Before the
Federal Trade Commission
Washington, D.C. 20580

In the Matter of	)
Fuel Economy Guide Amendments, R711008	))

To: The Commission

Comments of
Consumer Federation of America
Center for Auto Safety

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We appreciate the opportunity to comment in this long and important rulemaking. We also appreciate the Commission granting our request extend the deadline for these comments.

The Proposed Guide Needs to Prohibit Single City and Highway MPG Numbers in Automobile Advertisements

We were pleased the Commission took notice of some of the comments filed on its 2009 Proposed Rule/Guide (74 Fed. Reg. 19148, April 28, 2009) by reopening, in its 2014 Request for Public Comment (79 Fed. Reg. 27820, May 15, 2014), the vital issue of whether the Guide should allow advertisements disclosing only one type of mileage estimate, e.g., highway only. For a number of reasons, we respectfully disagree with the FTC's proposal that automakers be allowed to advertise single number city or highway EPA fuel economy ratings. For the reasons described below, presenting the single city or highway EPA number is misleading and deceptive.

[1] *The Consumer Federation of America is a national organization of more than 250 nonprofit consumer groups that was founded in 1968 to advance the consumer interest through research, advocacy, and education.*

[2] *The Center for Auto Safety is a not-for-profit organization formed in 1970 to analyze the problems of motor vehicle and highway safely and related problems, and to make available the results of research studies, investigations, evaluations and surveys to the public and other organizations with an interest in safer motor vehicles and highways.*

Establishing the Basis for Deception

We believe the record that has long been before the Commission clearly establishes that single city or highway MPG number advertising is deceptive. The EPA has long recognized that the two mode system, highway and city, is the best way to estimate and communicate the fuel efficiency of vehicles. Furthermore, because the combined number is based on a permutation of city and highway MPG, it can be an acceptable method of communicating a particular vehicle's estimated MPG. On the other hand, as outlined in this comment, using only the highway or only the city number in advertisements is a much different matter than the combined estimate.[3]

The Commission's Policy Statement on Deception states, "the Commission will find deception if there is a representation, omission, or practice that is likely to mislead the consumer acting reasonably in the circumstances, to the consumer's detriment."[4] The omission is disclosing one of the EPA estimates without its mate. Given the significance of that omission, this is one of the circumstances where "the Commission can [and should] presume that consumers are likely to reach false beliefs about the product."[5] A misleading omission acts to the consumer's detriment if it is material, i.e., if it is important to consumers. There's no doubt that fuel economy and fuel economy information are important for consumers.

The Commission continues to decline to make this obvious finding of deception. Instead it appears to agree with the manufacturers who claimed in their comments that a single highway or city number disclosure isn't deceptive because consumers have had many years to become familiar with the city, highway, combined rating system and are unlikely to be confused by a single rating. The manufacturers have presented no evidence on the degree to which that claim is true. Furthermore, as demonstrated below, because there is no consistent relationship between city and highway estimates, it is impossible for consumers to estimate one of the ratings based solely on the other. Nor is it possible for them to predict their own experience with just one rating.

[3] Note: In this document we often refer to a "single number" MPG rating. In those cases we are referring to single city or highway numbers being used by themselves in advertising. The use of a single combined EPA number is not deceptive as it factors in the relationship between the city and highway numbers for that particular vehicle.
[4] Policy Statement on Deception at p. 2.
[5] Id.

The Commission's Study Does Not Support Its Conclusion that Single Highway or City MPG Number Advertisements Are Not Deceptive

We welcome the FTC study and have reviewed it carefully, just as the Commission indicates it always considers extrinsic evidence carefully. The Commission points to the study as supporting its conclusion that single MPG number advertisements are not deceptive. The study's design, however, clearly invalidates that conclusion. In fact, the best conclusion from the study is that it strongly suggests that single number advertising is deceptive.

The flaw with the study's design is that the questions that the Commission felt were the most relevant to the single MPG number issue came late in the survey. By that point respondents had already experienced a number of questions emphasizing the distinction between highway and city driving and estimates, so that they were sensitized, educated consumers and not representative of typical consumers confronted by fuel economy ads. Specifically, Q5c, Q5d, Q6c, and Q6d were questions number 35, 36, 40, and 41 in a 49 question survey.[6] By that point all respondents had been asked Q3b, about what "up to" means in the statement, "This model gets up to 30 miles per gallon." One of the choices given to answer was, "Highway." Each respondent was then asked what "up to" means in one of three more elaborate variations of the statement in Q3b.[7] The first choice given in the answers for each version was, "This model gets up to 30 miles per gallon depending on whether it's highway or city driving."

The questions immediately preceding the ones the Commission considers most relevant to single number advertisements continue this education process. Thus, question 5a asked all respondents to consider an advertisement sating, "This car is rated at 25 miles per gallon according to the EPA estimate." It then asked them in what situations they would expect that car to get 25 miles per gallon. Three of the choices given were highway driving, city driving, and combination of highway and city driving. Each respondent was then presented with one of three versions of advertisement language that was a variation of that in Q5a[8], and asked what they think the advertisement means. The three substantive answer choices for each were that the car would get about 25 miles per gallon in city, highway, or combined driving, respectively. The Commission's Notice highlights the results on Q5c, which inserted "on the highway" into the advertisement language, and Q5d, which inserted "in combined city driving" into the advertisement language. The Commission noted that the vast majority of respondents to each question correctly answered that the car would get about 25 MPG in highway or combined

[6] We understand that respondents were not asked all of the questions
[7] Questions 3c, 3d, and 3e.
[8] Questions 5b, 5c, and 5d.

driving, respectively. Given all the education the survey had given respondents about highway, city, and combined driving and estimates, and that the only substantive answer options for driving mode were highway, city, and combined, it isn't surprising or significant that around 75% of respondents were successful in correlating the proper driving mode with the specified EPA number type.

The most relevant question regarding deception of single city or highway number advertising is 6c. It describes an advertisement that says: "This car is rated at 25 miles per gallon on the highway according to the EPA estimate." It asks: "Which statement best describes what you would expect to get if you used this car for all your driving?" The Commission emphasizes that 62.2% of respondents said they would expect to get a lot or a little less than 25 MPG overall, showing that they weren't misled by the highway only ad. Of course, by the time the respondents reached question 6c they'd received even more education on highway, city, and combined driving and estimates than they had going into question 5. The 62.2% figure does not reflect ordinary consumers confronted with fuel economy ads. More importantly, as evidenced below, a vehicle getting 25 mpg highway, has a wide range of corresponding city mpg numbers making it impossible to use as a predictor or to compare to other vehicles.

The Commission ignores the most telling statistic from the answers to Q6c, which is that 20.7% of respondents said they would probably get 25 MPG overall. This demonstrates that single number advertisements mislead consumers to overestimate the MPG they will receive by focusing on the figure in the ad, even if, as in this example, the advertisement clearly discloses the single number is for highway driving. The Commission has made clear that, "A material practice that misleads a significant minority of reasonable consumers is deceptive."[9] We've previously discussed that fuel economy information is material and there's no doubt that 20.7% is a significant minority.[10] Anyone engaged in a deceptive marketing scheme would be pleased if their scheme misled 20.7% of consumers. Should the FTC come across other promotional information that clearly misleads 20% of consumers they, no doubt, would take action. With 1 in 5 consumers being misled by the single number, this is a huge number of consumers given the ubiquitous nature of automobile advertising.

Significantly, the 20.7% deception figure is also the only statistic from the FTC study relating to the issue of whether single city or highway number advertisements are deceptive that isn't undercut by the design of the Commission study. It probably understates the true deception

[9] Policy Statement on Deception, fn 20, citing Heinz W. Kirchner, 63 F.T.C. 1282 (1963).
[10] We don't believe the Commission is questioning that the respondents in its study are reasonable.

figure because the study's education factor likely made that number lower than it would have been otherwise. Indeed, given the strength and pervasiveness of the education factor in the Commission's study, it is noteworthy that the number of deceived consumers was, in fact, so high. The true deception figure would be considerably higher.

The FTC has a long-standing concern about the use of "fine print" as a subtle means of allowing misleading information to be presented in advertisements. While consumers could remember, or take a mental note of an MPG number appearing in an advertisement, it is unlikely that they will take note of the fine print associated with that number and remember that it is the highway mileage. While over 20% of the FTC respondents incorrectly believed that 25 mph was what they could expect, as indicated below, it is impossible for the over 60% who the FTC believes understand the relationship between highway and city to accurately assess performance based only on one number.

It is Impossible for Consumers to Infer Overall Performance from Single Number City or Highway MPG Ratings

As further evidence that allowing advertisers to use only the EPA highway number in advertisements can seriously mislead consumers and is deceptive, the FTC must consider the following points:

1. The highway number is the one consumer's are least likely to experience. The EPA combined number assumes 45% highway driving and 55% city driving in order to approximate the typical consumer driving patterns and is widely recognized as the best number of the three to approximate one's expected mileage. So by allowing just the highway number, the FTC is allowing the number that consumers are least likely to experience according to the EPA. If the FTC were to allow only one number, *which we don't recommend*, in order to avoid deception, they should only allow just the city as that is the condition under which most people drive, according to the EPA.

2. For the majority of vehicles there is little correlation between the highway MPG and the vehicle's corresponding city or combined MPG. The FTC's own consumer research provides the strongest argument against allowing just the highway number. The FTC has determined that most consumers *believe* that they will get something less than the highway number and know how to "discount" it in their own minds. CFA's analysis of the EPA MPG

ratings of 1,159—2016 vehicles[11] demonstrates that for any single highway number, the corresponding city number can vary by as much as 17 MPGs. For example, for vehicles advertising the FTC allowed 40 highway MPG, the corresponding city numbers range between 27 and 44 MPGs. In fact, city mileage ranges occur on 86% of the possible 2016 highway MPG ratings. Sixty-nine percent of the highway ratings have a range of 6 or more MPGs and 44% have a range of 9 or more MPGs for the very same EPA highway number. As such, it is literally impossible for a consumer to make an accurate inference of the associated city or combined MPG with the FTC permitted highway only MPG figure.

EPA Highway MPG Ratings Do Not Relate to Corresponding City MPG Ratings

Figure 2 below, using the 2016 EPA highway mileage options[12], shows the variation between the highway and city miles. This demonstrates, with great clarity, why providing just the highway number is clearly deceptive, especially considering the FTC's conclusion that consumers believe they "know how to" discount the highway number. In addition, doing the exercise in reverse, comparing each city number with all of the highway corresponding numbers, provides the same discrepancies. So while consumers do more city than highway driving, the FTC allowing just the city number in advertisements will be equally misleading.

Providing both numbers (or the combined number) will avoid the type of deception exemplified by the following example: consider two vehicles which have the FTC allowed advertising of 29 MPG highway. As noted on Figure 1 below, one of the 29 highway mpg vehicles has a city MPG of 16 and the other has a city MPG of 28. As the table shows, both the combined and city numbers are dramatically different for the two vehicles with the exact same highway MPG.

Figure 1. Difference Between Highway and City MPG

	Highway MPG	City MPG	Combined MPG
Vehicle A	29	16	20
Vehicle B	29	28	28
MPG Difference	0	12	8

Because it is simply impossible for consumers to impute this very significant difference between two vehicles using the FTC allowed 29 MPG "highway," presenting the single highway

[11] Our analysis did not include exotic vehicles or commercial vans
[12] Excluding exotic vehicles or commercial vans

number is clearly deceptive. There are many, many other similar combinations (See Figures 2, 3, 4 and 5 below) among the vehicles which demonstrate the misleading nature of the FTC allowed highway only rating.

The best evidence of the misleading nature of single number disclosures is the fact that a single highway MPG can have corresponding city ratings that range in differences up to 17 MPGs. (See Figure 2 below)

The FTC's position is based, in part, on their conclusion that consumers understand the need to discount highway numbers. However, because most of the time there is no relationship between city and highway, they simply can't make the rational assumptions claimed by the FTC, *even if they think they can*.

Deceptive Disclosures Will Cost Consumers

Depending on just the highway number can have a serious negative impact on consumer pocketbooks and household budgets. For example, in our example above, using today's $2.12[13] per gallon of gas and a typical 15,000 annual driving cycle, the 8 MPG difference in the combined rating can cost consumers over $454 per year. If gas goes up to, say, $3.15, the consumer cost will be $675.

Consumers Need the Full MPG Story to Avoid Being Deceived

Providing <u>both</u> the city and highway MPG figures allows consumers to better assess, based on their own personal experience, the MPG differences in the vehicles they are considering. Providing just the highway number, simply does not allow such consideration. What makes this particularly deceptive is the FTC's conclusion that consumers *believe* they can impute their own expected mileage, or compare mileages, based on just the highway number. In fact, the FTC's own conclusion that consumers believe they can translate highway numbers is the strongest argument that single highway numbers shouldn't be allowed.

Because the combined <u>does</u> consider the varied relationships between highway and city MPGs, it provides consumers with a reasonable basis for vehicle comparison as well as their own expected results. By allowing automakers to advertise only highway mileage, the FTC not only gives consumers the worst information, it also gives automakers an incentive to game the standards governing fuel economy. It is counterproductive from both the consumer and public policy points of view.

[13] According to AAA

The following figures 2 and 3 list all possible highway mileages for 1,159, 2016 vehicles and the range of their corresponding city MPGs. For example, as Figures 2 and 3 demonstrate, a vehicle getting 29 MPG highway can have a corresponding city number that ranges from 16 to 28 MPG. Figures 4 and 5 contain the converse information for city MPG figures, again, demonstrating that on number can't predict expected performance. Note: Exotic, commercial van, or all-electric vehicles were not included.

Figure 2. Range of City MPG with Associated Highway MPG – 2016 Models		
Highway MPG	**Range of Associated City MPG**	**Difference in Range**
13	11	0
14	12-13	1
17	13-15	2
18	13-14	1
19	13-15	2
20	13-17	4
21	13-19	6
22	13-19	6
23	13-20	7
24	15-21	6
25	15-22	7
26	16-24	9
27	17-24	8
28	17-30	13
29	16-28	12
30	18-33	15
31	19-35	16
32	19-28	9
33	19-35	16
34	21-30	9
35	22-29	7
36	23-40	17
37	25-42	17
38	25-40	15
39	26-43	17
40	27-44	17
41	28-44	16
42	28-43	15
43	31-39	8
44	40	0
46	47-53	6
48	42	0
50	54	0
53	58	0

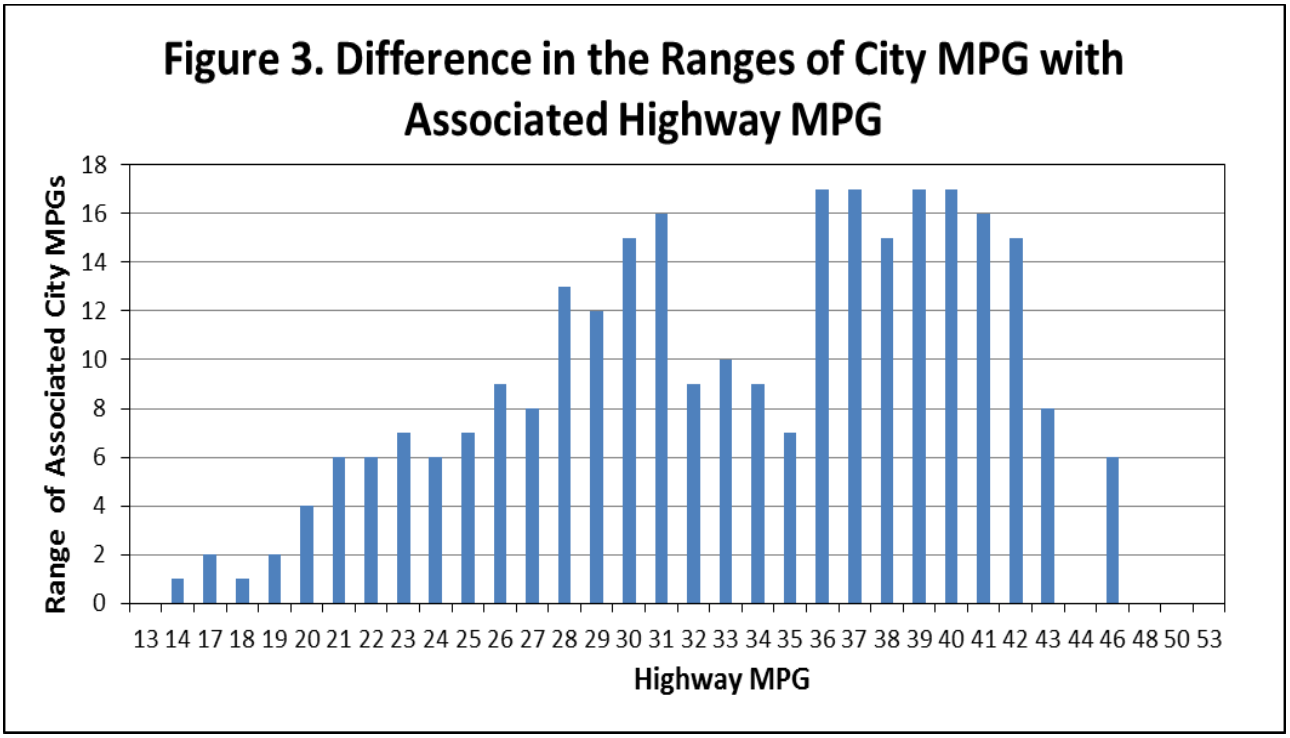
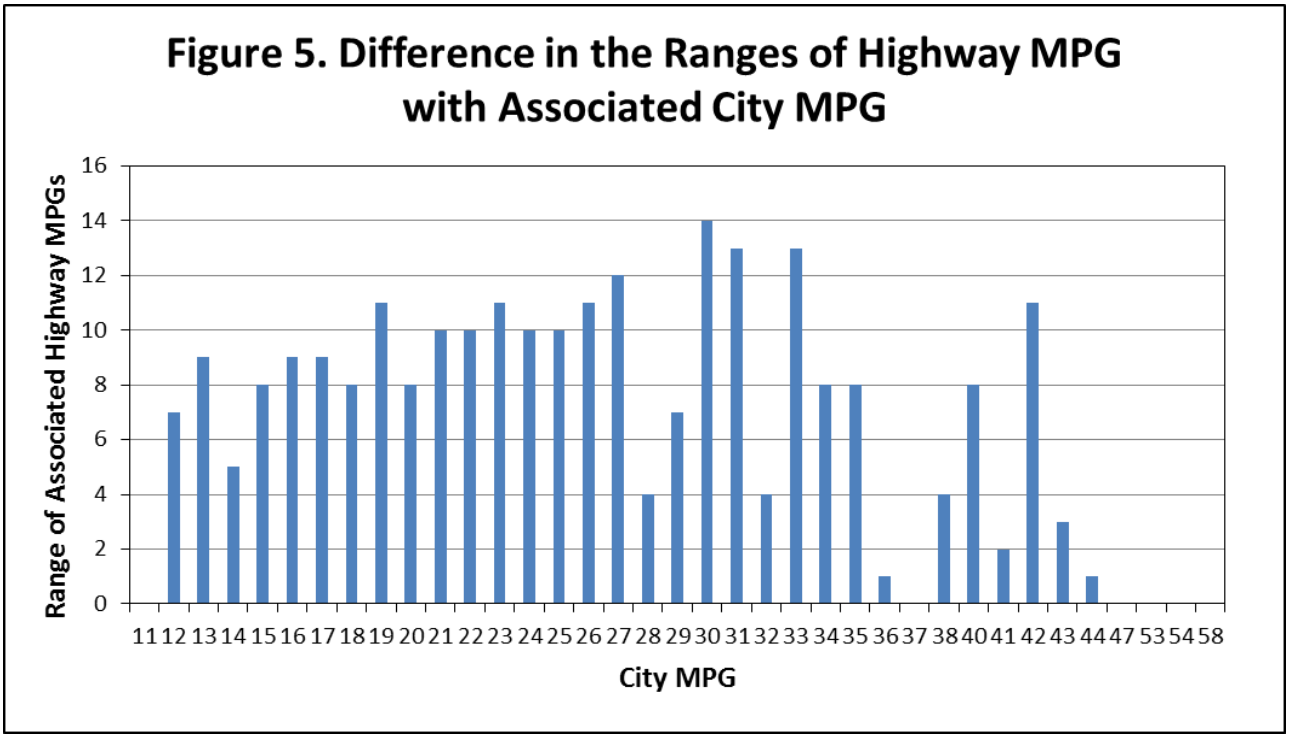


Figure 3. Difference in the Ranges of City MPG with Associated Highway MPG
Range of Associated City MPGs
0
2
4
6
8
10
12
14
16
18
13 14 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 46 48 50 53
Highway MPG

Figure 4. Range of Highway MPG with Associated City MPG – 2016 Models		
City MPG	**Range of Associated Highway MPG**	**Difference in Range**
11	13	0
12	14-21	7
13	14-23	9
14	18-23	5
15	17-25	8
16	20-29	9
17	20-29	9
18	22-30	8
19	21-32	11
20	23-31	8
21	24-34	10
22	25-35	10
23	25-36	11
24	26-36	10
25	28-38	10
26	28-39	11
27	28-40	12
28	28-42	4
29	34-41	7
30	28-42	14
31	30-43	13
32	38-42	4
33	30-43	13
34	31-39	8
35	31-39	8
36	39-40	1
37	41	0
38	37-41	4
40	36-44	8
41	37-39	2
42	37-48	11
43	39-42	3
44	40-41	1
47	46	0
53	46	0
54	50	0
58	53	0



CFA Survey Suggests Single MPG Number Advertising is Deceptive

While we are convinced the FTC study shows that single number advertising is deceptive, we noted the Commission's statement that, "absent additional evidence demonstrating that such claims are deceptive, the Commission does not propose changing its approach on this issue."[14] To address this issue, the Consumer Federation of America commissioned a national consumer opinion survey on August 18-21, 2016. [15] The telephone caravan survey was conducted by ORC International (formerly Opinion Research Corporation). [16]

The CFA survey asked the following questions:[17]

Please think about an ad for a new car or truck you may purchase that includes the statement, '31 miles per gallon EPA highway estimate'. Now if the ad also includes the statement, '19 miles per gallon EPA city estimate', would that additional statement make you more or less likely to consider buying this vehicle, or would it make no difference?

[14] 81 Fed Reg 36216 at 36220.
[15] We very much appreciate that Staff and the Commission extended the comment deadline to allow us to perform the study.
[16] Information on the ORC Telephone Caravan Methodology is contained in Attachment A.
[17] The questions are contained in Attachment B.

This question tackles head on the issue of whether single number advertisements are deceptive. It was the first in our group because we wanted respondents' answers to reflect their knowledge and views as they came into the study, not their knowledge and views after a number of questions that educated them on the subject, which we believe tainted the FTC study's questions relating to this issue. The question gets at the effect of omitting city estimates from advertisements by asking respondents about the difference from including the city number along with the highway estimate, and deals strongly and directly with materiality by asking about the likelihood of respondents considering buying the vehicle.

Overall, 43% of respondents indicated that including the city number in the advertisement would affect their behavior, which indicates the impact and importance of including both numbers. 26% of respondents indicated that the inclusion of the city number in the advertisement makes them less likely to consider buying the vehicle. On the other hand 17% indicated that inclusion of the city number in the advertisement made them more likely to consider buying the vehicle. [18] The fact that adding the city number caused a behavior change in over two-fifths of the respondents, suggests that it is important to present both numbers.

Vehicles nearly always get more miles per gallon, or higher mileage per gallon, on highway driving than on city driving. Do you think it is misleading to allow advertisers to present only a vehicle's miles per gallon estimate for highway driving?

This question addresses potential deception from a different perspective. It educates respondents but only to the extent of giving basic facts so that they can make their own judgments about whether highway number only advertisements are misleading. 64% of respondents indicated that it is misleading to allow manufacturers to advertise only the highway number. This finding further bolsters the case that such advertisements are deceptive and that the Commission, in response to consumer rather than manufacture desires, should prohibit single number advertising

Which one of the following do you think auto advertisers should be required to include if making a fuel economy claim? Would you say…

The miles per gallon estimates for BOTH city and highway driving

[18] We don't have information on why the inclusion of the city number makes some more likely to consider buying, but we suspect that one reason is being impressed with the forthrightness of an advertisement that discloses both highway and city estimates.

The miles per gallon COMBINED estimate, which is an average of the city and highway numbers
The miles per gallon HIGHWAY estimate only
The miles per gallon CITY estimate only

This question followed up on the previous question by asking respondents which of a list of mpg possibilities auto advertisers should be required to include if making a fuel economy claim. 65% said that both the city and highway estimates should be required to be disclosed, while 23% chose the combined estimate. Only 6% preferred just the city number and only 3% preferred just the highway estimate. Simply put, only a very small percentage (less than 10%) of consumers preferred single highway or city numbers whereas the vast majority (nearly 90%) want either both numbers or the combined rating.

Conclusion on the Use of Single Highway or City Numbers in Auto Advertising

1. Presenting just city or highway EPA mileage numbers in advertisements is misleading because there is no relationship between a particular highway MPG and its corresponding city or combined MPG. A particular highway MPG rating may have associated city MPG ratings that range up to 17 MPGs with as many as 14 different corresponding city MPG ratings. While consumers may think they can extrapolate their own expected mileage from a single highway number it is impossible to do so.

2. Consumers believe that presenting just the highway number, knowing that their actual experience is going to be lower, is misleading according to a new survey conducted by the Consumer Federation of America.

3. A review of the FTC consumer research indicates that consumers <u>believe</u> that they understand and can interpret for their own use a single highway MPG number. This finding by the FTC, coupled with the fact that a single number <u>cannot</u> be used to estimate the city, combined or personal experience of the consumer, makes clear that disclosing only one number will be deceptive.

We believe that allowing the presentation of just a single highway or city number in automobile advertisements is clearly deceptive and will easily mislead consumers who attempt to

use the single number to estimate their own expected mileage or compare advertised mileage ratings.

Because the combined number takes the differing relationships between highway and city into consideration and because it represents typical consumer driving conditions, presenting just the combined number avoids the deception inherent in providing the highway or city numbers by themselves.

Presenting both the highway and city numbers, just the combined, or all three should be the only options available to auto advertisers.

The Softened Language Incorporated into the Reformatted Proposed Guide Will Result in More Deceptive Fuel Economy Ads

Reformatting the Guide to include general principles and specific examples, so as to make it consistent with recent guides, such as the Green Guides, is critically important. However, and the greatly softened language in the Proposed Guide isn't consistent with the Green Guides and invites confusion and more deceptive fuel economy ads.

The Proposed Guide has only two places where it affirmatively and unequivocally states that a practice is deceptive. The first is in proposed 259.4(a), which states: "It is deceptive to misrepresent, directly or by implication, the fuel economy or driving range of an automobile." The second is in proposed 259.4(h), where it states: "It is deceptive to state or imply that a rated fuel economy figure applies to vehicles not included in the model type featured in the advertisement, unless such rating in fact applies to that model type."[19] All other references to deception are in couched terms, such as "may be deceptive" or "likely deceptive."[20] The majority of the general principles portions of subsections (b)-(h) of proposed 259.4 do not even contain the words "deceptive" or "deception.

This stands in contrast to the Green Guides. The examples given in the Green Guides don't mince words on deception. They either say that an example is deceptive or is not deceptive, the latter being another good way to give guidance. The general principles portion of subsections 260.4-260.19 begin by making a statement of what is deceptive While we realize that each of these subsections might be considered a different "Guide," we believe each has a

[19] We have to wonder if this was a typographical error because the only example under this subsection uses "likely to be deceptive."

[20] There are a few instances where the Proposed Guide says what the advertiser should do to "avoid deception," which is arguably somewhat stronger.

similarity to subsections (b)-(h) of proposed 259.4 and that (b)-(h) need to be written in a stronger manner, more consistent with 260.4-260.19.

The weak language in the reformatted Guide serves neither businesses nor consumers. Businesses want firm guidance. Clear rules enable businesses to avoid deceptive practices. The lack of clarity, gives unscrupulous businesses the ability to "push the envelope' when it comes to deception. If the Guide merely suggests that a practice may be deceptive, many will take the chance and engage in potential deception, depending on the vagueness of the requirement as a defense. This hurts both consumers and the businesses that don't practice deception. Lack of clarity also hampers the enforcement efforts of state and local consumer protection agencies and private attorneys. While the Guides don't have the force of a regulation, it's much more helpful to bring a successful enforcement action over a practice the FTC has said is deceptive than one it says may be deceptive.

The wording of proposed 259.3 also needs to be changed. The last sentence of the section twice uses "estimated MPG." We believe that "fuel economy claim" should be used there instead. An addition should be made to the section to make clear that if a MPG number appears in an ad, the additional information that it's an EPA estimate, etc. needs to be clearly, conspicuously, and prominently displayed adjacent to the MPG number.

ATTACHMENT A: CFA Survey Methodology

TELEPHONE CARAVAN® Methodology

The following pages describe the methodology used for the ORC International Telephone CARAVAN® survey conducted August 18-21, 2016.

The study was conducted using two probability samples: randomly selected landline telephone numbers and randomly selected mobile (cell) telephone numbers. The combined sample consists of 1,008 adults (18 years old and older) living in the continental United States. Of the 1,008 interviews, 508 were from the landline sample and 500 from the cell phone sample. The margin of error for the sample of 1,008 is +/- 3.09% at the 95% confidence level. Smaller subgroups will have larger error margins.

Surveys are collected by trained and supervised US based interviewers using ORC International's computer assisted telephone interviewing (CATI) system. Final data is adjusted to consider the two sample frames and then weighted by age, gender, region, race/ethnicity and education to be proportionally representative of the US adult population.

As a founding member of the Code of Standards of the Council of American Survey Research Organizations (CASRO) and a member of the European Society for Opinion and Marketing Research (ESOMAR), we adhere to a rigorous Code of Standards and Ethics for Survey Research. As required by CASRO, we will maintain the anonymity of our respondents. No information will be released that in any way will reveal the identity of a respondent. Our authorization is required for any publication of the research findings or their implications.

Sampling

Telephone CARAVAN® uses a dual frame sampling design. This means that the sample is drawn from two independent sample frames—one for landlines and one for cell phones.

Landline Sample

ORC International's Random Digit Dial (RDD) telephone sample is generated using a list-assisted methodology. That is, the updated white page listings that are used to identify telephone number banks (the first 8 digits of the phone number) with a listed phone number

in them. The standard that we use is 2+, meaning that a bank needs to have 2 or more listed households to be considered working. We use the Genesys Sampling in-house system to generate list-assisted Random Digit Dialing sample.

The standard GENESYS RDD methodology produces a strict single stage, EPSEM (Equal Opportunity of Selection Method) sample of residential telephone numbers. In other words, a GENESYS RDD sample ensures an equal and known probability of selection for every residential telephone number in the sample frame.

Cell Phone Sample

The cell phone sample, also RDD, has been supplied by SSI, Inc. using their proprietary Cell/WINS technology. The cell phone sample is generated from cell phone 1,000 series blocks with all the 100 series banks within each block turned on. The sampling interval is then calculated by dividing the universe of all possible numbers by the number of records desired, thus specifying the size of the frame subdivisions. Within each of the subsets one number is selected at random giving all numbers an equal probability of selection.

Weighting

In probability-based samples such as CARAVAN®, the basis of the weighting is the inverse of the selection probability. Then, weighting adjustments are frequently used to reduce the potential for biases that may be present due to incomplete frame coverage and survey nonresponse--both inherent in all telephone surveys. These adjustments may take advantage of geographic, demographic, and socioeconomic information that are known for the population and measured in the sample surveys. The adjustments reduce potential bias to the extent that the survey respondents and nonrespondents (noncontacts, refusals, etc.) with similar geographic, demographic, and socioeconomic characteristics are also similar with respect to the survey statistics of interest. In other words, post-survey weighting adjustments reduce bias if the weighting variables are related to (correlated with) the survey measures and the likelihood of survey participation.

The CARAVAN® *landline-cell* combined sample is a dual frame sampling design. This means that the sample is drawn from two independent sampling frames—one for landlines and one for cell phones. Adults with a landline but no cell phone (A) must be reached through a landline telephone sample. Adults with a cell phone and no landline (C) must be reached through the cell phone sample. Adults with both a landline and a cell phone (B) can be reached through either of the frames. Sampling from the two frames results in these four groups:

a_1: Landline respondents without a cell phone (landline only)

b_1: Landline respondents with a cell phone (dual user)
b_2: Cell phone respondents with a landline (dual user)
c_2: Cell phone respondents without a landline (cell only)

The dual user groups (b_1, b_2) are further classified into two subgroups:

Cell mostly: those who receive most calls on a cell phone

Landline mostly/Mixed use: those who receive most calls on a landline or who receive calls on both regularly

The National Health Interview Survey (NHIS) provides estimates of these user group populations. We weight-adjust the landline sample and the cell sample to their respective population proportions as reported from the NHIS. Once this design weight is calculated, the combined sample is weighted to represent the US population using data from the US Census Bureau's American Community Survey (CPS). This form of weighting is referred to as *calibration weighting*[i] in that survey respondents are assigned weights that are calibrated to reflect the population. The calibration weighting for CARAVAN® is based on a series of ratio adjustments called iterative proportional fitting, or "*raking*[ii], which was first introduced by Deming and Stephan for use in the 1940 US census.

Definition of Classification Terms
The following definitions are provided for some of the standard demographics by which the results are tabulated. Other demographics are self-explanatory.

Income
The income groupings refer to the total household income for 2015 before taxes.

Geographic Region
The states are contained in four geographic regions as follows:

North East
- New England: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut
- Middle Atlantic: New York, New Jersey, Pennsylvania

Midwest
- East North Central: Ohio, Indiana, Illinois, Michigan, Wisconsin
- West North Central: Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas

South
- South Atlantic: Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida
- East South Central: Kentucky, Tennessee, Alabama, Mississippi
- West South Central: Arkansas, Louisiana, Oklahoma, Texas

West
- Mountain: Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada
- Pacific: Washington, Oregon, California, Hawaii, Alaska

About ORC International

ORC International is a collaborative and consultative research partner to hundreds of organizations around the globe. We possess a wide variety of resources, tools and technologies to collect and analyze information for our clients.

ORC International is ISO 20252 certified. To achieve certification, ORC International passed a comprehensive, on-site audit. The certification establishes globally recognized terms, definitions, and service requirements for project management in research organizations. Processes outlined in ISO 20252 are designed to produce transparent, consistent, well documented and error-free methods of conducting and managing research projects. Adherence and certification to such standards provides a basis of confidence for clients and other constituencies that the work produced is being executed with quality processes and controls in place. The internationally recognized standard also provides a basis for subcontractor evaluation.

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[i] For a summary of calibration weighting, refer to Kalton, G. and I. Flores-Cervantes (2003) "Weighting Methods", *Journal of Official Statistics*.

[ii] Deming, W. E. and F. F. Stephan (1940) "On a Least Squares Adjustment of a Sampled Frequency Table When the Expected Marginal Totals are Known," *Annals of Mathematical Statistics*.

On another subject…

Now we're going to ask a few questions about fuel efficiency claims in automobile advertising.

E1 Please think about an ad for a new car or truck you may purchase that includes the statement, '31 miles per gallon EPA highway estimate.' Now, if the ad also includes the statement, '19 miles per gallon EPA city estimate', would that additional statement make you more or less likely to consider buying this vehicle, or would it make no difference?

(IF MORE/LESS, ASK) Would that be much (more/less) likely, or somewhat (more/less) likely?

01 MUCH LESS LIKELY TO CONSIDER BUYING
02 SOMEWHAT LESS LIKELY
03 SOMEWHAT MORE LIKELY
04 MUCH MORE LIKELY TO CONSIDER BUYING
05 NO DIFFERENCE
99 DON'T KNOW/REFUSED

E2 Vehicles nearly always get more miles per gallon, or higher mileage per gallon, on highway driving than on city driving. Do you think it is misleading to allow auto advertisers to present only a vehicle's miles per gallon estimate for highway driving?

01 YES
02 NO
99 DON'T KNOW/REFUSED

E3 Which one of the following do you think auto advertisers should be required to include if making a fuel economy claim? Would you say…
(READ ENTIRE LIST BEFORE RECORDING ONE ANSWER)
[ROTATE TOP TO BOTTOM, BOTTOM TO TOP]

01 The miles per gallon estimates for BOTH city and highway driving
02 The miles per gallon COMBINED estimate, which is an average of the city and highway numbers
03 The miles per gallon HIGHWAY estimate only
04 The miles per gallon CITY estimate only
98 NONE OF THESE
99 DON'T KNOW/REFUSED

E4 Have you either purchased a vehicle in the past two years or plan to purchase a vehicle in the future?

01 YES
02 NO
99 DON'T KNOW/REFUSED