

1

00:00:00,000 --> 00:00:05,680

Attention viewers, do not try anything you're about to see at home.

2

00:00:05,680 --> 00:00:08,800

We're what you call experts.

3

00:00:08,800 --> 00:00:10,600

On this episode of MythBusters...

4

00:00:10,600 --> 00:00:13,360

I feel like eating my beret.

5

00:00:13,360 --> 00:00:16,880

Adam and Jamie step on the gas.

6

00:00:16,880 --> 00:00:22,600

For the myth that a muddy motor car gets better mileage than its clean cousin.

7

00:00:22,600 --> 00:00:25,200

And then, in a classic MythBusters twist...

8

00:00:25,200 --> 00:00:26,960

What the hell are we doing?

9

00:00:26,960 --> 00:00:31,920

They test if a dirty dimple can save you money.

10

00:00:31,920 --> 00:00:38,000

Meanwhile, Carrie Grant and Tori get sloshed for science.

11

00:00:38,000 --> 00:00:42,040

First on beer, then on beer and liquor.

12

00:00:42,040 --> 00:00:44,320

Another round of science for me and my buddy here.

13

00:00:44,320 --> 00:00:46,720

In the quest to test the myth...

14

00:00:46,720 --> 00:00:48,680

Rise and shine!

15

00:00:48,680 --> 00:00:55,960

That beer and spirits leave you feeling sicker.

16

00:00:55,960 --> 00:00:58,080

Who are the MythBusters?

17

00:00:58,080 --> 00:00:59,080

Adam Savage.

18

00:00:59,080 --> 00:01:00,480

That's significant data.

19

00:01:00,480 --> 00:01:01,480

And Jamie Heineman.

20

00:01:01,480 --> 00:01:04,240

Jamie wants a big home.

21

00:01:04,240 --> 00:01:08,680

Between them more than 30 years of special effects experience.

22

00:01:08,680 --> 00:01:10,240

Joining them...

23

00:01:10,240 --> 00:01:11,240

Tori Bellachy.

24

00:01:11,240 --> 00:01:13,560

We're popping popcorn with lasers.

25

00:01:13,560 --> 00:01:16,560

Grant Imahara.

26

00:01:16,560 --> 00:01:17,560

And Carrie Byron.

27

00:01:17,560 --> 00:01:18,560

It's terrifying!

28

00:01:18,560 --> 00:01:21,560

They'll just tell the myths.

29

00:01:21,560 --> 00:01:23,240

Here comes chaos!

30

00:01:23,240 --> 00:01:34,240

They put them to the test.

31

00:01:34,240 --> 00:01:39,000

First up, Adam and Jamie are getting down and dirty.

32

00:01:39,000 --> 00:01:41,480

You're paddling around on the internet again, aren't we?

33

00:01:41,480 --> 00:01:42,480

Check this out.

34

00:01:42,480 --> 00:01:44,160

I just got a myth off of this site.

35

00:01:44,160 --> 00:01:45,160

What?

36

00:01:45,160 --> 00:01:46,160

You'll like this.

37

00:01:46,160 --> 00:01:49,520

It's called dirty versus clean car and it's another fuel efficiency myth.

38

00:01:49,520 --> 00:01:54,200

The myth is that a dirty car is more fuel efficient than a clean car because the dirt

39

00:01:54,200 --> 00:01:58,800

creates some kind of golf ball like effect on the surface of the car.

40

00:01:58,800 --> 00:02:02,440

Somehow making it more aerodynamic and thus more fuel efficient.

41

00:02:02,440 --> 00:02:03,440

That's not bad.

42

00:02:03,440 --> 00:02:05,600

I thought you'd like it.

43

00:02:05,600 --> 00:02:10,840

But could a coating of crud really alter the aerodynamics of your car and give you better

44

00:02:10,840 --> 00:02:11,840

fuel efficiency?

45

00:02:11,840 --> 00:02:17,680

Well, it's down to the MythBusters to find out if there's any mileage to this theory.

46

00:02:18,440 --> 00:02:19,880

Okay, here's my plan.

47

00:02:19,880 --> 00:02:27,200

Two cars side by side, one clean, one as dirty as we can make it and we test our fuel efficiencies

48

00:02:27,200 --> 00:02:28,200

against each other.

49

00:02:28,200 --> 00:02:32,360

You know, based on previous experience, we've never been able to find two cars that have

50

00:02:32,360 --> 00:02:34,360

identical performance.

51

00:02:34,360 --> 00:02:37,920

I say we get one car and test it both clean and dirty.

52

00:02:37,920 --> 00:02:41,200

And compare the results against each other to see if there's any meat on the bones of

53

00:02:41,200 --> 00:02:42,200

this myth.

54

00:02:42,200 --> 00:02:43,200

Exactly.

55

00:02:43,200 --> 00:02:45,080

Let's do it!

56

00:02:45,080 --> 00:02:50,040

With the wheels sorted out, the MythBusters hit the road to jumpstart this myth.

57

00:02:50,040 --> 00:02:53,040

A myth where accuracy is everything.

58

00:02:53,040 --> 00:02:57,520

This test is all about precisely measuring the amount of fuel used by this car.

59

00:02:57,520 --> 00:03:02,200

Now to do that, we bypass the normal fuel system and install their own.

60

00:03:02,200 --> 00:03:03,320

This is our tank.

61

00:03:03,320 --> 00:03:07,720

The fuel comes out the bottom, it goes into the fuel pump and right into the fuel injection

62

00:03:07,720 --> 00:03:08,720

system.

63

00:03:08,720 --> 00:03:13,720

Now when we get up to 65 miles an hour and we cross the starting line, Adam moves the

64

00:03:13,720 --> 00:03:16,520

arrow to the fuel level at that point.

65

00:03:16,520 --> 00:03:20,960

When we finish a mile later, he moves the other arrow to where the fuel is at at that

66

00:03:20,960 --> 00:03:21,960

point.

67

00:03:21,960 --> 00:03:24,440

That's how we're measuring the gas consumed.

68

00:03:24,440 --> 00:03:29,480

And with a mile marked out, they can get their hands dirty.

69

00:03:29,480 --> 00:03:34,920

This story is all about whether a dirty car gets better mileage than a clean car.

70

00:03:34,920 --> 00:03:40,520

So to do the test, we need a dirty car.

71

00:03:40,520 --> 00:03:41,520

Get down there.

72

00:03:41,520 --> 00:03:42,520

Yeah!

73

00:03:43,520 --> 00:03:50,840

They're following that old MythBusters adage that if it's worth doing, it's worth overdoing.

74

00:03:50,840 --> 00:03:56,600

Dirty car sitting pretty, it's time to find out what its muddy mileage is.

75

00:03:56,600 --> 00:03:58,600

Alright, go for it.

76

00:03:58,600 --> 00:03:59,600

Okay.

77

00:03:59,600 --> 00:04:04,000

And just give me a boop when you cross the starting line.

78

00:04:04,000 --> 00:04:05,000

Okay.

79

00:04:05,000 --> 00:04:06,000

And...

80

00:04:06,000 --> 00:04:09,400

And you're maintaining speed, right?

81

00:04:09,400 --> 00:04:11,000

Exactly at 65.

82

00:04:11,000 --> 00:04:17,200

For consistency, the guys run the dirty car down the track five times at a highway speed

83

00:04:17,200 --> 00:04:20,280

of 65 miles per hour every time.

84

00:04:20,280 --> 00:04:22,880

Three and seven eighths.

85

00:04:22,880 --> 00:04:24,880

Alright, here we go.

86

00:04:24,880 --> 00:04:28,440

And then Adam converts the inches to miles per gallon.

87

00:04:28,440 --> 00:04:33,600

Alright, so we ran this dirty car on a course that was exactly a mile long, every single

88

00:04:33,600 --> 00:04:38,680

time at precisely 65 miles per hour and the results are pretty consistent.

89

00:04:38,680 --> 00:04:43,320

Averaged out over all the runs, I'm coming up with a fuel efficiency of exactly 24 miles

90

00:04:43,320 --> 00:04:45,200

per gallon.

91

00:04:45,200 --> 00:04:47,520

Dirty car, 24 miles per gallon, huh?

92

00:04:47,520 --> 00:04:48,520

That's correct.

93

00:04:48,520 --> 00:04:49,520

Let's clean it up.

94

00:04:49,520 --> 00:04:50,520

Alright.

95

00:04:50,520 --> 00:04:55,520

24 miles per gallon seems reasonable.

96

00:04:55,520 --> 00:04:58,160

But now for some good, clean fun.

97

00:04:58,160 --> 00:05:02,440

But one shampoo and scrub ain't gonna ditch the dirt.

98

00:05:02,440 --> 00:05:07,600

Six car washes and some Heinemann buffing later and the car is spotless.

99

00:05:07,600 --> 00:05:08,800

That's ready to go?

100

00:05:08,800 --> 00:05:10,960

Clean car, we're good to go.

101

00:05:10,960 --> 00:05:16,280

Just like last time, the clean car takes five trips down the mile long track.

102

00:05:16,280 --> 00:05:18,280

And boop!

103

00:05:18,280 --> 00:05:19,280

Got it.

104

00:05:19,280 --> 00:05:20,280

Boop!

105

00:05:20,280 --> 00:05:23,000

Oh, more data points.

106

00:05:23,000 --> 00:05:24,560

So check this out.

107

00:05:24,560 --> 00:05:27,280

Half of our runs were three and five eighths inches.

108

00:05:27,280 --> 00:05:28,840

Half of the runs were three and a half.

109

00:05:28,840 --> 00:05:31,120

That means I can do the average in my head.

110

00:05:31,120 --> 00:05:33,440

It's three and nine sixteenths.

111

00:05:33,440 --> 00:05:36,840

I love consistent data.

112

00:05:36,840 --> 00:05:42,760

And with all that consistent data, it doesn't take Adam long to crunch the numbers.

113

00:05:42,760 --> 00:05:44,640

So the results are in and here they are.

114

00:05:44,640 --> 00:05:47,240

The dirty car got an average of 24 miles per gallon.

115

00:05:47,240 --> 00:05:51,320

While the clean car got an average of 26.4 miles per gallon.

116

00:05:51,320 --> 00:05:55,240

I'm gonna spell it out for you and make it really clear that the clean car did better.

117

00:05:55,240 --> 00:05:57,560

What'd we get?

118

00:05:57,560 --> 00:06:01,080

Clean car's mileage, 26.4 miles per gallon.

119

00:06:01,080 --> 00:06:02,080

That's better.

120

00:06:02,080 --> 00:06:03,720

A lot better than the dirty one, yeah.

121

00:06:03,720 --> 00:06:04,960

Not looking good for the myth.

122

00:06:04,960 --> 00:06:05,960

No, it's not.

123

00:06:05,960 --> 00:06:06,960

Dude!

124

00:06:06,960 --> 00:06:18,160

Next, the team is hitting the sauce for science.

125

00:06:18,160 --> 00:06:23,360

Well thanks to this, I can't actively participate in the next myth, which I'm pretty thrilled

126

00:06:23,360 --> 00:06:29,280

about because what we have in store for you two is painful, nauseating, and downright nasty.

127

00:06:29,280 --> 00:06:32,160

This is like a running theme for you, isn't it?

128

00:06:32,160 --> 00:06:34,040

All right, what is it this time?

129

00:06:34,040 --> 00:06:36,280

This myth is actually about the morning after.

130

00:06:36,280 --> 00:06:38,080

Stick to beer, you're in the clear.

131

00:06:38,080 --> 00:06:41,080

Beer and liquor, never sicker.

132

00:06:41,080 --> 00:06:45,440

So assuming you consume the same amount of alcohol, a night on beer alone will leave

133

00:06:45,440 --> 00:06:48,920

you feeling better the next day than if you mix your drinks.

134

00:06:48,920 --> 00:06:49,920

Exactly.

135

00:06:49,920 --> 00:06:53,400

So we're not just getting drunk for science, we have to get hangovers?

136

00:06:53,400 --> 00:06:58,560

You'll be suffering for science, Tori.

137

00:06:58,560 --> 00:07:03,400

Because according to this saying, by sticking to beer and not mixing drinks, you can minimize

138

00:07:03,400 --> 00:07:06,000

the hurt the morning after.

139

00:07:06,000 --> 00:07:09,360

But testing that ain't gonna be fun.

140

00:07:09,360 --> 00:07:11,240

All right, so how are we gonna test this one?

141

00:07:11,240 --> 00:07:12,600

Well it sounds pretty simple.

142

00:07:12,600 --> 00:07:16,200

First we get drunk on beer only and find a way to quantify our hangover.

143

00:07:16,200 --> 00:07:18,800

Then we get drunk again on beer and liquor and compare.

144

00:07:18,800 --> 00:07:22,120

Well you know what, it's very important that we consume the same amount of alcohol for

145

00:07:22,120 --> 00:07:23,120

each test.

146

00:07:23,120 --> 00:07:25,400

That way this is an accurate comparison.

147

00:07:25,400 --> 00:07:28,320

And to keep things scientific, the drinks need to be the only variable.

148

00:07:28,320 --> 00:07:31,800

So first off, you need to eat the same thing for each day of testing.

149

00:07:31,800 --> 00:07:34,880

Secondly, you need to do the testing at the same time each day.

150

00:07:34,880 --> 00:07:39,160

And third, I think it's important that you take a few days off to recover fully before

151

00:07:39,160 --> 00:07:40,160

we test you again.

152

00:07:40,160 --> 00:07:41,160

Yes!

153

00:07:41,160 --> 00:07:46,920

And one more thing, to make sure that there's no cheating, you two are gonna be sleeping

154

00:07:46,920 --> 00:07:48,400

here in the shop.

155

00:07:48,400 --> 00:07:49,400

What?

156

00:07:49,400 --> 00:07:53,120

It's the only way I can assure that you're gonna show up for a 6 AM hangover test.

157

00:07:53,120 --> 00:07:54,920

Why do we need to get up at 6 AM?

158

00:07:54,920 --> 00:07:59,560

Well, it's all about maximizing hangovers and controlling variables.

159

00:08:00,040 --> 00:08:06,000

For a scientific comparison of both hangovers, Grant and Tori will eat and sleep in an identical

160

00:08:06,000 --> 00:08:07,840

way for each test.

161

00:08:07,840 --> 00:08:16,080

But most importantly, for both sessions, they'll consume exactly the same volume of alcohol.

162

00:08:16,080 --> 00:08:20,880

And to ensure their stay is comfortable, Carrie and her Mythbusters minions get to work on

163

00:08:20,880 --> 00:08:23,480

hangover HQ.

164

00:08:23,480 --> 00:08:24,480

Touch of class.

165

00:08:24,480 --> 00:08:28,800

Now that the rooms are all built and completely decorated, it's time to create my torture

166

00:08:29,040 --> 00:08:31,280

I mean, by testing area.

167

00:08:31,280 --> 00:08:37,160

We're going to run a gamut of tests to find out which is the worst hangover, beer or beer

168

00:08:37,160 --> 00:08:38,840

with spirits.

169

00:08:38,840 --> 00:08:44,920

And after consulting with a hangover specialist, Carrie has built the Throne of Moan.

170

00:08:44,920 --> 00:08:49,120

This will test for the six crucial symptoms of a hangover.

171

00:08:49,120 --> 00:08:52,960

The first two being sensitivity to light and sound.

172

00:08:52,960 --> 00:08:56,880

Basically these lights are gonna start low and get brighter and brighter until they say

173

00:08:56,880 --> 00:08:57,880

stop.

174

00:08:57,960 --> 00:08:58,960

Right there?

175

00:08:58,960 --> 00:08:59,960

Yeah, that's good.

176

00:08:59,960 --> 00:09:02,960

Now, on to sound volume and duration.

177

00:09:02,960 --> 00:09:07,960

We'll start at a low volume and we'll get louder and louder until they just can't take

178

00:09:07,960 --> 00:09:08,960

it anymore.

179

00:09:08,960 --> 00:09:09,960

Stop!

180

00:09:09,960 --> 00:09:13,960

Thirdly, to test just how well their hungover brains are functioning.

181

00:09:13,960 --> 00:09:17,680

The boys will be looking at a series of ten pictures which they need to remember all of

182

00:09:17,680 --> 00:09:18,680

and in order.

183

00:09:18,680 --> 00:09:22,680

Each test, the pictures will be the same, but the order will change.

184

00:09:22,680 --> 00:09:23,680

You're doing good.

185

00:09:23,680 --> 00:09:25,800

When you talk, it breaks my concentration.

186

00:09:25,800 --> 00:09:26,800

Next up.

187

00:09:26,800 --> 00:09:29,280

Then, they move on to the headache assessment.

188

00:09:29,280 --> 00:09:32,480

They're going to decide between one and ten how bad their headache is because everybody

189

00:09:32,480 --> 00:09:36,200

knows really bad headache goes along with a really bad hangover.

190

00:09:36,200 --> 00:09:40,040

Fifth, to test the level of dehydration, it's the pinch.

191

00:09:40,040 --> 00:09:42,040

You pinch your skin for three seconds.

192

00:09:42,040 --> 00:09:44,720

If you're a healthy hydrated person, it steps right back into place.

193

00:09:44,720 --> 00:09:49,920

But if you're dehydrated, your skin will stick there and slowly go back to normal.

194

00:09:49,920 --> 00:09:50,920

Creepy.

195

00:09:50,920 --> 00:09:56,520

We're going to film that on high speed so that we can get exactly how long it takes for

196

00:09:56,520 --> 00:09:58,160

them to go back to normal.

197

00:09:58,160 --> 00:10:00,440

And for the final symptom, nausea.

198

00:10:00,440 --> 00:10:02,760

Carrie has just the thing.

199

00:10:02,760 --> 00:10:07,080

This chair is based on a NASA motion sickness chair that they use for the astronauts.

200

00:10:07,080 --> 00:10:08,280

Now this is how we're going to use it.

201

00:10:08,280 --> 00:10:12,240

We're going to turn up to maximum spin and they're going to move their heads forward,

202

00:10:12,240 --> 00:10:21,320

back, side, side, until either they cry for mercy or they vomit.

203

00:10:21,320 --> 00:10:23,600

But for the time being, that's under wraps.

204

00:10:23,960 --> 00:10:26,320

Alright, so for tonight, what are we doing?

205

00:10:26,320 --> 00:10:28,400

Okay, well tonight is the control test.

206

00:10:28,400 --> 00:10:31,360

So you're staying completely sober, just keep yourselves occupied.

207

00:10:31,360 --> 00:10:34,880

And in the morning, we'll come back and do all the baseline tests.

208

00:10:34,880 --> 00:10:39,600

After turning in at midnight, it's only six hours before Carrie arrives with just what

209

00:10:39,600 --> 00:10:40,600

this myth needs.

210

00:10:40,600 --> 00:10:45,600

Time for science!

211

00:10:45,600 --> 00:10:47,600

More cowbell.

212

00:10:47,600 --> 00:10:52,400

Why must you torture us like this?

213

00:10:52,400 --> 00:11:00,120

Carrie wastes no time getting their tired but hangover free baseline controls.

214

00:11:00,120 --> 00:11:03,280

First up, it's the bright lights till they can stand it no longer.

215

00:11:03,280 --> 00:11:06,280

Ah, there it is.

216

00:11:06,280 --> 00:11:08,560

Okay, let's stop there.

217

00:11:08,560 --> 00:11:16,360

Then Carrie turns up the volume for audio.

218

00:11:16,360 --> 00:11:21,280

Both the boys breeze through the memory test and the headache assessment.

219

00:11:22,280 --> 00:11:26,280

A quick pinch and their dehydration control is set.

220

00:11:26,280 --> 00:11:30,560

Because you're hydrated and you haven't been drinking, your skin snaps back to normal very

221

00:11:30,560 --> 00:11:31,560

quickly.

222

00:11:31,560 --> 00:11:37,160

And finally, to test their nausea, it's Grant's nemesis, the seasickness chair.

223

00:11:37,160 --> 00:11:38,160

Oh no.

224

00:11:38,160 --> 00:11:41,760

No, no, no, no, no, no, no.

225

00:11:41,760 --> 00:11:45,080

Feeling pretty not so good.

226

00:11:45,080 --> 00:11:46,760

Let's stop it here.

227

00:11:46,760 --> 00:11:49,760

Grant manages a baseline of 30 minutes.

228

00:11:49,760 --> 00:11:50,760

Okay.

229

00:11:50,760 --> 00:11:53,680

Why'd you stop it?

230

00:11:53,680 --> 00:11:57,600

Because you hit the maximum, it's been an entire hour.

231

00:11:57,600 --> 00:12:01,160

Unsurprisingly, they both did well on their control tests.

232

00:12:01,160 --> 00:12:05,760

They weren't bothered by the noise or bright light, they weren't dehydrated, and their

233

00:12:05,760 --> 00:12:09,080

brains were functioning better than expected.

234

00:12:09,080 --> 00:12:14,760

So Carrie just ran us through a whole bunch of tests and they were very annoying.

235

00:12:14,760 --> 00:12:17,400

And this is doing it without a hangover.

236

00:12:17,400 --> 00:12:21,560

I can't imagine how bad it's going to be when we're hungover.

237

00:12:21,560 --> 00:12:22,560

Still to come.

238

00:12:22,560 --> 00:12:30,280

Our aerodynamic duo puts a dirty twist on the dirty car tail.

239

00:12:30,280 --> 00:12:32,440

I feel like eating my beret.

240

00:12:32,440 --> 00:12:34,960

I'm not gonna.

241

00:12:34,960 --> 00:12:37,760

The Go Board.

242

00:12:37,760 --> 00:12:40,080

Information you need, freedom to get going.

243

00:12:40,080 --> 00:12:42,480

At a value that's simply refreshing.

244

00:12:43,480 --> 00:12:44,480

Courtyard.

245

00:12:44,480 --> 00:12:48,480

It's a new stay.

246

00:12:48,480 --> 00:12:50,880

Nothing matches that dentist level of clean.

247

00:12:50,880 --> 00:12:54,480

But imagine if you could get that dentist smooth clean feeling every time you brush

248

00:12:54,480 --> 00:12:59,480

it home.

249

00:12:59,480 --> 00:13:02,760

You can with oral B rechargeable brushes.

250

00:13:02,760 --> 00:13:06,320

Dentist inspired cupping action surrounds each tooth to remove up to twice as much plaque

251

00:13:06,320 --> 00:13:07,840

as a regular manual brush.

252

00:13:07,840 --> 00:13:11,000

The power of a dentist smooth clean feeling every day.

253

00:13:11,000 --> 00:13:14,200

B rechargeable brushes starting at \$22.

254

00:13:14,200 --> 00:13:15,800

Satisfaction guaranteed.

255

00:13:15,800 --> 00:13:18,000

Visit oral B.com for details.

256

00:13:31,000 --> 00:13:33,000

Wakakinaka.

257

00:13:33,000 --> 00:13:36,000

Makaparo Kinaka.

258

00:13:36,000 --> 00:13:37,000

No.

259

00:13:37,000 --> 00:13:38,000

Yeah.

260

00:13:38,000 --> 00:13:39,000

Kinaka.

261

00:13:40,000 --> 00:13:42,000

What did you say?

262

00:13:42,000 --> 00:13:45,000

I don't know.

263

00:13:45,000 --> 00:13:47,000

Kalua Coffee Le Cor.

264

00:13:47,000 --> 00:13:48,000

Explore Your Curiosity.

265

00:13:48,000 --> 00:13:49,000

Storm Chasers.

266

00:13:49,000 --> 00:13:51,000

New episode Sundays at 10.

267

00:13:51,000 --> 00:13:53,000

It's all new on Discovery.

268

00:13:53,000 --> 00:13:55,000

On the next All New Time Warp.

269

00:13:55,000 --> 00:13:56,000

Alright dude.

270

00:13:56,000 --> 00:13:59,000

The team experiments with some viewer requests.

271

00:13:59,000 --> 00:14:02,000

And the blue man group stops by to redecorate.

272

00:14:02,000 --> 00:14:03,000

I have something on me.

273

00:14:03,000 --> 00:14:05,000

An all new Time Warp.

274

00:14:05,000 --> 00:14:06,000

Next.

275

00:14:06,000 --> 00:14:08,000

It's all new on Discovery.

276

00:14:10,000 --> 00:14:11,000

Go.

277

00:14:11,000 --> 00:14:17,000

The Mythbusters are testing if you can get more mileage out of a dirty car than a clean one.

278

00:14:17,000 --> 00:14:20,000

Not looking good for the myth.

279

00:14:20,000 --> 00:14:21,000

No, it's not.

280

00:14:21,000 --> 00:14:26,000

But it looks as though this myth has already run out of gas.

281

00:14:26,000 --> 00:14:27,000

That didn't work too well.

282

00:14:27,000 --> 00:14:28,000

Nope.

283

00:14:28,000 --> 00:14:31,000

Dirty car was far less efficient than the clean car.

284

00:14:31,000 --> 00:14:32,000

I don't know what to do.

285

00:14:32,000 --> 00:14:36,000

Well isn't this myth about golf ball like effects on a car?

286

00:14:36,000 --> 00:14:37,000

Yeah.

287

00:14:37,000 --> 00:14:41,000

Well why don't we have a closer look at golf ball like effects on a golf ball.

288

00:14:41,000 --> 00:14:45,000

And then see how that might apply to a real car.

289

00:14:45,000 --> 00:14:46,000

Exactly.

290

00:14:46,000 --> 00:14:47,000

I love it.

291

00:14:47,000 --> 00:14:48,000

Let's do it.

292

00:14:48,000 --> 00:14:49,000

Okay.

293

00:14:49,000 --> 00:14:52,000

So before they give up on the dirty car myth.

294

00:14:52,000 --> 00:14:53,000

This is where I'll get them.

295

00:14:53,000 --> 00:14:56,000

They're hitting the Moffitt Field Lynx.

296

00:14:56,000 --> 00:14:58,000

In the name of research.

297

00:14:58,000 --> 00:15:00,000

And while Adam gets into the swing of things.

298

00:15:00,000 --> 00:15:02,000

Be the ball, right?

299

00:15:02,000 --> 00:15:05,000

Jamie has teed up aerospace engineer,

300

00:15:05,000 --> 00:15:09,000

Rabi Mehta for the inside info on golf ball dimples.

301

00:15:09,000 --> 00:15:11,000

Why do golf balls have dimples?

302

00:15:11,000 --> 00:15:15,000

Very simply because a dimple golf ball travels further than a smooth one.

303

00:15:15,000 --> 00:15:20,000

If we had a smooth ball, this laminar boundary layer tends to leave the surface at the location of the apex of the ball.

304

00:15:20,000 --> 00:15:26,000

This creates a separated region behind the ball, which we call a wake, and that means high drag.

305

00:15:26,000 --> 00:15:32,000

Now if we dimple the ball, then the dimples will make that laminar boundary layer turbulent,

306

00:15:32,000 --> 00:15:34,000

and thereby make it more energetic.

307

00:15:34,000 --> 00:15:38,000

It's able to stay attached to the surface for a longer period.

308

00:15:38,000 --> 00:15:41,000

Therefore, your laying separation is smaller wake, less drag.

309

00:15:41,000 --> 00:15:45,000

So just how much of a difference do those dimples make?

310

00:15:45,000 --> 00:15:51,000

For a top-notch drive, the mythbusters have enlisted pro golfer William Lin.

311

00:15:52,000 --> 00:15:56,000

William alternates between driving the regular and smooth balls.

312

00:15:56,000 --> 00:16:00,000

I claim this golf ball is the name of mythbusters.

313

00:16:00,000 --> 00:16:06,000

The only difference being the dimpling. In every other respect, they're identical.

314

00:16:06,000 --> 00:16:08,000

The smooth one feels like hitting a brick.

315

00:16:08,000 --> 00:16:10,000

I swapped it out when you weren't looking.

316

00:16:10,000 --> 00:16:13,000

Well, first of all, William, nice shooting.

317

00:16:13,000 --> 00:16:14,000

Thank you.

318

00:16:14,000 --> 00:16:16,000

These are all really tightly clustered.

319

00:16:16,000 --> 00:16:19,000

But you'll notice the smooth balls are all here.

320

00:16:19,000 --> 00:16:22,000

Dimpled balls way down that way.

321

00:16:22,000 --> 00:16:24,000

Looks almost twice as far to me.

322

00:16:24,000 --> 00:16:26,000

Yeah, at least.

323

00:16:26,000 --> 00:16:28,000

It's clear those dimples make a huge difference.

324

00:16:28,000 --> 00:16:29,000

I'll be darned.

325

00:16:29,000 --> 00:16:32,000

And just how much of a difference?

326

00:16:32,000 --> 00:16:35,000

Smooth balls, 556 feet.

327

00:16:37,000 --> 00:16:41,000

Dimpled balls, 893 feet.

328

00:16:41,000 --> 00:16:46,000

That's an average of 37% further for the dimpled balls.

329

00:16:46,000 --> 00:16:50,000

The dimples obviously work. I'd like to have a closer look at why.

330

00:16:50,000 --> 00:16:52,000

Yeah, me too.

331

00:16:52,000 --> 00:16:59,000

So to get a bead on exactly how the simple dimple works, the guys are going to need bigger balls.

332

00:16:59,000 --> 00:17:02,000

We need to have a closer look at the aerodynamics of a golf ball.

333

00:17:02,000 --> 00:17:04,000

And to do that, we're going to put it in a wind tunnel.

334

00:17:04,000 --> 00:17:08,000

Now, these balls are kind of small to have a nice look at it.

335

00:17:08,000 --> 00:17:14,000

So I'm going to take this bowling ball and give it dimples like what are on here to scale.

336

00:17:14,000 --> 00:17:17,000

Then we ought to be able to see it clearly.

337

00:17:17,000 --> 00:17:19,000

But while Jamie's going big scale...

338

00:17:19,000 --> 00:17:24,000

Okay, here's the first 360 holes.

339

00:17:24,000 --> 00:17:27,000

Adam's going the opposite way.

340

00:17:27,000 --> 00:17:34,000

So the fact that this effect works so well on a golf ball may mean that it has some application to a full-size automobile.

341

00:17:34,000 --> 00:17:38,000

But we're not going to start dimpling this full-size car just yet.

342

00:17:38,000 --> 00:17:40,000

Now, we're going to work in scale.

343

00:17:40,000 --> 00:17:44,000

And that's where this polycarbonate car will actually come into play.

344

00:17:44,000 --> 00:17:46,000

I'm going to make two castings out of it in resin.

345

00:17:46,000 --> 00:17:49,000

One of which I will dimple, one of which I will not.

346

00:17:49,000 --> 00:17:54,000

And hopefully in the comparison between those two, I might see some of the improvement that I'm looking for.

347

00:17:54,000 --> 00:17:58,000

It's done. It's perfect.

348

00:17:59,000 --> 00:18:02,000

Three hours of drilling holes.

349

00:18:03,000 --> 00:18:06,000

Eventually the models are ready for their close-up.

350

00:18:06,000 --> 00:18:09,000

Well, we've got some questions about smoothness and dimples.

351

00:18:09,000 --> 00:18:15,000

And hopefully here at the Fluid Mechanics Lab at NASA Ames Research Center, we'll find the answers that we're looking for.

352

00:18:15,000 --> 00:18:18,000

Hey Curtis, we've got some extra large golf balls for testing.

353

00:18:18,000 --> 00:18:21,000

Ah, fantastic. Why don't we get to work putting these in the wind tunnel?

354

00:18:21,000 --> 00:18:22,000

All right.

355

00:18:25,000 --> 00:18:26,000

Start it up.

356

00:18:27,000 --> 00:18:32,000

Can you really see the area behind the ball? It's like a bubble.

357

00:18:32,000 --> 00:18:36,000

Yeah, really clear how much is happening back in there.

358

00:18:36,000 --> 00:18:39,000

And once both balls have been exposed...

359

00:18:39,000 --> 00:18:41,000

That's pretty cool. I want to see the high speed.

360

00:18:41,000 --> 00:18:42,000

Yeah.

361

00:18:42,000 --> 00:18:44,000

The high speed tells the tale.

362

00:18:44,000 --> 00:18:47,000

Traces smoke patterns from both the smooth and the dimpled ball.

363

00:18:47,000 --> 00:18:50,000

And it's really clear the dimpled ball is making much less of a wake.

364

00:18:50,000 --> 00:18:53,000

It's expending less energy dragging that bubble around.

365

00:18:53,000 --> 00:18:56,000

Which is why it'll travel farther.

366

00:18:56,000 --> 00:19:03,000

The chaotic boundary layer on the dimpled ball created a smaller wake and therefore less drag.

367

00:19:03,000 --> 00:19:08,000

The only question we've now got to answer is, will this effect translate to the shape of a car?

368

00:19:08,000 --> 00:19:11,000

Well, that's a perfect segue to the next sequence.

369

00:19:11,000 --> 00:19:13,000

Almost too perfect.

370

00:19:13,000 --> 00:19:15,000

This thing right here is a water channel.

371

00:19:15,000 --> 00:19:21,000

And the water in it is moving about an inch a second, which allows us to inject fluorescent dye streams into it

372

00:19:21,000 --> 00:19:25,000

so we can have a close look at flow patterns around various objects.

373

00:19:25,000 --> 00:19:30,000

Now, given that we're dealing with aerodynamics, why are we using water?

374

00:19:30,000 --> 00:19:34,000

Well, because technically water and air are both fluids.

375

00:19:34,000 --> 00:19:37,000

And for our purposes, they behave the same way.

376

00:19:37,000 --> 00:19:42,000

Well, that's a good thing because Adam's already got the smooth car immersed.

377

00:19:42,000 --> 00:19:44,000

Beauty. Look at that.

378

00:19:44,000 --> 00:19:46,000

I'll turn on the die.

379

00:19:46,000 --> 00:19:47,000

Alright.

380

00:19:47,000 --> 00:19:50,000

Wow, that is so beautiful.

381

00:19:50,000 --> 00:19:54,000

So that dead zone behind the car, that's what's slowing it down, right?

382

00:19:54,000 --> 00:19:58,000

Yeah, that's the wake and the smaller it is, the better off we are as far as mileage.

383

00:19:58,000 --> 00:20:03,000

And once some red dye is added, the static wake is even clearer.

384

00:20:03,000 --> 00:20:06,000

Ah, look at that.

385

00:20:06,000 --> 00:20:09,000

That is so cool. It's just sticking there.

386

00:20:09,000 --> 00:20:12,000

But how will the dimpled car compare?

387

00:20:12,000 --> 00:20:16,000

Okay, that's interesting. It looks like it starts at the same point on the car, but look at the green lines.

388

00:20:16,000 --> 00:20:21,000

They look like they're hugging closer. It looks like that bubble is smaller.

389

00:20:21,000 --> 00:20:26,000

It could be narrower, but to be accurate, we should look at the two images side by side.

390

00:20:26,000 --> 00:20:29,000

Well, it's funny you mentioned that, Jamie, because...

391

00:20:29,000 --> 00:20:34,000

Now, through the magic of post-production, I want to show you each of the cars in its water channel tests.

392

00:20:34,000 --> 00:20:37,000

Here's the smooth car. Here's the dimpled car.

393

00:20:37,000 --> 00:20:40,000

Hold on. I'm going to leave frame so you can see them both as big as possible.

394

00:20:40,000 --> 00:20:41,000

Look at that.

395

00:20:41,000 --> 00:20:49,000

I don't know about you, but it seems subtle, but still somewhat there, that the dimpled car has a smaller wake.

396

00:20:49,000 --> 00:20:54,000

Does that mean that it's more fuel efficient? The only way to tell is for us to go full scale.

397

00:20:54,000 --> 00:20:57,000

But that's not going to be a walk in the park.

398

00:20:57,000 --> 00:21:00,000

For that, they'll need to get a little creative.

399

00:21:02,000 --> 00:21:04,000

Next, our hangover guinea pigs...

400

00:21:04,000 --> 00:21:06,000

Everything hurts right now, though.

401

00:21:06,000 --> 00:21:09,000

...are suffering in science.

402

00:21:12,000 --> 00:21:15,000

Beer.

403

00:21:15,000 --> 00:21:18,000

Supposedly the nectar of the gods.

404

00:21:18,000 --> 00:21:23,000

It's the world's oldest and most widely consumed alcoholic beverage.

405

00:21:23,000 --> 00:21:29,000

But does a night on the amber liquid leave you in a better state the morning after than mixing your drinks?

406

00:21:29,000 --> 00:21:35,000

With their hangover free baseline done and dusted, it's time to wet the whistle.

407

00:21:35,000 --> 00:21:37,000

Alright, time for science.

408

00:21:37,000 --> 00:21:39,000

Finally, we can start drinking.

409

00:21:39,000 --> 00:21:40,000

Alright, so what's the deal?

410

00:21:40,000 --> 00:21:46,000

I'm going to keep track of how many beers you guys drink, drink as many as you think it's going to take for you guys to get hangovers,

411

00:21:46,000 --> 00:21:51,000

and we'll have the same amount of alcohol when we do the beer mixing with the spirits.

412

00:21:51,000 --> 00:21:56,000

With Carrie keeping track, the boys don't waste any time beer-ing up.

413

00:21:56,000 --> 00:21:58,000

Check this out.

414

00:21:58,000 --> 00:22:04,000

I don't always drink beer, but when I do, I prefer mythbusters.

415

00:22:04,000 --> 00:22:07,000

Because the goal of this experiment...

416

00:22:07,000 --> 00:22:09,000

Can't get another round of science from me and my buddy here.

417

00:22:09,000 --> 00:22:12,000

...is drinking enough to get hungover.

418

00:22:12,000 --> 00:22:14,000

Hey, darling, can I get another one?

419

00:22:14,000 --> 00:22:16,000

Something they're not happy about.

420

00:22:16,000 --> 00:22:17,000

Beer.

421

00:22:17,000 --> 00:22:20,000

We're not even that far in.

422

00:22:20,000 --> 00:22:23,000

I know, but science ain't pretty.

423

00:22:23,000 --> 00:22:27,000

Remember, Tory and Grant don't need to drink the same amount as each other.

424

00:22:27,000 --> 00:22:34,000

The crucial thing is that they drink the same volume of alcohol for this test and the mixed drinks test.

425

00:22:34,000 --> 00:22:36,000

Touch your nose with your left hand.

426

00:22:36,000 --> 00:22:38,000

Very good.

427

00:22:38,000 --> 00:22:40,000

Now with your right.

428

00:22:40,000 --> 00:22:44,000

After a solid session of 11 beers for Tory and five for Grant,

429

00:22:44,000 --> 00:22:48,000

it's clear that tomorrow morning is going to be bad.

430

00:22:48,000 --> 00:22:53,000

Okay, so they've had enough beers to get them sufficiently hungover for tomorrow.

431

00:22:53,000 --> 00:22:54,000

Not even close.

432

00:22:54,000 --> 00:22:56,000

Almost.

433

00:22:57,000 --> 00:23:00,000

So I'm going to leave the EMT in charge.

434

00:23:00,000 --> 00:23:03,000

I'm going to go home and get a good night's sleep.

435

00:23:03,000 --> 00:23:07,000

Make sure they don't hurt themselves, Kevin.

436

00:23:07,000 --> 00:23:14,000

At midnight with the final beer tally at 14 for Tory and six for Grant, they turn in.

437

00:23:14,000 --> 00:23:21,000

Hopefully, in the best case scenario, I have a hangover and I'm ready to test tomorrow morning,

438

00:23:21,000 --> 00:23:24,000

which is going to suck.

439

00:23:25,000 --> 00:23:26,000

Good night.

440

00:23:26,000 --> 00:23:33,000

And just like the control, after six hours of peaceful slumber, Carrie returns.

441

00:23:34,000 --> 00:23:36,000

Rise and shine.

442

00:23:37,000 --> 00:23:39,000

It's morning time.

443

00:23:41,000 --> 00:23:43,000

Good morning, Mythbusters.

444

00:23:44,000 --> 00:23:47,000

There's no denying that the boys are hungover.

445

00:23:48,000 --> 00:23:51,000

Ugh, everything hurts right now though.

446

00:23:56,000 --> 00:24:00,000

It is physically throbbing. It feels like it's like...

447

00:24:00,000 --> 00:24:03,000

Bum, bum, bum.

448

00:24:03,000 --> 00:24:08,000

But it's over to Carrie to assess just how bad they're feeling.

449

00:24:08,000 --> 00:24:11,000

First to face the test says Tory.

450

00:24:11,000 --> 00:24:13,000

He's blinded by the light.

451

00:24:13,000 --> 00:24:14,000

Okay.

452

00:24:14,000 --> 00:24:15,000

Right there?

453

00:24:15,000 --> 00:24:17,000

Can't take the audio barrage.

454

00:24:17,000 --> 00:24:18,000

That's a good level.

455

00:24:18,000 --> 00:24:19,000

That's a good level.

456

00:24:19,000 --> 00:24:21,000

And is clearly dehydrated.

457

00:24:21,000 --> 00:24:23,000

Definitely slower than yesterday.

458

00:24:23,000 --> 00:24:26,000

Although he does surprisingly well on concentration.

459

00:24:26,000 --> 00:24:27,000

Time's up.

460

00:24:27,000 --> 00:24:31,000

After two minutes, he demands the chair stop.

461

00:24:31,000 --> 00:24:34,000

Ugh, I'm done. I can't do this anymore.

462

00:24:35,000 --> 00:24:41,000

Grants similar when it comes to light, sound and dehydration, but flunts the concentration test.

463

00:24:41,000 --> 00:24:46,000

And as for the chair, viewers of a nervous disposition, look away now.

464

00:24:47,000 --> 00:24:50,000

Just think, when you vomit, the test is over.

465

00:24:51,000 --> 00:24:52,000

Ugh!

466

00:24:56,000 --> 00:25:03,000

Pretty much I think I was just holding back what was inevitable throughout all the tests.

467

00:25:03,000 --> 00:25:08,000

So, you know, I think as soon as I got up, I was feeling pretty queasy.

468

00:25:08,000 --> 00:25:14,000

Just sitting in the chair, it's just so many bad memories of it.

469

00:25:15,000 --> 00:25:17,000

Couldn't hold it back any longer.

470

00:25:17,000 --> 00:25:22,000

The morning after beer, both the guys' tolerance to light and sound has more than half.

471

00:25:22,000 --> 00:25:27,000

There are at least four times more dehydrated and their nausea is through the roof.

472

00:25:27,000 --> 00:25:32,000

Compared to the control, Grant and Tori are badly hung over.

473

00:25:33,000 --> 00:25:39,000

I'm getting here, but man, now that I'm here, I'm not so happy.

474

00:25:41,000 --> 00:25:43,000

I'm turning that light off now.

475

00:25:44,000 --> 00:25:47,000

After the break, Adam and Jamie go pottery.

476

00:25:47,000 --> 00:25:50,000

I haven't seen anything like that before, anywhere.

477

00:25:50,000 --> 00:25:53,000

They're playing dirty for fuel efficiency.

478

00:25:56,000 --> 00:25:59,000

Don't try anything you see on the show at home.

479

00:25:59,000 --> 00:26:01,000

Wear what you call experts.

480

00:26:05,000 --> 00:26:08,000

Busting myths can be a painful business.

481

00:26:09,000 --> 00:26:14,000

Tori and Grant are all too used to putting their bodies on the line to get to the truth.

482

00:26:15,000 --> 00:26:19,000

But for this myth, they're getting sloshed for science.

483

00:26:24,000 --> 00:26:26,000

This is good behavior.

484

00:26:26,000 --> 00:26:32,000

And after a couple of days drying out, the boys are back at the bar, ready to buck their spirits up.

485

00:26:33,000 --> 00:26:34,000

Okay, what's the plan?

486

00:26:34,000 --> 00:26:37,000

We're about to mix our spirits with our beer.

487

00:26:37,000 --> 00:26:39,000

Now this is how it breaks down.

488

00:26:39,000 --> 00:26:40,000

Here are your charts.

489

00:26:40,000 --> 00:26:44,000

Grant, you consumed 3.6 ounces of alcohol cumulatively through your beers.

490

00:26:44,000 --> 00:26:47,000

Tori, you consumed 7.968.

491

00:26:47,000 --> 00:26:52,000

So for that, it means you, Grant, need to drink two beers and four shots.

492

00:26:52,000 --> 00:26:56,000

Tori, you get to drink five beers and eight shots.

493

00:26:58,000 --> 00:27:00,000

That sounds like I'm going to die.

494

00:27:00,000 --> 00:27:02,000

It's the exact same amount of alcohol.

495

00:27:02,000 --> 00:27:03,000

And that's key.

496

00:27:03,000 --> 00:27:11,000

Despite their reluctance for a scientific comparison, the guys will drink precisely the same volume of alcohol as test one.

497

00:27:11,000 --> 00:27:15,000

But this time in the form of beer and spirits.

498

00:27:15,000 --> 00:27:16,000

Pour the whiskey, Red.

499

00:27:16,000 --> 00:27:18,000

Yeah, give me a shot of tequila.

500

00:27:19,000 --> 00:27:23,000

Remember, the guys have eaten exactly the same thing as the previous test day.

501

00:27:23,000 --> 00:27:27,000

Started drinking at the same time and are proceeding at the same rate.

502

00:27:27,000 --> 00:27:31,000

The only difference here is the mix of alcohol.

503

00:27:31,000 --> 00:27:34,000

Oh, what a dough.

504

00:27:37,000 --> 00:27:40,000

My job as executor of the alcohol is finished.

505

00:27:40,000 --> 00:27:43,000

They have both ingested their allotted amount for the evening.

506

00:27:43,000 --> 00:27:47,000

I'm happy to say it's time for me to go home because they're starting to get a little crazy.

507

00:27:47,000 --> 00:27:51,000

Indeed, excessive consumption of alcohol can impair judgment.

508

00:27:51,000 --> 00:27:53,000

Throw your head back if you can't throw the glass.

509

00:27:53,000 --> 00:27:55,000

And lead to recklessness.

510

00:27:55,000 --> 00:27:57,000

All right, it looks like it's time to go to bed.

511

00:28:01,000 --> 00:28:03,000

Sorry.

512

00:28:08,000 --> 00:28:10,000

It's time for bed.

513

00:28:11,000 --> 00:28:15,000

And it goes without saying, please don't try that at home.

514

00:28:16,000 --> 00:28:20,000

Sleep tight, because tomorrow it all starts again.

515

00:28:31,000 --> 00:28:36,000

And although the dirt didn't cut it, the clean car did better.

516

00:28:36,000 --> 00:28:40,000

There could be light at the end of the water tunnel yet.

517

00:28:40,000 --> 00:28:42,000

What do you say to that, man?

518

00:28:42,000 --> 00:28:45,000

Well, there did seem to be a small effect in the water tunnel.

519

00:28:45,000 --> 00:28:47,000

Right, well, you know what that means.

520

00:28:47,000 --> 00:28:48,000

No, what?

521

00:28:48,000 --> 00:28:52,000

Well, if there was a small effect on the small scale car.

522

00:28:52,000 --> 00:28:56,000

It follows that there would be a big effect on a bigger car.

523

00:28:56,000 --> 00:28:59,000

Right, if we're going to find out whether or not that's true, we need to go full scale with this thing.

524

00:28:59,000 --> 00:29:00,000

I'm there.

525

00:29:00,000 --> 00:29:02,000

But that ain't going to be easy.

526

00:29:02,000 --> 00:29:08,000

How exactly do you dimple a full scale car without ruining it?

527

00:29:08,000 --> 00:29:13,000

So this 1,000 pounds of clay is hopefully our solution to dimpling this car.

528

00:29:13,000 --> 00:29:19,000

In order to do that, we need to start by covering the entire body in a perfectly even layer of clay.

529

00:29:19,000 --> 00:29:23,000

So we went to the automotive design department of a local design college

530

00:29:23,000 --> 00:29:27,000

and conscripted some of the students to assist us in this endeavor.

531

00:29:27,000 --> 00:29:29,000

We're going to set up a whole assembly line.

532

00:29:29,000 --> 00:29:32,000

Some people are going to be cutting slabs of clay all the same thickness.

533

00:29:32,000 --> 00:29:33,000

Some people are going to be applying it.

534

00:29:33,000 --> 00:29:36,000

Some people are going to be smoothing the clay that's already applied.

535

00:29:36,000 --> 00:29:43,000

And hopefully by the end of the day, we're going to have a car that looks just like this, except this color.

536

00:29:43,000 --> 00:29:47,000

Right, well, with the clay nation in motion, it won't be long.

537

00:29:47,000 --> 00:29:49,000

But why clay?

538

00:29:49,000 --> 00:29:55,000

We decided to use clay on this car because actually dimpling the car is rather difficult.

539

00:29:55,000 --> 00:30:02,000

An impact on the sheet metal of the car would make a big cavity rather than just a nice little divot.

540

00:30:02,000 --> 00:30:08,000

The divots we can do on the clay and that'll happen after we do the task with it smooth.

541

00:30:08,000 --> 00:30:11,000

And that's a whole lot of smoothing.

542

00:30:11,000 --> 00:30:13,000

But eventually...

543

00:30:13,000 --> 00:30:19,000

Six guys, 850 pounds of clay and six hours later, we've got a control car.

544

00:30:19,000 --> 00:30:24,000

Indeed, but the weight of the clay will likely lower the car's fuel efficiency.

545

00:30:24,000 --> 00:30:30,000

So before any dimpling begins, they'll need a new control with its smooth mileage.

546

00:30:30,000 --> 00:30:34,000

Here I am back at the start line of our one-mile test track.

547

00:30:34,000 --> 00:30:36,000

At the other end, I've got a car covered in clay.

548

00:30:36,000 --> 00:30:40,000

I'm going to run it several times down this track smooth.

549

00:30:40,000 --> 00:30:46,000

Then I'm going to carve some golf ball-like dimples into its surface and do several more runs.

550

00:30:46,000 --> 00:30:53,000

This test ought to answer once and for all whether golf ball-like dimples in a car makes it more fuel efficient.

551

00:30:53,000 --> 00:30:57,000

Great, but this time they're doing things slightly different.

552

00:30:57,000 --> 00:30:59,000

This is going to be our test procedure.

553

00:30:59,000 --> 00:31:07,000

We've replaced the window-mounted gas tank with a trunk-mounted fuel cell, which we will weigh before we do the test.

554

00:31:07,000 --> 00:31:09,000

10.056 kilograms of fuel.

555

00:31:09,000 --> 00:31:15,000

We'll get up to 65 miles per hour using our regular fuel tank, and when we hit the start line...

556

00:31:15,000 --> 00:31:16,000

Right here!

557

00:31:16,000 --> 00:31:18,000

...we'll switch to the fuel cell.

558

00:31:18,000 --> 00:31:20,000

When we cross the finish line...

559

00:31:20,000 --> 00:31:22,000

One mile later...

560

00:31:22,000 --> 00:31:31,000

...we turn off the fuel cell, we weigh it again, and then we determine the miles per gallon by the drop in weight of the fuel cell.

561

00:31:31,000 --> 00:31:35,000

And with that sorted, it's go time for the smooth car.

562

00:31:35,000 --> 00:31:37,000

You ready to do some driving?

563

00:31:37,000 --> 00:31:38,000

I am.

564

00:31:38,000 --> 00:31:39,000

Let's do it.

565

00:31:39,000 --> 00:31:41,000

You're going to do it for speed.

566

00:31:41,000 --> 00:31:48,000

Okay, I'm about to switch solenoids once we cross this mark, and bang! We're on the ox tank.

567

00:31:48,000 --> 00:31:50,000

Luckily for the mythbusters...

568

00:31:50,000 --> 00:31:53,000

Seems like it's holding together well.

569

00:31:53,000 --> 00:31:54,000

Yeah.

570

00:31:54,000 --> 00:31:59,000

The clay car is pottery in motion.

571

00:31:59,000 --> 00:32:02,000

Alright, hands on the fuel cell.

572

00:32:06,000 --> 00:32:10,000

And after five runs, what's the magic mileage number?

573

00:32:10,000 --> 00:32:14,000

9.553 kilograms.

574

00:32:15,000 --> 00:32:18,000

26 miles to the gallon.

575

00:32:18,000 --> 00:32:21,000

Exactly the same as the car with no clay on it.

576

00:32:21,000 --> 00:32:22,000

I love it.

577

00:32:22,000 --> 00:32:26,000

I got a point I want to make because I can hear the complaint that you might have.

578

00:32:26,000 --> 00:32:27,000

I can hear it through the TV.

579

00:32:27,000 --> 00:32:34,000

You're thinking, how can 800 pounds of clay added to the outside of the car not change its fuel efficiency?

580

00:32:34,000 --> 00:32:35,000

But you're thinking about it wrong.

581

00:32:35,000 --> 00:32:39,000

See, we're not measuring the overall real world fuel efficiency of this car.

582

00:32:39,000 --> 00:32:46,000

We're measuring it under very precise conditions, i.e. at 65 miles an hour for exactly one mile.

583

00:32:46,000 --> 00:32:53,000

Now, I grant you, with the clay on the car, it probably burned more fuel to get up to that speed, but that doesn't concern us.

584

00:32:53,000 --> 00:32:58,000

We expected to see no change with the clay on, and the data bore that out.

585

00:32:58,000 --> 00:33:00,000

And speaking of boring things out...

586

00:33:00,000 --> 00:33:06,000

We need to make a bunch of dimples all over this car, and you'd think we'd want to have something like a melon baller.

587

00:33:06,000 --> 00:33:09,000

But they actually don't work too well on clay.

588

00:33:09,000 --> 00:33:11,000

So I came up with my own tool.

589

00:33:11,000 --> 00:33:12,000

It's this thing right here.

590

00:33:12,000 --> 00:33:16,000

It's a wire that you rotate, and it works pretty well.

591

00:33:16,000 --> 00:33:18,000

And there you go.

592

00:33:18,000 --> 00:33:19,000

Dimple.

593

00:33:19,000 --> 00:33:23,000

Thanks to Jamie's Divit device, the dimples are simple.

594

00:33:23,000 --> 00:33:25,000

This is what this whole episode is about.

595

00:33:25,000 --> 00:33:27,000

This is the most fun part of the whole thing.

596

00:33:27,000 --> 00:33:30,000

Fun, but there's a lot of clay to carve.

597

00:33:30,000 --> 00:33:31,000

Oops.

598

00:33:31,000 --> 00:33:34,000

So in true, myth busters form.

599

00:33:34,000 --> 00:33:37,000

A very familiar phrase just rang through my head.

600

00:33:37,000 --> 00:33:40,000

What the hell are we doing?

601

00:33:40,000 --> 00:33:43,000

We're compressing thousands of depressions.

602

00:33:43,000 --> 00:33:46,000

They kind of get slippery after a while, though.

603

00:33:46,000 --> 00:33:48,000

Into only 30 seconds.

604

00:33:48,000 --> 00:33:50,000

And the final result?

605

00:33:50,000 --> 00:33:53,000

I don't mean to get all weepy, but dude, this is lovely.

606

00:33:53,000 --> 00:33:55,000

That's one dimpled car.

607

00:33:55,000 --> 00:33:59,000

If ever there was a car that looked like a golf ball, this is it, huh?

608

00:33:59,000 --> 00:34:03,000

The dimpled car is an unmistakably myth busters,

609

00:34:03,000 --> 00:34:08,000

unmistakably over-engineered take on the golf ball effect.

610

00:34:08,000 --> 00:34:12,000

I haven't seen anything like that before, anywhere.

611

00:34:12,000 --> 00:34:15,000

All the different ways we discussed how to do this,

612

00:34:15,000 --> 00:34:17,000

different tools and different materials,

613

00:34:17,000 --> 00:34:20,000

nothing I was thinking about when we first started posing how to do this,

614

00:34:20,000 --> 00:34:22,000

looked this good.

615

00:34:22,000 --> 00:34:23,000

It looks fantastic.

616

00:34:23,000 --> 00:34:24,000

Yeah.

617

00:34:24,000 --> 00:34:26,000

I can see it now.

618

00:34:26,000 --> 00:34:29,000

All the NASCARs are going to be looking like this.

619

00:34:29,000 --> 00:34:31,000

What do you think?

620

00:34:31,000 --> 00:34:36,000

It may be, Jamie, but that all depends on how well it does.

621

00:34:36,000 --> 00:34:40,000

Coming up next on MythBusters, find out which is the worst hangover.

622

00:34:40,000 --> 00:34:42,000

Drinking beer? Beer and liquor?

623

00:34:42,000 --> 00:34:45,000

Or just having to endure my hangover testing lab?

624

00:34:45,000 --> 00:34:48,000

Why are you talking so loud?

625

00:34:49,000 --> 00:34:55,000

First, Grant and Tori stuck to beer.

626

00:34:55,000 --> 00:34:57,000

I can't do this anymore.

627

00:34:57,000 --> 00:35:00,000

Then last night it was beer and liquor.

628

00:35:00,000 --> 00:35:06,000

So if the myth is right, this morning they should be feeling a lot sicker.

629

00:35:06,000 --> 00:35:07,000

Here we go again.

630

00:35:07,000 --> 00:35:11,000

This is the final day, the final wake-up call for the boys in the testing of the myth.

631

00:35:11,000 --> 00:35:14,000

Well, beer and liquor make you sicker.

632

00:35:15,000 --> 00:35:20,000

I've got all of my testing equipment ready and we're going to go wake the boys up now.

633

00:35:23,000 --> 00:35:25,000

Good morning, MythBusters.

634

00:35:25,000 --> 00:35:28,000

It's time to start science.

635

00:35:29,000 --> 00:35:32,000

Add while Tori is certainly worse for wear,

636

00:35:32,000 --> 00:35:38,000

I feel like somebody has hammered a 10-inch spike in my head.

637

00:35:38,000 --> 00:35:40,000

Grant is a different story.

638

00:35:40,000 --> 00:35:42,000

Grant, are you awake?

639

00:35:42,000 --> 00:35:44,000

Grant.

640

00:35:48,000 --> 00:35:50,000

It's got to be worse than a suckering.

641

00:35:50,000 --> 00:35:52,000

I got news for you.

642

00:35:52,000 --> 00:35:54,000

I'm awake and I'm not hungover.

643

00:35:54,000 --> 00:35:56,000

Hold on there, Mr. Imajara.

644

00:35:56,000 --> 00:35:57,000

Explain yourself.

645

00:35:57,000 --> 00:36:01,000

For whatever reason, the same amount of alcohol

646

00:36:01,000 --> 00:36:04,000

divided between beer and hard liquor

647

00:36:04,000 --> 00:36:09,000

is much easier on my system than just straight beer.

648

00:36:09,000 --> 00:36:14,000

On the straight beer, I was kind of doing all kinds of crazy things,

649

00:36:14,000 --> 00:36:18,000

but with the liquor, with the hard alcohol shots,

650

00:36:18,000 --> 00:36:22,000

I feel that I remain fairly lucid throughout the evening.

651

00:36:22,000 --> 00:36:24,000

And when I went to bed, I was like,

652

00:36:24,000 --> 00:36:27,000

I probably could do more,

653

00:36:27,000 --> 00:36:33,000

but I had to stop because we have to stop at the same amount of alcohol.

654

00:36:34,000 --> 00:36:36,000

Well, let's see.

655

00:36:36,000 --> 00:36:39,000

Indeed we will, because just like the last time,

656

00:36:39,000 --> 00:36:43,000

Carrie is putting her guinea pigs through their hangover paces.

657

00:36:43,000 --> 00:36:45,000

I think I'm never going to drink again.

658

00:36:45,000 --> 00:36:47,000

Ooh, that's a good sign of a hangover.

659

00:36:49,000 --> 00:36:50,000

Wink.

660

00:36:50,000 --> 00:36:52,000

Okay, grab the light meter and put it next to your face.

661

00:36:52,000 --> 00:36:53,000

Copy.

662

00:36:53,000 --> 00:36:55,000

Okay.

663

00:36:55,000 --> 00:36:58,000

It's obvious Grant isn't suffering too badly.

664

00:36:58,000 --> 00:37:01,000

He's not bothered by the light or sound.

665

00:37:01,000 --> 00:37:03,000

He has no headache,

666

00:37:03,000 --> 00:37:06,000

and he performs much better on the memory test.

667

00:37:06,000 --> 00:37:08,000

And time.

668

00:37:08,000 --> 00:37:12,000

Tori's sensitivity to light and sound is better than on beer,

669

00:37:12,000 --> 00:37:14,000

but he's still just as dehydrated.

670

00:37:14,000 --> 00:37:17,000

Creepy.

671

00:37:17,000 --> 00:37:19,000

And his headache rating?

672

00:37:19,000 --> 00:37:21,000

I'm going to have to give it a 9.

673

00:37:21,000 --> 00:37:23,000

Ooh, good.

674

00:37:23,000 --> 00:37:25,000

Yeah, it's hurting pretty good.

675

00:37:25,000 --> 00:37:28,000

However, when it comes to the regurgitron...

676

00:37:28,000 --> 00:37:30,000

I do find myself taking a lot of deep breaths,

677

00:37:30,000 --> 00:37:33,000

so it's kind of like a ride.

678

00:37:33,000 --> 00:37:37,000

His tolerance to the barfometer is through the roof.

679

00:37:37,000 --> 00:37:39,000

And as for Grant...

680

00:37:39,000 --> 00:37:41,000

Okay, full spin.

681

00:37:41,000 --> 00:37:45,000

But pretty much you've already surpassed your last test.

682

00:37:45,000 --> 00:37:47,000

Yeah.

683

00:37:47,000 --> 00:37:50,000

Yep, he not only exceeds his beer hangover score,

684

00:37:50,000 --> 00:37:56,000

amazingly, he matches the time set on his hangover-free control.

685

00:37:56,000 --> 00:37:58,000

That's it, I'm calling it.

686

00:37:58,000 --> 00:38:01,000

You hit your control marker, and you haven't vomited.

687

00:38:01,000 --> 00:38:03,000

Well, all right.

688

00:38:03,000 --> 00:38:08,000

I guess the beer before liquor didn't make me sicker.

689

00:38:08,000 --> 00:38:10,000

That's amazing.

690

00:38:10,000 --> 00:38:13,000

I have not only heard that rhyme my whole life,

691

00:38:13,000 --> 00:38:15,000

I've totally thought it was true.

692

00:38:15,000 --> 00:38:17,000

I mean, we need to get all the numbers in

693

00:38:17,000 --> 00:38:20,000

to double check all the data, but I mean...

694

00:38:20,000 --> 00:38:21,000

Yeah.

695

00:38:21,000 --> 00:38:23,000

Just seeing you and Tori.

696

00:38:23,000 --> 00:38:24,000

The bucket is clean.

697

00:38:24,000 --> 00:38:26,000

The bucket speaks.

698

00:38:26,000 --> 00:38:30,000

Indeed, and although we don't usually take our cues from buckets,

699

00:38:30,000 --> 00:38:33,000

this one might be on to something.

700

00:38:33,000 --> 00:38:35,000

Can you turn those lights up a little bit?

701

00:38:35,000 --> 00:38:37,000

They seem a little dim.

702

00:38:37,000 --> 00:38:39,000

So I've just finished the last day of testing,

703

00:38:39,000 --> 00:38:41,000

which gives you the worst hangover.

704

00:38:41,000 --> 00:38:42,000

And you know what?

705

00:38:42,000 --> 00:38:45,000

I'm not to say beer and liquor never sicker.

706

00:38:45,000 --> 00:38:47,000

It doesn't seem to be the case.

707

00:38:47,000 --> 00:38:49,000

I mean, right now I have a crazy splitting headache,

708

00:38:49,000 --> 00:38:51,000

way worse than I did when I drank the beer,

709

00:38:51,000 --> 00:38:55,000

but overall I feel much better than when I drank just beer.

710

00:38:55,000 --> 00:38:58,000

But you know, we won't know for sure until we look at all the data,

711

00:38:58,000 --> 00:39:01,000

but right now, I don't know, this saying doesn't look like it's true.

712

00:39:01,000 --> 00:39:04,000

And the data backs Tori up.

713

00:39:04,000 --> 00:39:08,000

On light, sound, concentration, headache, dehydration,

714

00:39:08,000 --> 00:39:11,000

and nausea, grant improved significantly.

715

00:39:11,000 --> 00:39:14,000

And while Tori's headache was more severe,

716

00:39:14,000 --> 00:39:16,000

and his dehydration on par,

717

00:39:16,000 --> 00:39:20,000

on every other test he did better than on beer alone.

718

00:39:20,000 --> 00:39:23,000

So what does that all mean for the morning after myth?

719

00:39:23,000 --> 00:39:26,000

Well, you know, to be honest, I felt a lot better after the test

720

00:39:26,000 --> 00:39:28,000

where you mixed beer and alcohol.

721

00:39:28,000 --> 00:39:31,000

Yeah, but for both of you, in almost every single test,

722

00:39:31,000 --> 00:39:33,000

you improved from the beer hangover.

723

00:39:33,000 --> 00:39:35,000

You know, these are really surprising results.

724

00:39:35,000 --> 00:39:36,000

This one's looking busted.

725

00:39:36,000 --> 00:39:40,000

Yeah, stick to beer, you're in the clear, beer and liquor never sicker.

726

00:39:40,000 --> 00:39:41,000

Busted.

727

00:39:41,000 --> 00:39:42,000

Busted. And you know what?

728

00:39:42,000 --> 00:39:43,000

That's it for me and beer.

729

00:39:43,000 --> 00:39:44,000

Forever?

730

00:39:44,000 --> 00:39:46,000

Okay, maybe just this week.

731

00:39:46,000 --> 00:39:47,000

Yeah, no, boy.

732

00:39:48,000 --> 00:39:50,000

Baaah!

733

00:39:50,000 --> 00:39:52,000

Next, buckle up.

734

00:39:52,000 --> 00:39:54,000

It's gonna be a bumpy ride.

735

00:39:54,000 --> 00:39:56,000

Let's go, dimple car!

736

00:39:56,000 --> 00:40:02,000

As the Mythbusters test, if the dirty dimple can save you cash.

737

00:40:02,000 --> 00:40:03,000

Ha ha ha ha!

738

00:40:10,000 --> 00:40:14,000

Every year, millions of dollars are spent on perfecting the aerodynamics

739

00:40:14,000 --> 00:40:17,000

of planes, trains and automobiles.

740

00:40:17,000 --> 00:40:22,000

But has this myth stumbled upon a dirt cheap solution?

741

00:40:22,000 --> 00:40:24,000

Well, not so far.

742

00:40:26,000 --> 00:40:29,000

But thanks to a car riddled with dimples.

743

00:40:29,000 --> 00:40:31,000

It looks fantastic.

744

00:40:31,000 --> 00:40:32,000

Yeah.

745

00:40:32,000 --> 00:40:35,000

Adam and Jamie have one more dirty trick to try.

746

00:40:35,000 --> 00:40:39,000

Remember, it's the dimples on a golf ball that cut down its drag

747

00:40:39,000 --> 00:40:41,000

and make it fly further.

748

00:40:42,000 --> 00:40:45,000

So by covering the clay with these...

749

00:40:45,000 --> 00:40:46,000

That's one dimpled car.

750

00:40:46,000 --> 00:40:49,000

If ever there was a car that looked like a golf ball, this is it.

751

00:40:49,000 --> 00:40:52,000

It might make the car more aerodynamic.

752

00:40:52,000 --> 00:40:57,000

This is by far one of the stranger things we've ever built.

753

00:40:57,000 --> 00:41:01,000

And to my mind, actually one of the most beautiful and not aesthetically either.

754

00:41:01,000 --> 00:41:04,000

I mean, to me, the beauty here is that we've taken the phrase

755

00:41:04,000 --> 00:41:09,000

golf ball-like effect on the car to the furthest possible point.

756

00:41:09,000 --> 00:41:12,000

No one can accuse us of not going far enough.

757

00:41:12,000 --> 00:41:16,000

Is this treatment going to translate to better fuel efficiency?

758

00:41:16,000 --> 00:41:19,000

I really don't think so.

759

00:41:19,000 --> 00:41:20,000

Adam's got his doubts.

760

00:41:20,000 --> 00:41:23,000

But before they test, there's one thing to make clear.

761

00:41:23,000 --> 00:41:27,000

But Adam, I hear you say, you cut out a 1,082 dimples worth of clay

762

00:41:27,000 --> 00:41:29,000

that significantly lighten the weight of the car

763

00:41:29,000 --> 00:41:32,000

and that might translate to a better fuel economy.

764

00:41:32,000 --> 00:41:34,000

You little face.

765

00:41:34,000 --> 00:41:35,000

For look here.

766

00:41:35,000 --> 00:41:38,000

We have every dimple we've cut out of this car

767

00:41:38,000 --> 00:41:40,000

and into the back.

768

00:41:40,000 --> 00:41:42,000

It goes.

769

00:41:42,000 --> 00:41:45,000

We've got them everything.

770

00:41:45,000 --> 00:41:47,000

Yep, everything.

771

00:41:47,000 --> 00:41:50,000

But will those dimples make a dent in the fuel consumption?

772

00:41:50,000 --> 00:41:53,000

9,450 grams.

773

00:41:53,000 --> 00:41:55,000

That's our start weight.

774

00:41:55,000 --> 00:41:58,000

Well, by now you know the drill.

775

00:41:58,000 --> 00:42:00,000

Main tank solenoid is on.

776

00:42:00,000 --> 00:42:03,000

Let's go, dimple car!

777

00:42:03,000 --> 00:42:05,000

Now.

778

00:42:06,000 --> 00:42:09,000

This thing really is lovely.

779

00:42:09,000 --> 00:42:13,000

Looks better from a distance.

780

00:42:13,000 --> 00:42:15,000

You know what's funny?

781

00:42:15,000 --> 00:42:18,000

This is absolutely the category of things that work

782

00:42:18,000 --> 00:42:21,000

only as long as we need them to work.

783

00:42:21,000 --> 00:42:23,000

It's just going to start sloughing

784

00:42:23,000 --> 00:42:26,000

whole body parts off any minute now.

785

00:42:26,000 --> 00:42:29,000

But despite five runs at 65 miles per hour,

786

00:42:29,000 --> 00:42:32,000

the clay catastrophe never comes.

787

00:42:32,000 --> 00:42:34,000

So it's over to Adam.

788

00:42:34,000 --> 00:42:37,000

8,972 grams.

789

00:42:37,000 --> 00:42:40,000

Alright. Time to do a little math.

790

00:42:40,000 --> 00:42:42,000

What you got?

791

00:42:44,000 --> 00:42:46,000

Okay.

792

00:42:46,000 --> 00:42:49,000

So, the clean car without any clay on it

793

00:42:49,000 --> 00:42:52,000

was 26 miles per gallon of change.

794

00:42:52,000 --> 00:42:54,000

The clay car with no dimples

795

00:42:54,000 --> 00:42:57,000

was 26 miles per gallon of change.

796

00:42:57,000 --> 00:42:59,000

The dimpled car?

797

00:42:59,000 --> 00:43:02,000

29.65 miles to the gallon.

798

00:43:05,000 --> 00:43:08,000

There is a golf ball like a bag.

799

00:43:08,000 --> 00:43:10,000

I feel like eating my beret.

800

00:43:10,000 --> 00:43:12,000

I'm not gonna...

801

00:43:12,000 --> 00:43:14,000

That's awesome.

802

00:43:14,000 --> 00:43:16,000

We totally didn't expect that result.

803

00:43:16,000 --> 00:43:19,000

If we had to bet, and not being a betting person,

804

00:43:19,000 --> 00:43:21,000

I didn't, but if we had to bet,

805

00:43:21,000 --> 00:43:23,000

we would have both said,

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00:43:23,000 --> 00:43:26,000

if anything, this would get poorer mileage.

807

00:43:26,000 --> 00:43:28,000

Like, you know, we should have gotten

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00:43:28,000 --> 00:43:30,000

something like the dirty car did.

809

00:43:30,000 --> 00:43:32,000

That's the coolest thing ever.

810

00:43:34,000 --> 00:43:38,000

And that result has got both mythbusters boggling.

811

00:43:38,000 --> 00:43:41,000

It flies in the face of conventional car wisdom

812

00:43:41,000 --> 00:43:45,000

that a smooth, streamlined surface reduces drag.

813

00:43:45,000 --> 00:43:48,000

Although the dimples are a long way from the dirty car

814

00:43:48,000 --> 00:43:50,000

and its coating of crud,

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00:43:50,000 --> 00:43:54,000

it goes to show a rough surface can more than deliver.

816

00:43:54,000 --> 00:43:57,000

If it works for a golf ball, it ought to work for a car.

817

00:43:57,000 --> 00:44:01,000

But somehow I didn't think it was gonna be that easy.

818

00:44:01,000 --> 00:44:03,000

You can say what you want, though.

819

00:44:03,000 --> 00:44:06,000

I mean, the fact is it worked.

820

00:44:06,000 --> 00:44:09,000

In fact, it gave us an 11% improvement,

821

00:44:09,000 --> 00:44:11,000

and that's significant.

822

00:44:11,000 --> 00:44:15,000

An 11% improvement may be significant,

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00:44:15,000 --> 00:44:16,000

but...

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00:44:16,000 --> 00:44:18,000

The catamix you think doesn't work.

825

00:44:18,000 --> 00:44:20,000

I mean, what does it all mean?

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00:44:20,000 --> 00:44:22,000

Where does this leave our original myth

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00:44:22,000 --> 00:44:24,000

that a dirty car will get better fuel economy

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00:44:24,000 --> 00:44:26,000

than a clean car?

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00:44:26,000 --> 00:44:29,000

Well, that myth is cleanly busted.

830

00:44:29,000 --> 00:44:31,000

But the theory behind that myth,

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00:44:31,000 --> 00:44:33,000

is that it's stated in the original myth

832

00:44:33,000 --> 00:44:35,000

that there is some kind of golf ball-like effect

833

00:44:35,000 --> 00:44:37,000

that will help the car get better fuel efficiency.

834

00:44:37,000 --> 00:44:40,000

We actually found a golf ball-like effect

835

00:44:40,000 --> 00:44:42,000

that helps the car get better fuel efficiency.

836

00:44:42,000 --> 00:44:45,000

Strangely, I think we call this one myth-busted

837

00:44:45,000 --> 00:44:48,000

concept plausible.

838

00:44:48,000 --> 00:44:51,000

I was pretty impressed how well that worked.

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00:44:51,000 --> 00:44:54,000

Yeah, I don't know if I'm gonna do it to my current attempt soon.

840

00:44:54,000 --> 00:44:57,000

Well, the clay'd fall off after a while.

