WEBVTT

1

00:00:38.670 --> 00:00:46.890

Jonathon Kass: Hello, everyone! We've got a few more people filtering into the zoom room, but i'm going to go ahead and get started.

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00:00:47.200 --> 00:00:53.660

Jonathon Kass: My name is Jonathan Cass. I'm. Spurs transportation policy manager. Thank you for joining us this afternoon.

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00:00:53.760 --> 00:01:03.010

Jonathon Kass: Many of you here today are sperm members. So thank you for your support. And if you're not a member, I encourage you to support Spurs ongoing work,

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00:01:03.230 --> 00:01:09.530

Jonathon Kass: using education, policy, analysis, and the advocacy to help our cities and region

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00:01:10.730 --> 00:01:14.260

prosperous, sustainable, and equitable places to live.

6

00:01:19.870 --> 00:01:22.989

Jonathon Kass: You'll find more information about membership online

7

00:01:23.250 --> 00:01:26.439

Jonathon Kass: spur, org slash. Join

8

00:01:27.380 --> 00:01:33.969

Jonathon Kass: as a brief advertisement our next program next Tuesday, September the sixth.

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00:01:34.030 --> 00:01:36.949

Jonathon Kass: At twelve thirty P. M. Is titled

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00:01:37.010 --> 00:01:38.759

Jonathon Kass: Buried Problems.

11

00:01:38.770 --> 00:01:42.769

Jonathon Kass: Hunters appoint a shipyard in a time of climate change.

12

00:01:43.080 --> 00:01:50.930

Jonathon Kass: When the San Francisco Hunters Point Naval shipyard closed in one thousand nine hundred and seventy four it left behind a toxic legacy of radioactive contamination

13

00:01:51.360 --> 00:01:52.630

and groundwater.

14

00:01:53.130 --> 00:02:00.220

Jonathon Kass: San Francisco has plans to redevelop the land, once it's declared safe bringing to homes and businesses to this area.

15

00:02:00.560 --> 00:02:02.620

Jonathon Kass: But as sea level rises

16

00:02:02.890 --> 00:02:06.940

would elevate groundwater and bring once very pollution to the surface

17

00:02:07.600 --> 00:02:20.019

Jonathon Kass: join us to hear from the San Francisco Civil Grand jury on its report, buried problems and a buried process. And here what they found, and their recommendations to the San Francisco Government

18

00:02:20.270 --> 00:02:23.380

Jonathon Kass: on how to better protect the health of Bayview hunters

19

00:02:27.170 --> 00:02:32.189

Jonathon Kass: today's program is life in the Not so Fast Lane.

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00:02:32.810 --> 00:02:39.309

Jonathon Kass: The bay area has a lot of carpool lanes, and these lanes are supposed to prioritize high occupancy vehicles

21

00:02:39.490 --> 00:02:41.000

Jonathon Kass: encouraging more people to cart,

22

00:02:41.210 --> 00:02:47.439

Jonathon Kass: while also delivering faster travel options for buses, shuttles, bandpools,

23

00:02:47.910 --> 00:02:58.830

Jonathon Kass: and other modes. In fact, Spur has written an entire report about how our existing freeway lanes can be adapted to provide great regional transit if we could implement,

24

00:02:59.040 --> 00:03:01.010

appropriate Hiv policies.

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00:03:01.700 --> 00:03:03.900

Jonathon Kass: Too often, however,

26

00:03:03.910 --> 00:03:09.209

Jonathon Kass: carpool lanes are just as congested as the regular travel lands that they run adjacent to

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00:03:09.280 --> 00:03:11.810

Jonathon Kass: rarely guaranteeing a quick trip,

28

00:03:12.490 --> 00:03:18.200

Jonathon Kass: one of the biggest challenges to delivering fast and reliable travel in these lanes is the difficulty of enforcement

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00:03:18.620 --> 00:03:25.449

Jonathon Kass: vehicle occupancy enforcement is dangerous and time-consuming for Chp officers and for other motorists.

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00:03:26.050 --> 00:03:28.310

Jonathon Kass: In addition, it can be impossible

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00:03:28.630 --> 00:03:30.040

accurately determined vehicle

32

00:03:30.470 --> 00:03:34.629

Jonathon Kass: when faced with tinted windows. Nighttime conditions,

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00:03:34.780 --> 00:03:37.530

Jonathon Kass: small children large dogs

34

00:03:38.770 --> 00:03:41.160

Jonathon Kass: anything else you might imagine. The

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00:03:42.380 --> 00:03:45.860

Jonathon Kass: enforcement of Hiv policies relies on very high fines

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00:03:45.940 --> 00:03:51.950

Jonathon Kass: to counter the very low probability of being caught, which is bad for both social equity and for gaining

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00:03:53.800 --> 00:04:01.909

Jonathon Kass: in an effort to tackle these challenges. Your Metropolitan Transportation Commission or Mtc. Is piloting technology to automatically confirm vehicle occupancy

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00:04:02.550 --> 00:04:07.969

Jonathon Kass: if adopted, Such such technology could dispense with the hazards and subterfuge.

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00:04:08.080 --> 00:04:13.170

Jonathon Kass: But more importantly, it could create an efficient and affordable travel option

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00:04:13.240 --> 00:04:16.280

for those who take the bus or other forms of carpool.

41

00:04:18.149 --> 00:04:22.669

Some great panelists today To describe these programs and discuss your questions.

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00:04:23.940 --> 00:04:33.020

Jonathon Kass: Robert Rich is a senior planner at Mtc. And the association of Bay Area Governments. His work is focused on transportation, technology, innovation,

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00:04:33.160 --> 00:04:35.139

Jonathon Kass: arterial operations, and

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00:04:37.540 --> 00:04:49.590

Jonathon Kass: Sarah Bernworth is a principal program coordinator at npc responsible for managing the Bay area incident management program, the connected Bay area program

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00:04:49.600 --> 00:04:58.520

Jonathon Kass: and the vehicle occupancy, verification, smartphone app pilot work involves close coordination with local agencies on projects related to traffic, incident,

46

00:04:59.210 --> 00:05:00.420

Jonathon Kass: transportation system and

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00:05:01.020 --> 00:05:02.620

Jonathon Kass: telecommunications,

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00:05:03.240 --> 00:05:04.559

vehicle occupancy,

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00:05:04.770 --> 00:05:05.930

Jonathon Kass: detection,

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00:05:06.210 --> 00:05:16.369

Jonathon Kass: and um Chelsea. Ah Gamulo is going to be not presenting but available to support Sarah Bernworth in

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00:05:17.050 --> 00:05:20.009

Jonathon Kass: describing some of the equity issues, and

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00:05:24.830 --> 00:05:44.359

Jonathon Kass: and finally, Jacob Denny Spurs Economic justice and policy director leads work to help build a bay area where all people thrive regardless of their economic status. Jacob's work includes reducing and eliminating the harmful effects of fines and fees with good wealth.

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00:05:46.530 --> 00:05:59.089

Jonathon Kass: We want today to be an interactive conversation and plan on spending as much time as possible engaging. But you also encourage you to use the chat box to share your thoughts with each other and the speakers, and to submit any questions you may have one hundred and fifty,

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00:05:59.280 --> 00:06:04.490

Jonathon Kass: the Q. And a panel which should appear at the bottom of your screen or at the top of your speed.

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00:06:06.470 --> 00:06:16.110

Jonathon Kass: And just finally a quick roadmap We're going to now. Hear a presentation on each of our Npc. Panelists programs, followed by

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00:06:16.570 --> 00:06:31.480

Jonathon Kass: brief reaction from Jacob regarding some of the equity, considerations and implications for these sorts of programs. I'll then ask a few general questions for Rob, Sarah, Jacob, and Chelsea's response.

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00:06:32.250 --> 00:06:37.679

Jonathon Kass: Then we'll send. Spend the rest of the time responding to questions from you all.

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00:06:39.100 --> 00:06:47.980

Jonathon Kass: So with that I will turn it over to Robert and have him start us off with automated roadside vehicle occupancy.

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00:06:50.220 --> 00:06:55.550

Robert Rich: Thank you, Jonathan, and thank you to the spur team for the opportunity to talk today,

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00:06:55.700 --> 00:07:00.290

Robert Rich: you should be able to, uh see my presentation deck, which

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00:07:00.300 --> 00:07:10.089

Robert Rich: it's framed as a question, because I do think that it is still a very much depending question whether or not automated roadside vehicle occupancy, enforcement, or detection and verification. Excuse me,

62

00:07:10.100 --> 00:07:24.320

Robert Rich: can improve carpool and performance, and I'm going to talk today at a high level about a little bit of the problem statements, although I think that Jonathan articulated it. Well, that led us to look at this type of technology, these technologies.

63

00:07:24.330 --> 00:07:36.210

Robert Rich: Ah, the pilot that Mtc. Has done was specifically on the roadside, and then a little bit of the challenges that we would face. Ah, in taking that technology to the next level if we wanted to do that.

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00:07:37.280 --> 00:07:38.510

Robert Rich: So

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00:07:38.810 --> 00:07:40.410

Robert Rich: I think the first

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00:07:41.440 --> 00:07:54.030

Robert Rich: step here is to define the the problem a little bit more, and what we deemed carpool violations. Um, because there is a few ways you can violate. Ah, in either an express lane in a joke Lane,

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00:07:54.070 --> 00:07:56.189

Robert Rich: and that's either by having not enough

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00:07:56.380 --> 00:08:06.879

Robert Rich: occupants in your vehicle and H. Will be two or three, not having a cleaner vehicle sticker, which is a legal way to use those lanes in California

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00:08:06.890 --> 00:08:14.309

Robert Rich: not declaring a correct toll. And there's a few issues associated with that particularly given the magnitude of the problem which

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00:08:14.450 --> 00:08:31.349

Robert Rich: data that we've collected, and it's consistent with data that's been collected by others. At least twenty percent, sometimes more of travelers in those corporate lanes, don't meet those requirements that are ducks violating this has impact. If there's a congestion in the lane. Um, only a

71

00:08:31.360 --> 00:08:44.430

Robert Rich: If I' only a fraction of that traffic out of that land could significantly improve land performance leading faster time for travelers and carpoolers. There's also a basic fairness question

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00:08:44.620 --> 00:08:59.770

Robert Rich: to. I think the widespread violations do undermine faith in the managed land system, and indeed, in essentially expanding that um. This has been articulated as part of a vision that would support greenhouse gas reduction in the region,

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00:08:59.780 --> 00:09:10.470

Robert Rich: and finally, the the high violation rates provide a rationale for field enforcement by California Highway Patrol, which is Jonathan lut two is

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00:09:10.480 --> 00:09:20.389

Robert Rich: inefficient, unsafe for those involved, and leads to concerns for those communities that are being policed. Given the way that that enforcement is undertaken sometimes

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00:09:20.400 --> 00:09:23.599

Robert Rich: selectively due to the numbers involved.

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00:09:24.600 --> 00:09:35.600

Robert Rich: One of the solutions to tackling this problem is a policy tool that we have and are expanding within the region which is, the use of pricing is supposed to provide a legal opportunity for people to use the lane.

77

00:09:35.830 --> 00:09:54.990

Robert Rich: Ah, unfortunately, the way that the express line system works our declaration is essentially an honor-based system, with some chp enforcement um via the roadside. And the data that most recent data we have on this does indicate that a variety of folks are not declaring the correct documents,

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00:09:55.000 --> 00:09:58.870

Robert Rich: the error in that way. And this this is data from our

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00:09:59.140 --> 00:10:17.100

Robert Rich: eight hundred and eighty express lines collected last year suggest that more people are substantially more people are declaring toll-free status than um own, it, and That is probably a result of having their switch set on Hiv three. When they are not back they will be threes, and some of those folks may be clean. Our vehicle users, but some are not

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00:10:17.170 --> 00:10:24.460

Robert Rich: so. This is a problem that persists, and the honor system is not necessarily taking that traffic out of the lane.

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00:10:25.460 --> 00:10:33.420

Robert Rich: There are technologies on. They're not new, but they're not widespread, and this is what I'm going to talk about today. Specifically the roadside. But

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00:10:33.430 --> 00:10:43.890

Robert Rich: there are a variety of systems, and they generally fall into those that utilize a smartphone app app using sensors on the phone or a roadside camera based system.

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00:10:43.900 --> 00:10:53.600

Robert Rich: And Mtc. Has tested the roadside system. We'll be in the process of testing the smartphone system, as Sarah will speak to, and there are some lessons learned

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00:10:54.710 --> 00:10:55.840

Robert Rich: two.

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00:10:55.960 --> 00:11:07.560

Robert Rich: Our roadside pilot took place on the Interstate eighty um Hiv second, which has now subsequently been converted to an express lane. This was a brief pilot, two thousand and eighteen

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00:11:07.570 --> 00:11:20.240

Robert Rich: three months of data to test three different systems very much focused on system accuracy, the ability to read the number of people in the car. I'm going to speak a little bit more of the mechanics of these systems.

87

00:11:21.190 --> 00:11:35.269

Robert Rich: But first I want to acknowledge some of the limitations of the pilot um to show the results. Each of the vendors had only a month to set up a breakdown. Their systems all the numbers i'm going to show you are based off of six days worth of data for each vendor,

88

00:11:35.280 --> 00:11:44.270

Robert Rich: and they did. This does not leave time for these systems which rely on calibrating fine-tuning models and cameras to necessarily reach their

89

00:11:45.550 --> 00:12:01.690

Robert Rich: Ok. So this is an image taken from our eight hundred and eighty roadside pilot, and although there is some variation among different vendors, and the table to the right shows that in terms of the number of cameras there is a common setup that is emerging with these types of systems,

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00:12:01.700 --> 00:12:02.950

Robert Rich: and

91

00:12:03.360 --> 00:12:21.190

Robert Rich: that requires a detection that triggers the camera. That's a laser device. In this case two different poles spaced differently in some cases depending on vendor and true and camera systems with accompanying flash, high intensity. Illumination is necessary to get a good enough view.

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00:12:21.200 --> 00:12:26.549

Robert Rich: The vehicle interior, so that is, that has been, that is an important element

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00:12:26.560 --> 00:12:34.000

Robert Rich: the deployment, now that the camera in the background here, is going to be taking a picture through the front windshield, the camera to the side

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00:12:34.490 --> 00:12:42.419

Robert Rich: through the and we're in the number one lane. The H. You'll be plane is northbound in this picture through the left passenger side windows

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00:12:43.910 --> 00:12:54.519

Robert Rich: all right, so everyone always asks right up front. No, I didn't want to know how accurate is it? Well, there's not a simple answer to that. But I've attempted to give you one here. The

96

00:12:54.600 --> 00:13:13.030

Robert Rich: overall system. Accuracy ah varied significantly among citizen vendors and reporting averages here. But we did see. I think the first thing to note is that the violation problem was confirmed to be higher than probably we had anticipated. Thirty, seven, to forty, eight percent.

97

00:13:13.140 --> 00:13:19.250

Robert Rich: We did see both false, positive, and false negatives, and in this case a positive

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00:13:19.360 --> 00:13:33.699

Robert Rich: is actually a violator and a negative, as someone who is adhering to the ah, to the rules of the Lane, a vehicle that's in compliance. So we saw different types of errors, false negative errors, or folks who

99

00:13:33.980 --> 00:13:35.110

Robert Rich: we're

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00:13:35.570 --> 00:13:42.290

Robert Rich: cheating, so to speak, or violating. Excuse me, but the system did not flag them.

101

00:13:42.300 --> 00:13:46.879

Robert Rich: And then there is an and the other type of error. The false positives in which the

102

00:13:48.060 --> 00:14:01.389

Robert Rich: genuine carpool is were flagged as as being in violation, and that is a a particular type of concern. I say that particular type of error is is the number one concern that we have in these types of systems,

103

00:14:01.400 --> 00:14:12.599

Robert Rich: because there's already such a low level of enforcement. But people are not used to this technology and being flagged as achieved when they're not, would cause some significant concern.

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00:14:12.830 --> 00:14:14.050

Robert Rich: So

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00:14:15.030 --> 00:14:32.299

Robert Rich: we did. I wanted to drill into these results a little bit on the eight hundred and eighty. We did a variety of different validations of the data. The first is just to make sure that the systems can capture all the vehicles that are passing the read zones, and although not perfect, not at the ninety nine point nine percent level,

106

00:14:32.440 --> 00:14:36.789

Robert Rich: we did find that, typically speaking, these cameras were

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00:14:37.210 --> 00:14:44.670

Robert Rich: able able to at least get a read whether or not they were able to get usable data from each of the vehicles at a high percentage level. So

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00:14:45.480 --> 00:14:55.240

Robert Rich: there is, I think, a gold standard to doing these types of evaluation, and that's what we call controlled Test runs independent

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00:14:55.720 --> 00:15:04.029

Robert Rich: test where we know the number of people in the vehicle passing the reed point for the for the vehicle oxidency, detection system for the roadside system,

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00:15:04.040 --> 00:15:17.740

Robert Rich: and comparing that to what the system tells you. It reads, and here the picture is more nuanced. Now this data is presented as a range, because there are three different vendors and some of the vendors do better. Some of them did not, but, generally speaking,

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00:15:18.140 --> 00:15:28.850

Robert Rich: errors that we saw increased, as there were more people in the vehicle, which is perhaps to be expected. There was a large degree to error when they had to recognize the presence of multiple people.

112

00:15:28.860 --> 00:15:40.499

Robert Rich: So you can kind of get a sense. This is what the rear image looks like. This is yours truly. On an Mtc. Controlled test runs. We did multiple test runs and local different parties to ascertain this data.

113

00:15:41.880 --> 00:15:59.960

Robert Rich: Now, the other type of validation is human manual view, and this is done typically by the firms as well. And in this case, independently, we conducted Manual review, a larger image set than the seventy to ninety images in the prior. Um, the prior test. And here,

114

00:15:59.970 --> 00:16:05.950

Robert Rich: you know, we were both looking at whether or not the images were of sufficient quality that you were able to determine the accuracy.

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00:16:06.060 --> 00:16:24.210

Robert Rich: Ah! And also evaluating whether or not a machine learning model that looks at that image is able to accurately count the same number of people that are in overseas, and there's a range of accuracies presented here, too, from seventy, six to ninety, two percent in terms of its legibility of the image. And as to whether or not the automated system function correctly,

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00:16:24.220 --> 00:16:29.070

Robert Rich: so this seventy, seven, and eighty, nine percent figure is the one that folks usually focus on. And I

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00:16:29.280 --> 00:16:38.169

Robert Rich: It was mentioned in the I prior slide. I want to emphasize. This is for the automated system only. It does not involve any human manual reveal or correction, and

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00:16:39.570 --> 00:16:41.989

Robert Rich: the figure should be taken in the context of the

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00:16:42.000 --> 00:16:52.469

Robert Rich: ah, the pilot and the challenges that that were faced. It was a very short pilot. Um! There were some issues with image quality that were in the process of being corrected,

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00:16:52.990 --> 00:17:05.780

Robert Rich: related to glare and darkness which the luminary system is there to. Ah, ah! Set up! It's not a permanent site That, you know, is under construction. It's not a site that was set up for this permanently, and there,

121

00:17:05.790 --> 00:17:22.479

Robert Rich: or some things we learn, for instance, the vulnerability of these systems to theft and vandalism. There are low-mounted cameras and some equipment was stolen during the course of the pilot. So this is some of these real world factors play into these numbers, and I think even you kept in mind. Well, you know,

122

00:17:22.680 --> 00:17:24.960

Robert Rich: looking at a single number

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00:17:25.940 --> 00:17:45.640

Robert Rich: now, no discussion of the roadside, or frankly, any of these technologies would be complete without discussing the privacy, challenges, and something that Mtc. Is very cognizant of, uh by design. The Dod system, as mentioned, takes images of all the passing vehicles or attempts to, and it is designed to view inside the vehicle interior, and to get data

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00:17:45.650 --> 00:17:55.189

Robert Rich: inside the vehicle. It's only for the purposes of counting. This is a privacy impact, and this makes some people uncomfortable. Frankly, it is

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00:17:55.550 --> 00:18:03.060

Robert Rich: unheard of, and these technologies are deployed elsewhere. But there are in our mind, as we studied this in some detail,

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00:18:03.200 --> 00:18:16.330

Robert Rich: a lot that needs to happen to make sure that we are mitigating and being mindful of the privacy impact on on road users. And I think the first step to that is making people aware that the data collection is happening, but they have consent with it,

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00:18:16.430 --> 00:18:17.650

Robert Rich: and

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00:18:17.790 --> 00:18:28.909

Robert Rich: minimizing what that data is collected. And there's a lot of ways to do that. But the one that we're aware of in the systems involves the redaction of unnecessary information. Essentially, though we'll obscure

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00:18:28.970 --> 00:18:36.960

Robert Rich: um. The automated systems are able to obscure faces with the intent of making the data not personally identifiable,

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00:18:37.170 --> 00:18:46.109

Robert Rich: and that is a reversible process. In some cases you need to see the base in order to do the verification of the number of people in the vehicle,

131

00:18:46.150 --> 00:18:59.199

Robert Rich: but it is an important step to minimize the data. You need to have cybersecurity within the systems. You know, hacks are very common these days. More aware of the need for encryption, these to secure protocols, and having secure operations

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00:18:59.660 --> 00:19:16.870

Robert Rich: along with that, you really need to minimize who has access to the data. And I think here there's two things: one that you're only showing it to manual viewers or to program team members who

have a business need, and you have assurances built in that You're not sharing that data for purposes outside of the Car Pool

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00:19:17.520 --> 00:19:35.159

Robert Rich: Lane verification. And that's a big concern we've heard when it relates to these pilots about sharing information, for instance, law enforcement. Um. If Mcc. Was to do this, I think it, we would follow a very similar path that the take with the toll system, which is to only share information in response to it

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00:19:35.460 --> 00:19:38.249

when they're legally compelled to do so, subpoena.

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00:19:39.190 --> 00:19:40.270

Robert Rich: But I

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00:19:40.390 --> 00:19:54.379

Robert Rich: you can say that for myself. But by design. The other step you need to take is getting rid of the data that you don't need um after you calibrated your models. Once that data is no longer required for your operation, it should be purged. It should not be kept indefinitely.

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00:19:55.500 --> 00:20:03.659

Robert Rich: There are other challenges as we looked at these this technology. The first is that because

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00:20:04.020 --> 00:20:09.860

Robert Rich: due to our legal authority which i'll speak to, we'd be integrating this with the toll system. If we would have put it out,

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00:20:09.930 --> 00:20:24.199

Robert Rich: you would have two different systems, and we're taking two different sets of images, and you would need to integrate those systems, and you need to make sure that the data lined up the fast track user not just the picture. And that is not a trivial problem.

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00:20:24.290 --> 00:20:26.879

Robert Rich: Excuse me when you have two different sets of equipment.

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00:20:27.160 --> 00:20:32.020

Robert Rich: The second is that there are exceptions. Store Hiv requirements in the region.

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00:20:32.030 --> 00:20:49.790

Robert Rich: Ah! Clean air vehicles are allowed as lanes as mentioned, that poses some of the technical challenges, and there are cases in which a two-seater vehicle that wants to be on a sports car are allowed to be H. O. E. Two and H. Of three, specifically on I eighty, and Alameda County, and the punch includes the Bay Bridge and some of the biggest bottlenecks

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00:20:50.210 --> 00:20:51.700

in the region.

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00:20:52.590 --> 00:21:01.259

Robert Rich: I think the biggest technical challenge that perhaps comes after the pilot trying to decide if it worked or not, because these systems not only need to work for

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00:21:01.460 --> 00:21:08.269

Robert Rich: people on average, they need to be fair, and they need to be equitable. So we need to make sure that we are reading.

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00:21:09.410 --> 00:21:20.829

Robert Rich: Anyone who would pass by such a system would be able to have it the same chance of being caught or not, and it shouldn't be

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00:21:22.000 --> 00:21:31.249

Robert Rich: accuracy. Some accuracy shouldn't change in response to vehicle type, the time of day, or the phenotypes of the passengers. And I think we need to be very cognizant of others, particularly the impacts

148

00:21:31.530 --> 00:21:38.040

Robert Rich: folks in our equity priority communities, as we evaluate these kind of technologies at the planning stage.

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00:21:40.880 --> 00:21:48.800

Robert Rich: But in addition to that, I think the larger policy questions remain. There's going to be significant opposition.

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00:21:49.030 --> 00:22:01.339

Robert Rich: If a Government agency were to incorporate the technology into their day-to-day operations due to the fact that it was new type of data collection pictures taken to people in their vehicles, and

151

00:22:01.780 --> 00:22:08.290

Robert Rich: you need people to be aware of the technology in order for it to work so and for them to build a consent to the data collection.

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00:22:08.390 --> 00:22:26.949

Robert Rich: There's a lot of complicated questions that come in within the tolling space. Um, do we have gone to all electronic toll in the region? Ah, so we have eliminated these paper invoices in most cases are we going to be? Ah, for our customers, at least. Are we going to be sending out paper invoices?

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00:22:27.130 --> 00:22:28.790

Robert Rich: Ah, what do we be

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00:22:28.950 --> 00:22:33.870

Robert Rich: using electronic messages? How do you make people aware of this? While also, you know,

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00:22:33.940 --> 00:22:41.089

Robert Rich: efficiently processing these violations? And finally, what's the amount to charge? And how do you give people an opportunity to contest?

156

00:22:41.100 --> 00:22:42.589

Robert Rich: These are all important questions.

157

00:22:42.600 --> 00:22:59.919

Robert Rich: Um. Lastly, I think it's important just limitation to keep in mind here. There is no existing authority to deploy these um certainly not outs out, not outside of toll environment, and to do that in the wider H. Would be space required State legislation. So

158

00:22:59.930 --> 00:23:04.089

Robert Rich: with that I'm happy to take any questions and thank you for the time.

159

00:23:06.840 --> 00:23:21.690

Robert Rich: Thank you so much, Robert, and I think in in the in the interest of time. We'll probably roll right into Sarah's presentation on the other technology that Mtc. Is exploring. But maybe

160

00:23:21.700 --> 00:23:36.009

Jonathon Kass: if you have specific questions for Robert. You could go ahead and post those in the Q. And A. Panel, and he may be able to respond, if appropriate, in writing there. But when we go ahead and move on to Sarah's presentation,

161

00:23:40.060 --> 00:23:53.439

Sarah Burnworth: All right. Um, Good afternoon, and thank you to Jonathan, from Robert for the introduction and context. My presentation is focused on the smartphone app that Mtc. Is piloting for carpool verification.

162

00:23:54.600 --> 00:24:11.959

Sarah Burnworth: Um and Rob is already provided. Robert has provided background and context for why we are pursuing pilots to verify carpools. But i'll recently know that the smartphone app pilot is focused on reducing violations, and a client that is not being considered for General

163

00:24:11.970 --> 00:24:24.049

Sarah Burnworth: Lanes at this time. Well, the roadside pilot was completed on Interstate eight hundred and eighty. The smartphone app is being piloted on the interstate six hundred and eighty express lanes in Contra Costa County.

164

00:24:25.680 --> 00:24:42.589

Sarah Burnworth: I thought it might be helpful to start with the basics of how the app works on the right of this slide you'll see a video animation of the app in action verifying different car pools. So the app is simple to use, and it takes about five seconds to verify a car pool.

165

00:24:42.600 --> 00:24:56.930

Sarah Burnworth: Um! It's worth noting that only one smartphone is required, so only one member of a parcel needs to have a smartphone device. The app is designed by right-like technologies to verify all skin tones, all ages, including infants.

166

00:24:57.060 --> 00:25:03.180

Sarah Burnworth: And, as you can see, it works for those wearing hat masks, and

167

00:25:03.510 --> 00:25:20.050

Sarah Burnworth: there we go. Just how to fix this slide. It works for those wearing hat maps and glasses as well. Um, it won't work with a mannequin photo or a video. Um, and it doesn't function when the vehicle is in motion. So you should be seeing the animation on the slide now. Sorry about that,

168

00:25:25.480 --> 00:25:40.090

Sarah Burnworth: All right. So we are currently working on preparing for an initial phase. One pilot of the App. I want to emphasize that this is a phase one. This phase, one pilot is an initial test of the technology, and how it may work.

169

00:25:40.100 --> 00:25:53.959

Sarah Burnworth: So participation is totally voluntary, and the app is not integrated with fast track or with the toll system. So our priority for the phase one pilot is to see how well the technology works and what people like or don't like about it.

170

00:25:53.970 --> 00:26:03.300

Sarah Burnworth: Um, We also want to check accuracy, explore privacy, questions and concerns better understand costs and potential customization opportunities.

171

00:26:03.460 --> 00:26:08.489

Sarah Burnworth: So, as I mentioned, the pilot will take place on the I, six hundred and eighty contrast expressing the

172

00:26:08.500 --> 00:26:19.270

Sarah Burnworth: corridor, and will involve around five hundred volunteer participants. Data will be collected via participant surveys and focus groups and participation will be compensated.

173

00:26:20.830 --> 00:26:40.720

Sarah Burnworth: So a little bit more on how the app works to begin. A trip. Users have to verify carpal button on the bottom left here. Um! And this sticks into the verification camera screen. Um! At this

point the app is looking for occupants with real human bases to determine occupancy. Count what you saw in the previous slide.

174

00:26:40.730 --> 00:26:54.460

Sarah Burnworth: Um and once occupants were counted the eligibility status located in the top right-hand corner of the screen is updated. So the button at the bottom now reads entry and is grayed out while the vehicle is in motion.

175

00:26:54.790 --> 00:27:00.599

Sarah Burnworth: After passing through the express plane, the user will be instructed to re-verify their carpool when parked

176

00:27:01.230 --> 00:27:18.380

Sarah Burnworth: um and the reason for the yes and no option showing here is that we are testing two separate versions of the app. One version requires the same people to be present at the beginning and end of the trip which is confirmed, using a proximate facial measurement also known as the facial signature

177

00:27:18.390 --> 00:27:22.339

Sarah Burnworth: and the other version of the app does not require the people to be the same.

178

00:27:22.370 --> 00:27:40.200

Sarah Burnworth: So on the far right. The trip concludes with a carpool credit granted screen, but indicates to the user how many trips have been completed to date during the pilot Um, and for a wider deployment this final screen could confirm whether the trip was a verified purple, and therefore eligible for a discount.

179

00:27:42.090 --> 00:27:49.840

Sarah Burnworth: So we want to ensure that the app is not only easy to use, but also in effective effective to verify a diverse range of user groups.

180

00:27:49.850 --> 00:28:03.820

Sarah Burnworth: Um. So Chelseaia Gamolo, of Mp. Staff has done an amazing job of leading the effort to ensure that this pilot is conducted equitably. She is attending a session today, and i'm happy to provide her contact information for any. Follow up questions.

181

00:28:04.180 --> 00:28:14.499

Sarah Burnworth: Um, So far we've focused on um equity through hiring an equity consultant to review and provide feedback on the app and pilot plans.

182

00:28:14.730 --> 00:28:24.089

Sarah Burnworth: In July Chelsea is presented to Mpc's policy, advisory Council, equity, and access subcommittee so here's our thoughts and questions about the pilot.

183

00:28:24.570 --> 00:28:33.349

Sarah Burnworth: And we've learned that data privacy. And in-af accessibility are significant concerns so we're focusing our attention around those areas as Well,

184

00:28:33.430 --> 00:28:53.140

Sarah Burnworth: um access to stress lanes is another topic that came up. Um, and we're pursuing, allowing eligible car pools while participating in the pilot to use the app and a valid life replay instead of a fast track account, and this would help us increase participation and access for those who may not currently use it for us. Lane.

185

00:28:54.070 --> 00:29:10.929

Sarah Burnworth: We're also focusing on how to encourage equity, priority, community participation in the pilot through development of our outreach and recruitment strategy. Um, and we will be considering equity in our evaluation plan, and we look forward to sharing the outcome of our findings sometime next year.

186

00:29:13.360 --> 00:29:27.259

Sarah Burnworth: Um! So I mentioned privacy is a concern, and we are working on being transparent about what data the app collects and stores. This slide shows the data that is stored by the app meaning that it would be available beyond each individual trip.

187

00:29:27.500 --> 00:29:41.859

Sarah Burnworth: Ah, the app only stores the same information as the existing fast-track tool system. Um, you know, both fast track and the app store. The same account information and highway trip data, both also store trip, date and time, as well as the number of occupants.

188

00:29:41.870 --> 00:29:57.159

Sarah Burnworth: Um. And as I mentioned, the app does use approximate facial measurements to verify occupants. Um, and it's important to note that that does not involve any actual images taken. Um, and that data is a race upon completion of each trip.

189

00:29:57.220 --> 00:30:05.979

Sarah Burnworth: So that's not stored. Um again. Fast track account data is not tied to this pilot, and participation is voluntary.

190

00:30:08.690 --> 00:30:21.880

Sarah Burnworth: Ah! Earlier this year. So in terms of the phase one pilot timeline Ah! Earlier this year, we reviewed and refined the draft pilot framework. We're currently working to develop, and refine our outreach and recruitment plan

191

00:30:21.890 --> 00:30:36.130

Sarah Burnworth: um a pre-pilot. Ah, with internal agency staff is scheduled for october of this year, and we anticipate that we will conduct the three-month pilot of the app in around november through January.

192

00:30:36.440 --> 00:30:46.799

Sarah Burnworth: Um. We'll conduct a post highlight evaluation in early twenty twenty-three, and finally, an evaluation report will be prepared in early to mid two thousand and twenty, three

193

00:30:48.570 --> 00:31:08.329

Sarah Burnworth: um and i'll leave you with the challenges and opportunities that we're considering. As we move forward with this pilot we we want to make, We want to ensure that the technology provides an equitable experience in terms of its functionality and user experience. We want to make sure that the the technology can accurately determine vehicle, occupancy,

194

00:31:08.340 --> 00:31:27.119

Sarah Burnworth: um and outreach and recruitment will be important to make sure that we recruit a sufficient number of participants, and also ensure that divers provide full volunteers for the pilot. We're currently working through our plans. Um in coordination with our equity. Consultant um based on and and based on other feedback that we've received.

195

00:31:27.810 --> 00:31:45.609

Sarah Burnworth: Ah, we also wanted to explore and address privacy concerns. We know that there are going to be a lot of questions about this, and our goal is to be as transparent as possible through this pilot, and also identify through our pilot evaluation of what may be important to users if this pilot were to move beyond phase, one

196

00:31:47.850 --> 00:31:50.249

Sarah Burnworth: So thank you and i'm happy to answer any questions

197

00:31:57.390 --> 00:31:58.740

Jonathon Kass: great.

198

00:31:58.990 --> 00:32:01.120

Sarah Burnworth: Thank you so much, Sarah,

199

00:32:01.520 --> 00:32:19.859

Jonathon Kass: and just for those that are not aware there. There are several questions in the Q. And A. Panel, and I see Robert, who are busy responding to a few. So if you want to go, read those, you are welcome to do so. Maybe we'll. We'll hit those shortly

200

00:32:20.020 --> 00:32:35.800

Jonathon Kass: um before we get into some general questions. I wanted to. Having now heard about both of these pilots invite any reactions or thoughts from from Jacob having having had experience with

201

00:32:35.810 --> 00:32:44.230

Jacob Denney, SPUR (he/him): thinking about programs like this, and where they might go right and where they might go wrong. What are your thoughts given what you've heard so far?

202

00:32:44.350 --> 00:32:50.799

Jacob Denney, SPUR (he/him): Yeah, thanks, Jonathan, and thanks Robert and Sarah for sharing It's really kind of fascinating stuff.

203

00:32:50.810 --> 00:33:13.459

Jacob Denney, SPUR (he/him): I'm always struck by how much technology is growing and changing, and the opportunities it gives us and and the risks it also represents. And and I appreciate also that you all have been thinking about this, and Mtc. Has been thinking about it, and everyone acknowledged that Mtc. There's really been a leader in centering equity in these questions and having these thoughts and conversations. So I really appreciate.

204

00:33:13.470 --> 00:33:14.939

Jacob Denney, SPUR (he/him): You're doing that work,

205

00:33:15.120 --> 00:33:44.530

Jacob Denney, SPUR (he/him): you know. I I think. Ah, on on Robert's presentation move to cameras and Hiv lanes. Obviously I support anytime. We remove um human discretion from traffic enforcement. What we see, of course, is not only is it not very effective for the purpose of of protecting Hiv lanes. It also ends up, not being effective for the purpose of promoting equitable treatment of people. When people make decisions on who gets a ticket, and who doesn't get a ticket we see overwhelmingly.

206

00:33:44.540 --> 00:33:51.230

Jacob Denney, SPUR (he/him): But the people ticketed are low-income people, and black and brown people whereas white people tend to be treated differently,

207

00:33:51.710 --> 00:34:01.399

Jacob Denney, SPUR (he/him): so personal discretion is biased, and it leads to at best ineffective and at worst discriminatory patterns of behavior. But I think it's great that we can move away from that.

208

00:34:01.770 --> 00:34:04.429

Jacob Denney, SPUR (he/him): You know the concerns. I think

209

00:34:04.700 --> 00:34:17.750

Jacob Denney, SPUR (he/him): that my friends will raise, and I and colleagues in the space, and they are worth raising with you. All that you have started to think about are those privacy concerns? I really applaud the the work you already put in

210

00:34:17.760 --> 00:34:36.620

Jacob Denney, SPUR (he/him): Ah! Relating to blurring faces, deleting data promptly. Those to keep it separate. Those kind of best practices, I think, are really important. I would encourage Mtc. To consider, not being able to reverse blurring, and then having the tightest kind of possible deadlines possible for deleting data,

211

00:34:36.630 --> 00:35:05.510

Jacob Denney, SPUR (he/him): the reason why being that San Francisco. But California has a real history of surveillance from some communities of color by police departments, and that history has, you know, contributed to a long lasting of long time in those communities, and contributes to a sense of distrust around policies like this. Um that are clearly intended to do things like make world safer and better, and reduce environmental impacts, but are viewed as possible

212

00:35:05.530 --> 00:35:11.009

Jacob Denney, SPUR (he/him): by police agencies. Who aren't necessarily interested in kind of the best

213

00:35:11.480 --> 00:35:24.439

Jacob Denney, SPUR (he/him): practices for those communities so baking in even stronger protections on some of the stuff you're already doing, makes it, and being more explicit in it, makes it more likely that those policies will be viewed as less harmful for people,

214

00:35:25.080 --> 00:35:37.240

Jacob Denney, SPUR (he/him): and I think the other thing that comes up for me and you all then talk about this in your presentation. But I think it's very important to consider as we talk about increasing enforcement and raming up enforcement

215

00:35:37.250 --> 00:35:47.230

Jacob Denney, SPUR (he/him): is what kind of finds and fees are associated with violations. And what are the consequences of those fines and bees, and what are the pathways out for those

216

00:35:47.240 --> 00:36:07.220

Jacob Denney, SPUR (he/him): you know right now? I know that maybe the Toll Lane violations and other e-mailing violations in the bay area. If enforced by chp it can cost hundreds of dollars get enforced by a transportation agency. It can make costs anywhere from twenty, five to seventy dollars, depending on the agency in agreement.

217

00:36:07.230 --> 00:36:17.480

Jacob Denney, SPUR (he/him): Um! Those fines are really disproportionately large. Proportionally, they're much larger than the amount of person would have to pay for a tool

218

00:36:17.490 --> 00:36:28.670

um, and also tend to be larger than kind of the perceived violation severity, because it's not something that's worse in someone's life. It's not dangerous. Behavior is Instead, You just didn't follow a rule,

219

00:36:29.030 --> 00:36:46.620

Jacob Denney, SPUR (he/him): so I would encourage people to consider reducing those fines and fees, and really enacting rigorous systems of warnings as well, so that people know that they're being seen, and that they're likely to be caught. We have great research for a lot of great research decades of research.

220

00:36:46.630 --> 00:37:05.200

Jacob Denney, SPUR (he/him): That shows that what actually motivates people to change behavior is not severity of punishment, but is, instead surety of being caught. So once people know that they are on camera, and that they will be punished each time the majority of people will change their behavior and avoid the Hiv Lane or other violations because of that system.

221

00:37:05.520 --> 00:37:11.079

Jacob Denney, SPUR (he/him): So there's no need for disproportionately punitive fines and fees

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00:37:11.130 --> 00:37:26.129

Jacob Denney, SPUR (he/him): on that same track. I think, anytime you introduce any kind of enforcement that can have the effect of accrueing debts for people you need to have systems in place that consider people's economic status, and what happens to those people who can't afford to pay,

223

00:37:26.140 --> 00:37:44.079

Jacob Denney, SPUR (he/him): who may find themselves in a position where they have recruited debt, that they're unable to pay off and find themselves trapped in the debt. And what do we do about that? I

know Ntc. Is considering various payment plan systems. That's good. But I would encourage also waving of debt for lower income people.

224

00:37:44.210 --> 00:38:05.990

Jacob Denney, SPUR (he/him): I would also encourage um. The end of the use of Dmb holds, which are registration holds, where, if people have a certain amount of debt that they haven't paid, they will have their registration paused, so they're unable to renew it until they've paid off that debt. The consequence of that is for many very low income. People where they get the registration, though, which is very large,

225

00:38:06.000 --> 00:38:11.589

Jacob Denney, SPUR (he/him): about one hundred and sixty dollars right now they have an extra cost on top of it. They're unlikely to be able to pay

226

00:38:11.600 --> 00:38:28.120

Jacob Denney, SPUR (he/him): um, and they can't then reach back out to Ah Dc. And and negotiate a payment plan or things like that. Um, because it's in the in these hold. So those kind of levers that come at the end of your system can end up disproportionately harming people.

227

00:38:28.130 --> 00:38:38.439

Jacob Denney, SPUR (he/him): And I raise those just because when you're doing a better job of forcing the rules. There's a transition period where you're going to catch a lot more people, and then the consequences of catching a lot more people,

228

00:38:38.450 --> 00:38:50.210

Jacob Denney, SPUR (he/him): and they're spiraling out for people. And we saw this play out in the bridge tolls when we automated bridge toll enforcement. Suddenly Ntc. Had huge numbers of people who weren't paying their bridge tolls because it just

229

00:38:50.220 --> 00:39:06.190

Jacob Denney, SPUR (he/him): was now recorded by a camera, and people either Mr. Mail or couldn't afford a payer, decided not to pay, and then we had tens of thousands of people, if not more, suddenly finding themselves low in large amounts of debt, and so planning for that kind of outcome is necessary,

230

00:39:06.980 --> 00:39:17.250

Jacob Denney, SPUR (he/him): you know, on the Sarah in your presentation it's super interesting.

231

00:39:17.260 --> 00:39:29.049

Jacob Denney, SPUR (he/him): I'm interested in the facial recognition piece. I know there's a question in the chat that you may have answered. You may answer later on, and why it's necessary to to for people to have facial recognition and app instead of just kind of counting

232

00:39:29.060 --> 00:39:42.190

Jacob Denney, SPUR (he/him): human bodies, and that may be to make it better enforced, or anything like that. But it is interesting to me. I appreciate that You have been thoughtful already about skin tone issues and facial recognition, which is a huge problem.

233

00:39:42.200 --> 00:39:54.800

But if the app is able to recognize all people ask people already. Then you're better than the majority of facial recognition Software is out that we send out and operate in much of the country already. So that's wonderful.

234

00:39:54.810 --> 00:40:23.820

Jacob Denney, SPUR (he/him): Um, I think it goes back again to questions and concerns. People are going to have about surveillance, particularly. Um lowering music views of color. How is that data

stored. Who has access that data? How long is it stored you? You answered many of those questions already, and I think that's great. And I think the same question arises in what happens when they're not validated by the app

235

00:40:23.830 --> 00:40:43.439

Jacob Denney, SPUR (he/him): where they punish? What's the system for appealing those punishments? What are the consequences of those punishments? And are there offerings for people to avoid finding themselves in debt for large amounts of money they can't afford to pay, or other kinds of consequences that arise from these kind of transportation violations.

236

00:40:43.830 --> 00:40:59.829

Jacob Denney, SPUR (he/him): So that was a lot of me talking a lot of stream of consciousness. But I I just appreciate you both sharing that so much. And I'm. I'm really fascinated by the work Ntc. Is doing, and i'm grateful for you all for already thinking about these hard questions and problems that arise from these systems.

237

00:41:02.020 --> 00:41:05.780

Jonathon Kass: Thank you, Jacob. That was a very coherent,

238

00:41:06.320 --> 00:41:18.050

Jonathon Kass: a really really helpful set of thoughts. I I want to give Robert and Sarah a chance to respond to any points that came up there that you particularly want to comment on.

239

00:41:18.060 --> 00:41:30.400

Jonathon Kass: I I do. I've never seen such a productive written response session to our Q. And A. Panel. So I just want to make sure people are aware that

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00:41:30.530 --> 00:41:46.920

Jonathon Kass: questions that have been posted in writing to the Q. And a panel. There is a tab, a separate tab for those that have been answered, and I think we'll try to get into some of those, maybe to to follow up. But you can go ahead and read answers and responses there. And

241

00:41:46.930 --> 00:41:54.799

Jonathon Kass: so, before we get to further questions. Let me ask um, Robert and Sarah, if there's anything to take upset that you want to jump in.

242

00:41:57.300 --> 00:41:59.180

Sarah Burnworth: Sure, I yeah, I guess

243

00:41:59.910 --> 00:42:19.040

Sarah Burnworth: I mean I I can move this line first. Um, you know I I just was gonna say, you know, regarding privacy. Um, you know any information taken from the app Um is a property of Mpc. And Mtp. Has policies in place to safeguard user data and maintain use of privacy. So that's kind of how we're you know, in terms of the app.

244

00:42:19.050 --> 00:42:26.199

Sarah Burnworth: Um. I I wanted to mention you mentioned penalties, and what happens if people don't follow the rules

245

00:42:26.210 --> 00:42:44.460

Sarah Burnworth: the way that the app works is, it verifies a car to determine whether the trip is eligible for a discount or not, so the way that it would likely be implemented is that the app verifies that a

vehicle meets occupancy requirements. When they get a total discount. If the carpool isn't verified, then no discount would be given.

246

00:42:44.540 --> 00:43:00.190

Sarah Burnworth: Um, so it's a little different. Take on, you know. Um on enforcement, if you will. Um, and then you had mentioned facial recognition, and why it's necessary. Um. So I I guess. First Um, you know, facial recognition.

247

00:43:00.200 --> 00:43:08.070

Sarah Burnworth: The technology that the app is using is different from facial recognition. We call it a facial signature, because it's not exactly.

248

00:43:08.140 --> 00:43:19.150

Sarah Burnworth: It's not the same as facial recognition. So facial signatures are measurements of faces that are compared against other measurements of bases, whereas facial recognition compares

249

00:43:19.160 --> 00:43:38.310

Sarah Burnworth: facial signatures against human bases from a digital image or database of faces. So the facial signatures that we're using can't be used to like, reconstruct a face, or compare with a photo to identify a person, which is why I mentioned that we're not taking images.

250

00:43:38.320 --> 00:43:49.739

Sarah Burnworth: Um and images. Aren't, you know, involved in the process. So I I just wanted to point out that distinction. It's a little bit technical, but I think it's important to understand.

251

00:43:49.840 --> 00:43:51.100

Sarah Burnworth: Um,

252

00:43:52.160 --> 00:44:03.390

Sarah Burnworth: Yeah, I I think that's it for my comments at this time, and i'll i'll answer some questions in the chat. I see that Chelsea has been answering some related to the app. So, thanks to you for doing that as well,

253

00:44:06.270 --> 00:44:13.879

Robert Rich: I don't know that I have a lot to add. I mean, we're still early days in this technology, and there's

254

00:44:13.970 --> 00:44:15.699

Robert Rich: I think, a lot to

255

00:44:16.170 --> 00:44:33.529

Robert Rich: that needs to occur before Mtc. Would consider doing another roadside deployment. If we go that round. I mean one that the app based technology is potentially competitive or complementary technology. We don't know yet until it's tested.

256

00:44:33.540 --> 00:44:39.640

Robert Rich: But I do think, you know, you know, some be good to step back and look at the way that the larger policy

257

00:44:39.710 --> 00:44:57.969

Robert Rich: context in terms of how we assign a Jo e toll discounts, and i'm speaking specifically here as to whether or not we we make the assumption that someone is an Hiv or an Sov. And right now we have an honor based system. Um, we have a system that assumes. Ah, if you're in the lane that you're supposed to be in the lane,

258

00:44:57.980 --> 00:45:02.670

Robert Rich: and it's reliant on law enforcement, and we said it's problematic.

259

00:45:02.700 --> 00:45:22.459

Robert Rich: So I think there's a larger policy conversation to be had about how we toll manage lanes that needs to take place before we decide exactly which technology tool is appropriate. And although these technology has been out here for a while, as I said, at the top of the presentation, and someone asked: I mean, they have been deployed

260

00:45:22.470 --> 00:45:38.669

Robert Rich: in Virginia. I think they're going to be up in North Carolina. L. A. Metro is testing a system speaking just to the roadside, and I know that there's been deployments to the app, too. We're not at the stage where that's a common industry practice, and you may want to be careful about

261

00:45:39.040 --> 00:45:51.290

Robert Rich: ah starting with the being the early adopter in this space, which I think the bay area often does, because we're technologically advanced. But there may be further technological advancements coming,

262

00:45:51.300 --> 00:45:57.410

Robert Rich: and and I do think it's important to have that policy conversation before you pick which technology you're going to go with.

263

00:46:01.020 --> 00:46:12.520

Jonathon Kass: Thank you both at the end. There, Robert, you noted something in the Q. And A. Panel that there's a question that we have as well, which is,

264

00:46:12.710 --> 00:46:19.729

Jonathon Kass: we are sort of an early adopter. But these are systems that are being deployed in other places already,

265

00:46:19.910 --> 00:46:31.829

Jonathon Kass: and I just wonder if you could say a little bit more about that First of all, whether any of the other places are beyond the pilot phase, if you're aware. And actually

266

00:46:32.090 --> 00:46:33.979

Jonathon Kass: it's actively. Um.

267

00:46:34.010 --> 00:46:44.090

Jonathon Kass: And likewise, if there's any other technology in the mix that shows some promise that maybe we would be a subject for a future.

268

00:46:44.960 --> 00:47:04.409

Robert Rich: Sure, i'll try to briefly answer that because i'll be speaking to other People's work, and sometimes they launch a pilot, and then they stop using the technology that Doesn't always get publicized as much as the the successes. But uh, you know, the trans urban tolling group in Virginia did deploy a Dod system. I don't know if they still are. That's a roadside system.

269

00:47:04.420 --> 00:47:11.190

Robert Rich: Metro is testing in technology on express lanes. To my knowledge, they have not made it live in their tolling system.

270

00:47:11.200 --> 00:47:21.009

Robert Rich: Yet. Um, there are going to be plans to put a roadside system in North Carolina. There have been tests of multiple systems over multiple years.

271

00:47:21.210 --> 00:47:31.200

Robert Rich: It was deployed in New York at the Verzano Narrows Bridge, but then there was a wider policy change, and it was taken out again. That's the roadside system. I'm speaking to here only,

272

00:47:31.290 --> 00:47:46.819

Robert Rich: but you know, in terms of looking down the years and saying, Okay, what might emerge. There is some interest. There are more sensors inside cars, and specifically there's some discussion of a mandate, or having sensors to make sure that there's

273

00:47:46.830 --> 00:48:03.939

Robert Rich: to avoid overheating for passengers and for for children relentless side vehicles. And so there could be a sense of opt-in that uses cameras that are built in some of the vehicle that technology is not ready yet, as far as I know, but it would be a third alternative to that, to the phone under the roadside.

274

00:48:04.520 --> 00:48:09.590

Robert Rich: It could, it could very well use sensors that aren't cameras.

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00:48:10.320 --> 00:48:26.169

Robert Rich: But again, that's a a process like that would probably take at least a decade to become standard in a fleet, and i'm not saying you necessarily want to wait for it. But I I think you want to be cognizant about the technology choices that you make, because you can get locked in to those technology choices.

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00:48:30.100 --> 00:48:48.400

Robert Rich: Well, that that it's obviously just a great deal of complexity in deciding, not only being an early adopter, but adopting something when the technology is evolving so rapidly as you've described, and yet, at the same time at least, Spur believes,

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00:48:48.410 --> 00:49:06.619

Jonathon Kass: you know, getting back to questions of equity that there is just immense potential to deliver better transit service that are better vampool, surface, better mobility for people. If we can get these

278

00:49:06.630 --> 00:49:15.159

Jonathon Kass: these high occupancy lanes and express lands functioning really well. So there's an urgency at the same time. And on that front

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00:49:15.260 --> 00:49:26.909

Jonathon Kass: a lot of our system is simple. Hv. Lanes not express lanes, and the politics of converting those is tough, so I imagine they'll be there for a while. So I I just wanted to

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00:49:27.530 --> 00:49:29.820

Jonathon Kass: understand a little bit better

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00:49:29.840 --> 00:49:36.359

Jonathon Kass: the stages to having this kind of technology actually function for straight out of Hlv lanes.

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00:49:36.380 --> 00:49:52.579

Jonathon Kass: Um, You You mentioned that there's some legislative needs that right now you would not be authorized to put this kind of technology on an Hp. Length. Can you talk about some of the other steps and or challenges for either the app based or the

283

00:49:52.790 --> 00:49:58.419

Jonathon Kass: the roadside systems to be applied in a pure Hiv environment.

284

00:49:59.780 --> 00:50:08.040

Robert Rich: Sure I can speak to it since I've mentioned it, and then Sarah may want to follow, because I know It's something that she's given consideration to as well.

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00:50:08.330 --> 00:50:24.780

Robert Rich: We don't have um any a regional body in the bay area that um other that has authority to and to enforce Hiv Lane violations. Um when you're outside of a tolling network, and outside of matters related to tolling,

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00:50:25.050 --> 00:50:29.490

Robert Rich: responsibility for occupancy falls on the California highway control. The

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00:50:29.600 --> 00:50:34.699

Robert Rich: that would be a State legislative change. I think you would also probably need to

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00:50:35.080 --> 00:50:49.399

Robert Rich: make institutional change to build technologies and enforcement potentially, or verification depending on how you restructuring it into some government age. Whenever Government agency gets tasked to do that, and that's that's a maybe even a bigger

289

00:50:49.410 --> 00:51:06.049

Robert Rich: challenge from my perspective. But you know currently just putting a a camera out there to look into the vehicle doesn't give you the information about how to contact those motorists, you know. That's what the toll system is for, and

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00:51:06.230 --> 00:51:18.050

Robert Rich: it. It is, I think, difficult to build up that kind of infrastructure, given all all the other work that needs to be done on our regional transportation system. But, Sarah, do you want to maybe speak more to that?

291

00:51:18.340 --> 00:51:30.720

Sarah Burnworth: Sure. Yeah. So for the app, the app is initially being contemplated for implementation on express lanes. I mean it's really It's It's surely to tell if this technology makes sense to implement it more widely.

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00:51:30.730 --> 00:51:45.289

Sarah Burnworth: I think you know part of the reason why the technology is not being considered for purpling is that, unlike a cross-lane carpenter don't have license like wears, which would allow us to identify vehicle weather vehicles are using the app to verify their occupancy.

293

00:51:45.300 --> 00:51:58.749

Sarah Burnworth: So I mean, you know that being said, you know potentially this, the technology could be used in carplanes to reward, People say for legitimately caroling, you know not just. It wouldn't be able to identify those who are not caroling. If that makes sense

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00:52:01.230 --> 00:52:15.290

Robert Rich: just to add to that, the the positioning of the roadside cameras is not set up to capture license plate imagery, either. So that is another camera potentially another poll. And so, you know, from an engineering perspective,

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00:52:15.300 --> 00:52:22.340

Robert Rich: a systems integration perspective. You have to keep those additional costs in mind with vod, when, if you were to be in an Hiv line.

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00:52:23.880 --> 00:52:38.939

Jonathon Kass: So it's sort of all of what you describe. Sort of sounds like. It is a really long road to imagine this in an Hlv environment, and that one might just assume that those Hv lanes are going to kind of work the way they work

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00:52:39.030 --> 00:52:41.019

Jonathon Kass: with other Enforcement

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00:52:41.510 --> 00:52:44.810

Sarah Burnworth: and tell me until we maybe convert them,

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00:52:45.310 --> 00:52:49.389

or at least equip them with a very different kind of technology.

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00:52:50.950 --> 00:52:56.969

Robert Rich: I think that question is someone outside my ken. But I think it's a fair assessment.

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00:53:01.340 --> 00:53:14.120

Jonathon Kass: Um! Well, the um let me uh that. There was a question about this um i'm having trouble sorting through all the answer to unanswered questions. So let me just come back to a question that was asked about

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00:53:14.280 --> 00:53:26.340

Jonathon Kass: the um fossil positives which you you describe, Robert. That sort of the false positives is the the key number, the key number to actually make this acceptable, that you can be

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00:53:26.720 --> 00:53:33.460

Jonathon Kass: charging or defining people as violators if they're not in any meaningful number.

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00:53:34.870 --> 00:53:37.340

Jonathon Kass: Is there

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00:53:37.460 --> 00:53:50.769

Jonathon Kass: an industry, standard, or an expectation of how low that number needs to get before this could be a viable path forward. How low a false positives, once you've done whatever post review you would do

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00:53:52.770 --> 00:54:09.640

Robert Rich: That's a a good question, which is why i'm deferring and saying, Maybe There, there, Isn't. But I think you're saying closer to the ninety nine point five to ninety, nine point nine percent in terms of what you do for like um optimal character recognition, for instance, reviewing license plates.

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00:54:09.650 --> 00:54:12.769

Robert Rich: That's that's closer to the accuracy level that you're looking at,

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00:54:12.780 --> 00:54:18.700

Robert Rich: and this is probably even going to cost more to the Human Manual Review, and there's probably a little more sensitivity

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00:54:18.710 --> 00:54:26.889

Robert Rich: around it. So you would be looking for a very high level certainty, I think, before you put that technology in production.

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00:54:26.900 --> 00:54:28.350

So certainly not

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00:54:28.470 --> 00:54:30.460

Robert Rich: what we saw in phase

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00:54:30.570 --> 00:54:34.329

Robert Rich: in the in the phase of the work that we did at eight hundred and eighty,

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00:54:36.200 --> 00:54:41.019

Jonathon Kass: and and Sarah is there. I apologize. If I miss this. Is there

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00:54:41.250 --> 00:54:47.070

equivalent to a false, positive, false, positive in the in the app based system.

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00:54:47.920 --> 00:55:06.669

Sarah Burnworth: Yeah. So that's I. I mentioned accuracy, and that's something that we're going to be looking at through the pilot evaluation, you know. And I think some of that will also come from. You know we'll be looking at the technology. But then also from the surveys and focus groups that we'll be doing with with pilot participants and kind of how they're feeling about it. What's their experience with it,

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00:55:06.680 --> 00:55:12.499

Sarah Burnworth: you know. And then you know, including that with what we're seeing with the app and the back end of the technology as well

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00:55:14.350 --> 00:55:15.620

Jonathon Kass: got it.

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00:55:19.580 --> 00:55:35.989

Jonathon Kass: So there's a question just appeared which is a natural follow up here, Can you? Can you reduce? Can you just sort of turn the dial down to reduce false positives except to change some of your standards to accept.

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00:55:36.280 --> 00:55:44.959

Jonathon Kass: You're not going to catch anywhere near as many of the violators, and thereby just make sure you're not catching people properly.

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00:55:44.980 --> 00:55:53.650

Robert Rich: Yeah, it's a great question, and the answer is, Yes, you can, because the systems produce not only an assessment to me for the roadside

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00:55:53.660 --> 00:56:00.110

Robert Rich: uh the, to produce not only assessment of the number of people in the vehicle, but a confidence score,

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00:56:00.120 --> 00:56:07.760

and you would do precisely what you said is, you would want to pick a confidence score a threshold. If you're putting this into production

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00:56:07.770 --> 00:56:10.189

Robert Rich: that make sure that you let

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00:56:10.200 --> 00:56:11.370

Robert Rich: you know

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00:56:11.390 --> 00:56:19.310

Robert Rich: that's it. Ten centers go free before before you punish one. I mean, I do think that is the correct approach It's

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00:56:19.430 --> 00:56:23.310

Robert Rich: There's enough uncertainty with the technology, and there's a low

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00:56:23.950 --> 00:56:36.980

Robert Rich: current capture of violators like the current level enforcement is so low that even just a small improvement in the level of verification and changing that operation a little bit is going to offer a lot of improvement.

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00:56:36.990 --> 00:56:43.550

Robert Rich: What you don't want to do is is, you know, potentially punish your sanctioned people,

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00:56:43.560 --> 00:56:46.690

Robert Rich: or even it, just a small toll fee that they Don't deserve.

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00:56:46.700 --> 00:56:50.489

Robert Rich: So yeah, that that exists was certainly something that you know that

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00:56:50.500 --> 00:56:54.709

Robert Rich: that that that's going to factor heavily into any adoption of the technology.

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00:56:55.260 --> 00:57:11.019

Sarah Burnworth: Yeah, Yeah, Um, I agree. I mean that's a great point about small changes potentially leading to big improvements, I think, with the app, I mean a lot of the technology with an app is customizable. So there, you know, there are a lot of like in terms of our policies, and how, if we were to move to a deployment like how to?

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00:57:11.030 --> 00:57:38.809

Sarah Burnworth: We want to make it. I mean, you know, for example, in the what I showed were for the pilot, we're asking the participants to reverify their occupants every single trip, you know, one option could be to be verify. You know It's more work for the user right. They've got to verify the beginning at the end of the trip. You know one option in the future because it could be done at random, you know. So I think there there are a lot of options there depending on where we want to go with it. If we were to move forward with that technology.

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00:57:39.930 --> 00:57:47.119

Robert Rich: I agree. And i'll add one other thing, which is that none of these technologies foolproof. And I think we know that if you hang your dry clean

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00:57:47.180 --> 00:58:05.729

Robert Rich: in the side rear of human window. You can compound the care roadside system. There's probably a way to compound the smartphone system that we Haven't discovered yet, or maybe Sarah's discovered It's um it's again about making progress and trying to make the system fair. You know enough. I think it's cool.

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00:58:08.680 --> 00:58:11.320

Jonathon Kass: Well, you guys. Um!

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00:58:11.330 --> 00:58:35.370

Robert Rich: We are so grateful for your spending time with us today. We are about out of time. Um! We. We covered a lot of ground if you include all the Q. A. Questions. Um responded to thank you, Chelsea, for jumping in and helping with that as well. And thank you so much, Jacob, for for giving a really helpful additional context. Um to consider as we explore these technologies. I you know

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00:58:36.230 --> 00:58:55.929

Jonathon Kass: i'm grateful that you all are doing this so carefully. I'm, i'm a little daunted. And what a long road it appears! We have a head, and I hope that you guys will keep added uh full force, because this is a really important problem for the Bay area resolve to, uh to deliver some sustainable,

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00:58:55.940 --> 00:58:58.249

Jonathon Kass: equitable, and reliable mobility,

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00:58:58.740 --> 00:59:04.580

Jonathon Kass: thanks to all of our audience for joining and hanging in there, and, thanks to all of our protectors,

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00:59:06.440 --> 00:59:07.539

Jonathon Kass: a great master

342

00:59:07.700 --> 00:59:08.779

Jonathon Kass: and everyone.