778 00:37:52.560 --> 00:37:56.340 And I have a link here at the bottom of the slide.

779 00:37:56.340 --> 00:38:00.630 The tool is finally published just about a year ago.

780 00:38:00.630 --> 00:38:04.690 And I also wanna highlight that someone who has way better

781 00:38:04.690 --> 00:38:08.910 coding skills than I do is a doctoral student,

782 00:38:08.910 --> 00:38:10.830 a doctoral student at the party rating school,

783 00:38:10.830 --> 00:38:12.540 Carlos Calvo Hernandez.

784 00:38:12.540 --> 00:38:16.170 So he really was instrumental in building this tool.

785 00:38:16.170 --> 00:38:19.830 But we have data on about 200 communities in the US

786 00:38:19.830 --> 00:38:21.930 and we have two dropdown menus for this tool

787 00:38:21.930 --> 00:38:23.670 where you can pick the community

788 00:38:23.670 --> 00:38:25.890 and you can pick the environmental hazard  
789 00:38:25.890 --> 00:38:28.950 and then you can see maps comparing  
790 00:38:28.950 --> 00:38:30.690 those historical redlining maps  
791 00:38:30.690 --> 00:38:33.450 and as well as the distribution of all of these  
792 00:38:33.450 --> 00:38:35.970 environmental metrics and how they exist  
today.  
793 00:38:35.970 --> 00:38:39.000 And you'll see quite consistent patterns  
794 00:38:39.000 --> 00:38:40.560 across a range of cities  
795 00:38:40.560 --> 00:38:43.533 and across a range of environmental metrics.  
796 00:38:46.080 --> 00:38:48.660 And in general, just to show you some descrip-  
tive results  
797 00:38:48.660 --> 00:38:49.710 from that work,  
798 00:38:49.710 --> 00:38:52.410 we consistently see this is from data  
799 00:38:52.410 --> 00:38:53.850 from all of the communities.  
800 00:38:53.850 --> 00:38:55.655 So things like diesel particulate matter  
801 00:38:55.655 --> 00:38:59.850 are carcinogen much higher in previously red-  
line areas  
802 00:38:59.850 --> 00:39:01.743 than in other parts of cities.  
803 00:39:02.610 --> 00:39:04.770 Counts of hazardous waste sites higher,  
804 00:39:04.770 --> 00:39:07.530 again, in those formerly redline areas.  
805 00:39:07.530 --> 00:39:11.190 When we talk specifically about climate re-  
lated stressors,  
806 00:39:11.190 --> 00:39:13.080 others have shown this.  
807 00:39:13.080 --> 00:39:15.210 But we did look at tree canopy cover.  
808 00:39:15.210 --> 00:39:17.970 I again see that consistent pattern where areas  
that were  
809 00:39:17.970 --> 00:39:21.074 previously redlined have much less tree canopy  
810 00:39:21.074 --> 00:39:23.130 than other parts of the community.  
811 00:39:23.130 --> 00:39:26.610 We looked at gridded climate data,  
812 00:39:26.610 --> 00:39:30.270 so we were able to look at average minimum  
temperatures  
813 00:39:30.270 --> 00:39:32.490 over a summer season, mean temperature,  
814 00:39:32.490 --> 00:39:33.900 maximum temperature.

815 00:39:33.900 --> 00:39:36.240 We know that minimum temperature can be important

816 00:39:36.240 --> 00:39:38.490 in terms of health because that's the time

817 00:39:38.490 --> 00:39:41.040 when the body can cool down in the evening

818 00:39:41.040 --> 00:39:44.070 and we consistently see higher minimum

819 00:39:44.070 --> 00:39:46.710 temperatures in those previously red line areas.

820 00:39:46.710 --> 00:39:50.070 And another metric that I'm really excited about,

821 00:39:50.070 --> 00:39:52.890 a paper that was published not too long ago,

822 00:39:52.890 --> 00:39:54.630 by Remedea Et al.,

823 00:39:54.630 --> 00:39:58.080 They put together a estimate of air conditioning

824 00:39:58.080 --> 00:40:01.830 prevalence by census tract in many major cities in the US

825 00:40:01.830 --> 00:40:02.760 And so this is,

826 00:40:02.760 --> 00:40:03.900 we're working on this now

827 00:40:03.900 --> 00:40:05.710 to get the paper ready for publication,

828 00:40:05.710 --> 00:40:10.020 but I looked at the air conditioning prevalence by these

829 00:40:10.020 --> 00:40:11.970 redlining measures and we can still see

830 00:40:11.970 --> 00:40:14.790 while air conditioning prevalence doesn't vary a lot,

831 00:40:14.790 --> 00:40:16.170 we can still see,

832 00:40:16.170 --> 00:40:18.150 and it's statistically significant

833 00:40:18.150 --> 00:40:20.010 in our regression modeling of it,

834 00:40:20.010 --> 00:40:23.130 that there is a lower prevalence of air conditioning

835 00:40:23.130 --> 00:40:25.203 in those previously redlined areas.

836 00:40:26.880 --> 00:40:30.030 Now, in terms of what we learned from the interviews

837 00:40:30.030 --> 00:40:31.443 with Groundwork USA,

838 00:40:32.280 --> 00:40:33.420 there is a lot,

839 00:40:33.420 --> 00:40:36.235 and I'm not gonna go through all of those results.

840 00:40:36.235 --> 00:40:39.270 We published a paper last year on those interviews

841 00:40:39.270 --> 00:40:42.300 and a lot of the policy solutions people are working on,

842 00:40:42.300 --> 00:40:44.580 so if this is something you're interested in,

843 00:40:44.580 --> 00:40:46.481 I encourage you to take a look at that.

844 00:40:46.481 --> 00:40:49.734 But the response that we heard

845 00:40:49.734 --> 00:40:52.227 from the trust over and over again

846 00:40:52.227 --> 00:40:55.432 was something that I found really interesting

847 00:40:55.432 --> 00:40:58.740 was that they themselves and their constituency

848 00:40:58.740 --> 00:41:02.640 had a lot of concerns about greening solutions

849 00:41:02.640 --> 00:41:07.020 and quotes from interviews,

850 00:41:07.020 --> 00:41:08.460 and I'll let you read them yourself,

851 00:41:08.460 --> 00:41:11.530 but generally these

852 00:41:13.740 --> 00:41:15.360 were basically within the context

853 00:41:15.360 --> 00:41:18.331 of people being concerned about displacement

854 00:41:18.331 --> 00:41:21.680 or what some people are calling green gentrification.

855 00:41:21.680 --> 00:41:25.740 So there are a lot of concerns about like,

856 00:41:25.740 --> 00:41:28.260 are you putting trees in here for me

857 00:41:28.260 --> 00:41:31.710 or for the person who's gonna buy up my land

858 00:41:31.710 --> 00:41:33.123 and displace me?

859 00:41:34.170 --> 00:41:35.880 And so this is something that Groundwork

860 00:41:35.880 --> 00:41:37.350 has taken really seriously.

861 00:41:37.350 --> 00:41:39.990 And one of the things that they told us that they're doing

862 00:41:39.990 --> 00:41:42.720 to address this issue is to really think

863 00:41:42.720 --> 00:41:44.760 holistically about solutions.

864 00:41:44.760 --> 00:41:47.130 And that is when they're advocating for greening,

865 00:41:47.130 --> 00:41:50.760 they're simultaneously advocating for housing protections.

866 00:41:50.760 --> 00:41:52.050 And I think, you know,

867 00:41:52.050 --> 00:41:53.400 with these types of issues,

868 00:41:53.400 --> 00:41:56.220 we really need to think very holistically,

869 00:41:56.220 --> 00:41:59.307 even as researchers when we're recommending solutions about

870 00:41:59.307 --> 00:42:01.683 the potential unintended consequences.

871 00:42:03.371 --> 00:42:07.860 So with that work we see of across a variety of hazards,

872 00:42:07.860 --> 00:42:09.873 we see pretty consistent spatial patterns

873 00:42:09.873 --> 00:42:12.600 that this systemic discriminatory practice,

874 00:42:12.600 --> 00:42:15.720 whether it's redlining or other things that will hopefully

875 00:42:15.720 --> 00:42:17.809 start to measure better soon,

876 00:42:17.809 --> 00:42:20.881 as potential drivers for some of the environmental

877 00:42:20.881 --> 00:42:22.767 inequities we see today,

878 00:42:22.767 --> 00:42:24.780 even with some regional variation,

879 00:42:24.780 --> 00:42:27.520 we still see that those relationships hold up

880 00:42:28.530 --> 00:42:31.530 and it's really important to think about implementing

881 00:42:31.530 --> 00:42:35.700 interventions that may avoid unintended consequences.

882 00:42:35.700 --> 00:42:38.370 So thinking about holistic solutions are really,

883 00:42:38.370 --> 00:42:39.459 again, an important piece

884 00:42:39.459 --> 00:42:43.173 of how we're gonna move forward with this and progress.

885 00:42:44.220 --> 00:42:45.270 So, you know,

886 00:42:45.270 --> 00:42:47.790 this work has really gotten me thinking a lot

887 00:42:47.790 --> 00:42:50.760 about how to better consider structural racism

888 00:42:50.760 --> 00:42:52.680 within climate and health studies.

889 00:42:52.680 --> 00:42:53.513 And I wanted to...

890 00:42:53.513 --> 00:42:55.650 This work is very much in progress.

891 00:42:55.650 --> 00:42:58.470 I wanted to just go highlight my doctoral student,

892 00:42:58.470 --> 00:43:00.840 current doctoral student, Shifali Matthews,

893 00:43:00.840 --> 00:43:03.210 because she's been really digging into thinking about,

894 00:43:03.210 --> 00:43:05.946 she's using the case study of hurricanes

895 00:43:05.946 --> 00:43:09.450 and trying to think about how can we do a better job

896 00:43:09.450 --> 00:43:12.324 of looking at these systemic upstream factors.

897 00:43:12.324 --> 00:43:16.530 And she's started off that work by doing a literature review

898 00:43:16.530 --> 00:43:17.760 to look at, well,

899 00:43:17.760 --> 00:43:20.190 how have we in the past considered vulnerability

900 00:43:20.190 --> 00:43:21.300 to hurricanes?

901 00:43:21.300 --> 00:43:22.770 And I know this graph

902 00:43:22.770 --> 00:43:24.960 isn't in the best shape at this point,

903 00:43:24.960 --> 00:43:25.950 it's very preliminary,

904 00:43:25.950 --> 00:43:29.490 but what I can tell you is the bar all the way on the left

905 00:43:29.490 --> 00:43:31.830 is a bar of demographic.

906 00:43:31.830 --> 00:43:35.850 So that's by far and a way how we generally look at

907 00:43:35.850 --> 00:43:38.520 vulnerability things like age,

908 00:43:38.520 --> 00:43:39.900 race, and ethnic groups,

909 00:43:39.900 --> 00:43:41.823 social economics, gender.

910 00:43:43.080 --> 00:43:46.260 The second to the, you know,

911 00:43:47.360 --> 00:43:49.560 or maybe the one, two, three, four,

912 00:43:49.560 --> 00:43:52.980 fifth bar over is structural factors.

913 00:43:52.980 --> 00:43:56.640 And I think we found maybe four or five studies that looked

914 00:43:56.640 --> 00:43:58.459 at structural factors and sort of

915 00:43:58.459 --> 00:44:01.200 upstream policy factors.

916 00:44:01.200 --> 00:44:04.696 So you can really see the literature has not explored that

917 00:44:04.696 --> 00:44:07.180 as much and Shifali's been thinking about this

918 00:44:08.070 --> 00:44:11.013 you know, is working on recommendations for this paper.

919 00:44:12.660 --> 00:44:14.670 So I wanna close out with just a mention

920 00:44:14.670 --> 00:44:16.260 of really briefly two studies.

921 00:44:16.260 --> 00:44:19.380 I know that when Dr. Chen first invited me here,

922 00:44:19.380 --> 00:44:22.530 I think he was hoping that I would talk about one of these

923 00:44:22.530 --> 00:44:23.910 and I was hoping that too,

924 00:44:23.910 --> 00:44:27.420 but we've had some big delays in in these studies,

925 00:44:27.420 --> 00:44:29.791 but, you know, maybe if I'm able to come back

926 00:44:29.791 --> 00:44:33.620 in a year or two, maybe I can put on some findings

927 00:44:33.620 --> 00:44:35.400 on some of this new work.

928 00:44:35.400 --> 00:44:38.550 But we have two studies

929 00:44:38.550 --> 00:44:40.634 that are really kicking off right now.

930 00:44:40.634 --> 00:44:43.530 One is very much focused on heat

931 00:44:43.530 --> 00:44:46.290 within the city of New Orleans.

932 00:44:46.290 --> 00:44:49.683 And a lot of this is building off of the New York City work.

933 00:44:50.790 --> 00:44:52.020 And really, again,

934 00:44:52.020 --> 00:44:54.300 thinking about what is the right threshold

935 00:44:54.300 --> 00:44:56.040 that we start to see hospitalizations.

936 00:44:56.040 --> 00:44:58.500 We're working with Louisiana Department of Health

937 00:44:58.500 --> 00:45:00.780 to look at more hospitalization data.

938 00:45:00.780 --> 00:45:03.360 What are the neighborhood factors?

939 00:45:03.360 --> 00:45:07.615 We know that there's a high proportion of the population

940 00:45:07.615 --> 00:45:10.500 in New Orleans that is living in poverty.

941 00:45:10.500 --> 00:45:13.470 And so it's a particularly heat vulnerable area.

942 00:45:13.470 --> 00:45:16.590 And we have three things that we're doing study first,

943 00:45:16.590 --> 00:45:18.660 again, sort of characterizing that burden

944 00:45:18.660 --> 00:45:20.970 from a threshold perspective,

945 00:45:20.970 --> 00:45:22.200 looking at vulnerability,

946 00:45:22.200 --> 00:45:25.080 very similar to the work I showed in New York City.

947 00:45:25.080 --> 00:45:28.673 So we're hoping to create a heat vulnerability index then.

948 00:45:28.673 --> 00:45:32.610 Then which is one of the most exciting parts of the study.

949 00:45:32.610 --> 00:45:34.920 And we'll be in the field this summer

950 00:45:34.920 --> 00:45:37.950 and hopefully we'll get participants and get good data,

951 00:45:37.950 --> 00:45:41.220 but we're partnering with a group called I See Change

952 00:45:41.220 --> 00:45:44.850 who has a digital application where they allow participants

953 00:45:44.850 --> 00:45:47.310 to just report on climate change

954 00:45:47.310 --> 00:45:48.690 and the findings,

955 00:45:48.690 --> 00:45:50.310 sightings in their own neighborhoods.

956 00:45:50.310 --> 00:45:52.980 So we're gonna work with I See change to get participants

957 00:45:52.980 --> 00:45:56.490 enrolled in our study to answer questionnaires

958 00:45:56.490 --> 00:46:00.060 through their app that kind of report on day-to-day

959 00:46:00.060 --> 00:46:02.460 subtle changes, changes in mood,

960 00:46:02.460 --> 00:46:04.770 changes in sleep patterns,

961 00:46:04.770 --> 00:46:07.200 and kinda subjective health measures



962 00:46:07.200 --> 00:46:10.530 that will correlate with day-to-day changes in temperature

963 00:46:10.530 --> 00:46:12.867 and even within day changes in temperature.

964 00:46:12.867 --> 00:46:15.150 So I'm really hoping that that data collection

965 00:46:15.150 --> 00:46:16.920 goes well this summer.

966 00:46:16.920 --> 00:46:19.200 The other study that is kicking off now

967 00:46:19.200 --> 00:46:23.370 is building off of the work I talked about

968 00:46:23.370 --> 00:46:25.650 related to redlining and green space

969 00:46:25.650 --> 00:46:29.910 and we're adding on a health component to that work

970 00:46:29.910 --> 00:46:32.560 and really thinking about how neighborhood factors

971 00:46:33.810 --> 00:46:36.420 can play a role in cognitive function.

972 00:46:36.420 --> 00:46:38.340 But there's been little attention

973 00:46:38.340 --> 00:46:40.230 on the relationship between green space

974 00:46:40.230 --> 00:46:42.480 and cognitive function to date.

975 00:46:42.480 --> 00:46:44.550 We do see huge racial disparities,

976 00:46:44.550 --> 00:46:47.490 and so maybe again these systemic factors

977 00:46:47.490 --> 00:46:50.850 that have led to very different environments

978 00:46:50.850 --> 00:46:52.830 where people have green space around them

979 00:46:52.830 --> 00:46:57.063 may play some role in in these health disparities.

980 00:46:58.800 --> 00:47:01.560 And you know, this question around green gentrification,

981 00:47:01.560 --> 00:47:03.280 does that modify the relationship?

982 00:47:03.280 --> 00:47:07.243 Does that make green space have benefits

983 00:47:07.243 --> 00:47:09.589 for some groups of people while it's detrimental to

984 00:47:09.589 --> 00:47:11.640 other groups of people?

985 00:47:11.640 --> 00:47:13.620 So in this study we're gonna be looking at,

986 00:47:13.620 --> 00:47:15.030 we've already kind of looked at,

987 00:47:15.030 --> 00:47:15.960 as I mentioned,

988 00:47:15.960 --> 00:47:17.850 the relationship between historical redlining

989 00:47:17.850 --> 00:47:18.990 and green space.

990 00:47:18.990 --> 00:47:21.410 We're adding on measures of cognitive function

991 00:47:21.410 --> 00:47:23.060 in a nationally representative study.

992 00:47:23.060 --> 00:47:24.970 We're gonna be examining that,

993 00:47:24.970 --> 00:47:28.710 looking at this maybe as a potential mediation pathway

994 00:47:28.710 --> 00:47:32.430 and I'm looking at gentrification as a modifying variable

995 00:47:32.430 --> 00:47:35.220 as well as potentially the role of social support

996 00:47:35.220 --> 00:47:37.020 in cognitive function.

997 00:47:37.020 --> 00:47:37.853 So, you know,

998 00:47:37.853 --> 00:47:40.020 I hope we'll have some preliminary results

999 00:47:40.020 --> 00:47:42.423 in that also maybe within the next year.

1000 00:47:43.727 --> 00:47:46.080 So hopefully just sort of in wrapping up,

1001 00:47:46.080 --> 00:47:49.200 I think, I hope you can see that there are many ways

1002 00:47:49.200 --> 00:47:53.200 I think that climate health research can inform policy

1003 00:47:53.200 --> 00:47:55.001 from, you know, characterizing the burden,

1004 00:47:55.001 --> 00:47:57.783 understanding triggers and thresholds,

1005 00:47:58.680 --> 00:48:00.270 thinking about drivers of vulnerability

1006 00:48:00.270 --> 00:48:01.960 and how to target resources

1007 00:48:03.248 --> 00:48:05.700 and also thinking about solutions.

1008 00:48:05.700 --> 00:48:06.906 I didn't get to talk at all

1009 00:48:06.906 --> 00:48:10.710 but I'm very interested in the effectiveness of solutions.

1010 00:48:10.710 --> 00:48:14.403 I think that's a huge area for us to be working on.

1011 00:48:14.403 --> 00:48:17.280 Love to think about that with anyone who's interested

1012 00:48:17.280 --> 00:48:19.290 in thinking about that more.

1013 00:48:19.290 --> 00:48:20.790 But as I did show, you know,

1014 00:48:20.790 --> 00:48:23.340 I think solutions really we need to think about

1015 00:48:23.340 --> 00:48:26.040 all the potential unintended consequences too,

1016 00:48:26.040 --> 00:48:28.290 and that's a key role.

1017 00:48:28.290 --> 00:48:30.960 So with that,

1018 00:48:30.960 --> 00:48:33.280 I'd like thank you for your attention

1019 00:48:34.470 --> 00:48:37.740 if you are interested in any more information,

1020 00:48:37.740 --> 00:48:39.480 I have my website here.

1021 00:48:39.480 --> 00:48:42.690 Probably be posting some postdoc opportunities there soon

1022 00:48:42.690 --> 00:48:44.430 just in case anyone's interested in that.

1023 00:48:44.430 --> 00:48:47.943 But yeah, and really thank you all very much.

1024 00:48:54.690 --> 00:48:56.040 <v Dr. Chen>I think because of time,</v>

1025 00:48:56.040 --> 00:48:57.843 let's have two questions.

1026 00:48:58.740 --> 00:49:00.162 Yeah.

1027 00:49:00.162 --> 00:49:02.579 (indistinct)

1028 00:49:10.260 --> 00:49:11.913 <v ->It's actually a great question.</v>

1029 00:49:12.780 --> 00:49:13.613 <v ->And I-</v>

1030 00:49:13.613 --> 00:49:14.663 <v Dr. Chen>Could you please repeat the-</v>

1031 00:49:16.245 --> 00:49:17.078 <v ->Oh, sorry, yes,</v>

1032 00:49:17.078 --> 00:49:19.160 So the question from the audience was...

1033 00:49:23.806 --> 00:49:25.560 The person here mentioned that they've heard

1034 00:49:25.560 --> 00:49:27.240 of the Be A Buddy program in New York City

1035 00:49:27.240 --> 00:49:31.020 and they were wondering if it was actually effective.

1036 00:49:31.020 --> 00:49:33.273 And so the answer is I don't have the answer to that.

1037 00:49:33.273 --> 00:49:36.480 I've actually asked the collaborators

1038 00:49:36.480 --> 00:49:39.267 if they've ever been able to evaluate that program

1039 00:49:39.267 --> 00:49:41.580 and I think they wanted to,

1040 00:49:41.580 --> 00:49:45.000 but I think they had some resource constraints

1041 00:49:45.000 --> 00:49:46.980 around actually doing an evaluation.

1042 00:49:46.980 --> 00:49:49.200 So I'm not sure they were ever able to evaluate it.

1043 00:49:49.200 --> 00:49:52.639 And in transparency, I actually don't know

1044 00:49:52.639 --> 00:49:55.263 if it's continued at this point.

1045 00:49:57.420 --> 00:49:58.590 Yeah.

1046 00:49:58.590 --> 00:50:01.650 <v Student>When you run into (indistinct)</v>

1047 00:50:27.630 --> 00:50:29.580 <v ->Yeah, being on so,</v>

1048 00:50:29.580 --> 00:50:32.190 well I think I'm actually,

1049 00:50:32.190 --> 00:50:33.750 I'm not sure.

1050 00:50:33.750 --> 00:50:34.860 Let me repeat what you're saying

1051 00:50:34.860 --> 00:50:36.720 and I'm not sure if I'm totally understanding the question,

1052 00:50:36.720 --> 00:50:38.310 but I think question was,

1053 00:50:38.310 --> 00:50:41.040 when you start to hear things about potential

1054 00:50:41.040 --> 00:50:43.710 unintended consequences, so for example,

1055 00:50:43.710 --> 00:50:46.350 someone responding that they're not sure the greening

1056 00:50:46.350 --> 00:50:48.150 is really meant for them

1057 00:50:48.150 --> 00:50:49.260 or is it meant for the person

1058 00:50:49.260 --> 00:50:51.360 that's going to potentially displace them?

1059 00:50:52.230 --> 00:50:54.180 What are some workarounds

1060 00:50:54.180 --> 00:50:57.420 about not being able to quantify that risk?

1061 00:50:57.420 --> 00:50:58.253 Is that right?

1062 00:50:59.460 --> 00:51:00.450 So I think, yeah,

1063 00:51:00.450 --> 00:51:04.620 there's a couple of answers to that question.

1064 00:51:04.620 --> 00:51:07.740 So one is I think it actually does point to the value

1065 00:51:07.740 --> 00:51:09.990 of kind of mixed methods research

1066 00:51:09.990 --> 00:51:12.840 because and I kind of grew up trained

1067 00:51:12.840 --> 00:51:14.130 as a quantitative researcher

1068 00:51:14.130 --> 00:51:18.010 and it was only more recently that I've been exposed to

1069 00:51:19.200 --> 00:51:21.180 interviewer qualitative studies.

1070 00:51:21.180 --> 00:51:23.280 And I think there is a real value

1071 00:51:23.280 --> 00:51:25.920 to kind of interdisciplinary collaborations

1072 00:51:25.920 --> 00:51:29.910 because we might not have good quantitative data on that.

1073 00:51:29.910 --> 00:51:31.560 Yeah, there are studies that are looking

1074 00:51:31.560 --> 00:51:33.360 at green gentrification,

1075 00:51:33.360 --> 00:51:35.130 we're gonna look at it in the study I just mentioned,

1076 00:51:35.130 --> 00:51:38.730 but it may be happening in some places,

1077 00:51:38.730 --> 00:51:41.910 it may not be happening in other places.

1078 00:51:41.910 --> 00:51:43.260 There may be a lot of things

1079 00:51:43.260 --> 00:51:45.290 that are triggering gentrification.

1080 00:51:45.290 --> 00:51:46.890 So it's hard to tease that out.

1081 00:51:46.890 --> 00:51:50.490 But I think we can just put some value on the words

1082 00:51:50.490 --> 00:51:52.410 that that person is speaking.

1083 00:51:52.410 --> 00:51:55.560 Those are the person's like feelings, right?

1084 00:51:55.560 --> 00:51:56.393 That's how...

1085 00:51:56.393 --> 00:52:00.990 And so whether objectively by one of the 10 ways

1086 00:52:00.990 --> 00:52:02.700 we can define gentrification,

1087 00:52:02.700 --> 00:52:03.543 it's happening,

1088 00:52:04.650 --> 00:52:08.040 that person may still be dealing with mental stress

1089 00:52:08.040 --> 00:52:10.980 and anxiety related to tho those feelings.

1090 00:52:10.980 --> 00:52:13.740 So I think that's an important piece.

1091 00:52:13.740 --> 00:52:18.570 So sort of thinking about how that, that might relate

1092 00:52:18.570 --> 00:52:20.280 to mental distress and also thinking about  
1093 00:52:20.280 --> 00:52:22.173 the value of qualitative research.  
1094 00:52:24.637 --> 00:52:26.626 <v Dr. Chen>So I think because of  
time,</v>  
1095 00:52:26.626 --> 00:52:30.177 (indistinct) thank you again for.  
1096 00:52:33.823 --> 00:52:35.790 <v ->(indistinct) for our online audi-  
ences,</v>  
1097 00:52:35.790 --> 00:52:38.489 thanks for staying with us. <v ->Thank  
you.</v>  
1098 00:52:38.489 --> 00:52:41.280 <v ->We got to end this masters seminar  
series</v>  
1099 00:52:41.280 --> 00:52:44.423 and only all the best for the families, okay?