



APPENDIX J

PUBLIC PARTICIPATION AND COMMENT PERIOD



page intentionally blank

MPO staff followed the procedures set in the MPO's adopted *Public Participation Plan for the Boston Region Metropolitan Planning Organization* in the development of this report. (Please refer to Appendix G for the complete document.) The MPO developed these procedures to ensure public involvement in the transportation planning process.

As a report that documents the activities the MPO has undertaken over the previous three years to comply with FTA's and FHWA's Title VI program requirements, staff solicited public comments following the MPO's approval to circulate a draft for public review. Staff posted the document on the MPO's website (<http://bostonmpo.org/equity>) in PDF and accessible formats, including translations. Staff emailed the MPO's contact list and equity contact list to notify recipients of the document's availability and the 30-day period for public review and comment. Staff also sent out notices via Twitter, notifying followers of the availability of the document for review and comment, and of the opportunity to visit staff during Office Hours.

During the review period, MPO staff held two public meetings at the State Transportation Building: an extended Office Hours open-house style meeting specifically to accommodate the public comment period, and an Office Hours session during regular working hours. Staff sent emails to MPO and equity contacts about the opportunity to meet with staff at these Office Hours events. At both, staff made themselves available, either in-person or on the phone, to interested parties who wanted to discuss the draft Title VI report. Printed copies of the report were available to attendees. The State Transportation Building is accessible via transit and to people with disabilities.

Staff received three public comment letters, which are provided on the following pages. These comment letters represent an increase over previous MPO Title VI triennial reports (in 2014, for example, the MPO did not receive any comment letters). Receiving these few letters reflect the success of the increased public outreach efforts undertaken by MPO staff, particularly the regular MPO-hosted Office Hours open-house style events.

The comment letters contain suggestions about what the MPO could do differently with regards to MPO efforts to satisfy federal Title VI requirements. MPO staff will consider these comments when developing its upcoming work plan for the Title VI program and in the implementation of Title VI-related analyses.



page intentionally blank

Members of the Boston MPO,

We are favorably impressed by the report. In general, we think that the MPO has made laudable efforts toward ensuring that transit and transportation are spent in an equitable manner, and we are supportive of the MPO's public outreach process. Thanks to the MPO's office hours and Betsy Harvey's generosity with her time, many minor questions and concerns were answered and resolved in our face-to-face meeting with her. Below are specific comments from the Capital Investment & Finance (CIF) Subcommittee with the support of the MBTA Rider Oversight Committee (ROC) that we would like to document formally.

1. We support the MPOs Transportation Improvement Program (TIP) equity analysis. We understand that, as of this year, only the methodology has been validated, and we look forward to the analysis once the methodology has been finalized in FFY18. We also appreciate the challenges that the MPO faces in mapping out public transit projects beyond the first year, and we encourage the MPO to work with our CIF subcommittee in an effort to provide the MPO with the desired clarity beyond the first year.
2. In Tables 11 and 12 relating to TIP public transit investments, we observed that there were no threshold values determined for the minority and low-income populations for the various modes of transit as there were in the analysis of TIP target-funded project in Table 10. We understand that the region served by transit is smaller than the overall MPO region, but having analysis that shows the degree to which transit serves minority and low-income populations within its subset of TAZs could be insightful. For example, if with all other factors being equal, buses provide transit to minorities and individuals with low income that is above the thresholds for that subset of TAZs, then it may point to an area of equity concern. We also agree that though the results in Tables 13 and 14 show a lower investment per passenger for minority and low-income populations, the novelty of the analysis requires more time and data to see if a pattern emerges. That said, we support the MPOs transparency in making its analysis public at this stage.
3. We support the MPOs outreach and public participation strategy as described in Section 3.6. In addition to its current outreach practices, we suggest that the MPO consider live-streaming its outreach meetings and making it possible for the public to interact with participants at these meetings by either calling in via phone or communicating via online methods such as Twitter and Facebook.
4. We encourage the MPO to reach out to communities in order to make sure that they understand the MassDOT project development process. Since the universe of projects from which projects are selected come from this development process, providing assistance to community leaders and town officials in order to understand the MassDOT development process is essential for these communities to have a chance at getting the kind of transportation and transit projects that would be of benefit to their communities.

Thanks for your attention,

The Capital Investment & Finance Subcommittee of the MBTA Rider Oversight
Committee

Carl Seglem

Brighton, MA 02135

July 18, 2017

Members of the Boston Region MPO
Betsy Harvey, Title VI Specialist
State Transportation Building
10 Park Plaza, Suite 2150
Boston, MA 02116-3968

RE: Draft 2017 Triennial Title VI Report

Dear Members of the Boston Region MPO and Betsy Harvey:

Thank you for taking the time to consider my comments on the Draft 2017 Triennial Title VI Report.

Before my specific comments, I want to acknowledge and appreciate the effort that the Boston Region MPO and the CTPS staff put into transportation equity efforts generally, and the analyses described in the Draft Report itself. I'm grateful to the MPO and CTPS staff for thinking and working to go beyond the minimum that is required legally, not just in this Draft Report, but in other areas of work, such as the equity evaluation criteria for TIP projects.

My comments are grouped below under these headings, followed by each heading's page number:

Troubling transit funding numbers 2

Troubling impact and burden evaluation criteria 3

Worrying statistical analysis of UPWP projects 4

Equity analyses to be done 8

Confusion and concerns about Accessibility metrics, identical charts and similar highway and transit numbers 8

Limited contents of Executive Summary and impacts for public involvement and language accessibility 11

Appendices contents, page labeling and numbering 12

Troubling transit funding numbers

Comment #1

This comment relates to section 3.4.2 of the Draft Report titled Analysis of TIP Public Transit Investments .

In the Draft Report’s own words comparing TIP Public Transit Investments by Minority Status and Income: “the investment per passenger for both low-income and minority populations is lower, compared to non-low-income and non-minority populations, respectively” (p.61).

From Table 13, per-passenger Non-minority investment of \$5,936 is **47% greater** than Minority investment of \$4,045,



and, from Table 14, per-passenger Non-low-income investment of \$6,218 is **35% greater** than investment of Low-income \$4,606.



The report continues “this does not necessarily indicate that a disparate impact or disproportionate burden exists,” and that these figures should be compared over time to decide whether the MPO should do anything about the differences.

I hope the members of the MPO are struck by these large differences between levels of investment per-person in TIP Public Transit Investments and

- work diligently to invest TIP funds in transit more equitably starting with the next TIP,
- inform these TIP investment decisions based on better understanding of existing inequities as described below in my Comment #2.

Troubling impact and burden evaluation criteria

Comment #2

This comment relates to section 3.3 of the Draft Report and Appendix F, Chapter 7, results starting on page 7-9.

The approach taken by the MPO to determine disparate impacts or disproportionate burdens

- **only** takes into account whether the **percentage changes** in future conditions are **similar** between Title VI populations and non-Title VI populations, but
- **does not** take into account whether current or future conditions or metrics themselves are **equitable with each other**,
- and even allows inequities to increase.

Consider this thought experiment:

If some hypothetical metric is currently 100 for non-Title VI populations and 80 for Title VI populations (where higher numbers are better, like jobs accessible by transit within some amount of travel time),

The current condition is 20% worse for Title VI populations, but this current condition doesn't factor into the disparate impacts or disproportionate burdens analysis.

In the LRTP analysis relied upon in the Draft Title VI report, transportation in 2040 is modeled, comparing LRTP investments made ("Build") vs not made ("No Build"). In this example, imagine both improve by 0% in the No Build Scenario and both improve by 5% in the Build scenario, resulting in non-Title VI populations metric changing to 105 and Title VI populations metric changing to 84.

The test for disparate impacts or disproportionate burdens first compares the Build to No-Build scenarios for each of the populations. In this case, both populations are 5% better in the Build Scenario.

Then the test for disparate impacts or disproportionate burdens compares the improvements (or worsening) for the non-Title VI populations. In this case, both are 5% better and their ratio is 1.

This ratio of 1 is less than the threshold of 1.2 (20% difference) to find disparate impacts or disproportionate burdens, so no disparate impacts or disproportionate burdens are found.

However, in the modeled 2040 Build condition, Title VI population's metric is still just 84 compared to the non-Title VI population's better 105 — the Title VI population's metric is still 20% below of the non-Title VI population's metric.

So this approach to measuring disparate impacts or disproportionate burdens

1. does not consider existing inequities,

For example, Appendix F, Page 7-17 Air Quality Results: “Carbon monoxide emissions are essentially the same in the 2040 build network as in the 2040 No-Build network for all zones.” This doesn't say anything about differences between Title VI populations/areas and non-Title VI populations/areas.

2. and permits existing inequities to be maintained,

For example, Appendix F, Page 7-16: “Tables 7.5 and 7.6 show **disproportionate burdens and disparate impacts for average VMT, and a disproportionate burden for congested VMT** [*emphasis mine*]. However, because the changes between the 2040 No-Build and Build alternatives for each type of equity/non-equity analysis zone comparison are within the margin of error of the model, it is unlikely that the ratio of the changes is meaningful.”

3. and even permits them to get somewhat worse because the threshold is 20% and the ratio comparison permits non-Title VI populations to receive better outcomes than non-Title VI populations, as long as it is below the 20% threshold.

I hope the members of the MPO will find ways to take into account and address existing inequities **as well as** avoid disparate impacts or disproportionate burdens to Title VI and other transportation equity populations.

Worrying statistical analysis of UPWP projects

Comment #3

This comment relates to Section 3.4.3 Geographical Distribution of UPWP Investments, and Appendix H, FFY 2017 UPWP Table D-1, and FFY 2018 UPWP Table D-1.

As I looked at Section 3.4.3 Geographical Distribution of UPWP Investments, it seemed not to contain information about any Title VI-related findings, but it did refer to study counts by community Appendix H. In that appendix, I didn't find any analysis of the data to assess anything related to Title VI, just the raw data, summarized by MPO sub-region.

When I asked whether I was missing some Title VI-related analysis, like disparate impact of UPWP studies, Betsy Harvey replied and I've excerpted:

- “we can't determine the impacts of studies whose benefits and burdens are often impossible to reliably quantify”
- “just because the town has had a study it doesn't necessary mean they've received a particular 'benefit' in the same way that a TIP or LRTP might confer (such as reduced CO emissions).”
- “There may be other qualitative analyses we could do, which are described in Appendix H.”

One of the additional analyses described in Section D-5 Next Steps for both FFY 2017 and 2018 is:

- “Examine the number of tasks per community and compare the data to the number of road miles, the median household income, or the minority population in each community”

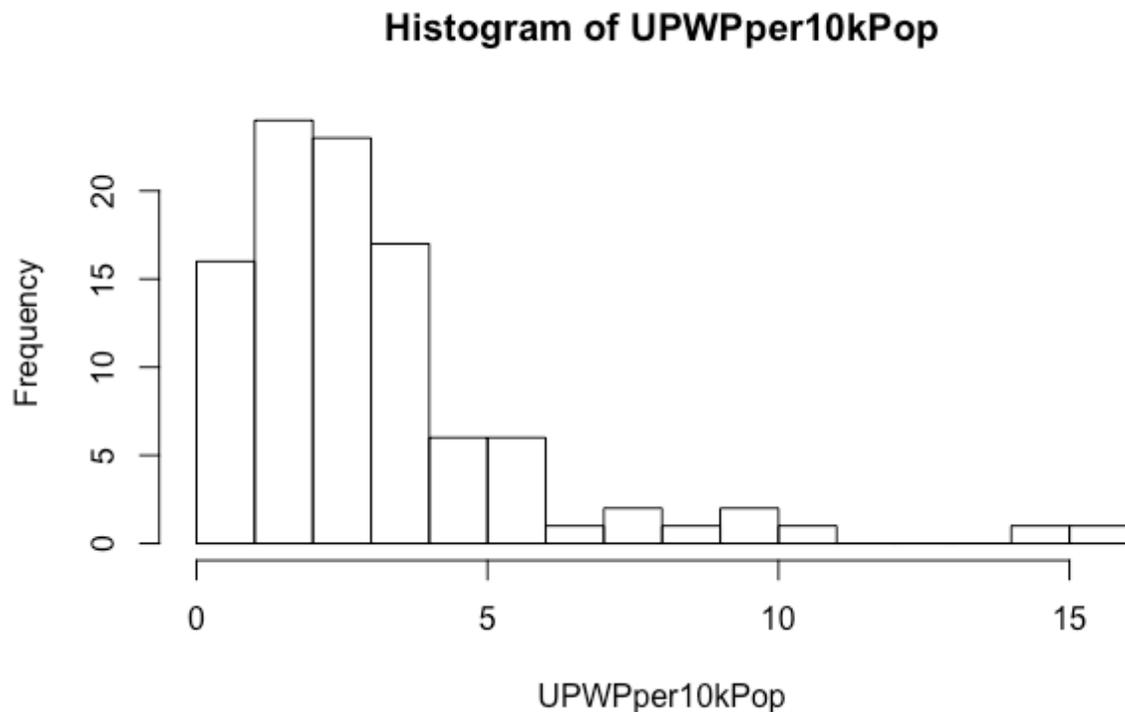
Being curious about the distribution of studies, and relying on my previous basic statistics learning, a scientist friend's advice, Wikipedia and other reference and tutorials, I did some statistical comparisons myself based on the FFY 2017 and 2018 Tables D-1. I don't claim expertise or authority in analysis with statistical methods, but the visual and numerical results of my analysis were simple and clear enough to me to share them here.

My approach was to compare UPWP studies from 2010 to 2017 per 10,000 residents between communities whose population percentages were above and below minority (27.8%) and income (31.8%) thresholds. For example:

- Cambridge had 18 studies per 105,162 population, translating to 1.7 studies per 10,000 population, and its 37.9% minority population and 33.1% low-income population are both above the regional thresholds.

- Salem had 11 studies per 41,340 population, translating to 2.7 studies per 10,000 population, its 24.1% minority population is below the threshold, while its 40.6% low-income population is above.

After loading the data into R statistical analysis software, I could see a histogram of the studies per 10,000 population for all communities, with most communities' having fewer than five studies per 10,000 population.

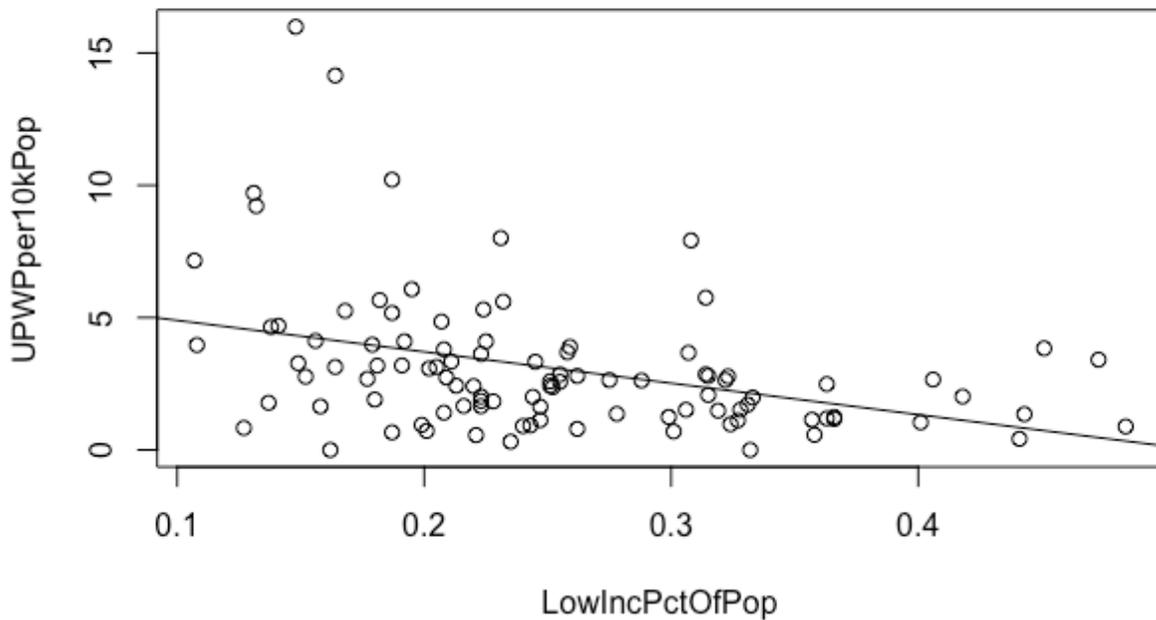


I ran an analysis of variance (ANOVA) based on the minority and low-income factors (whether the community population percentages were above or below thresholds) and the interaction between the factors. The analysis showed a significant result based on the low-income factor ($P = 0.00946$), but not the minority factor ($P = 0.10233$). This is an indication that low-income communities have statistically **different** outcomes in terms of number of studies per 10,000 population.

Looking at the effect of income more closely, I created a linear regression model in R based on the low income percent of population to find its correlation with studies per 10,000 population. The regression model showed low income population percentage as a significant factor ($P < 0.0001$) with a negative coefficient (-11.9) and a low R-squared (0.1446). The negative coefficient is an indication that the higher the percent of low income population for a community, the **lower** the number

of studies per 10,000 population, and the low R-squared value is an indication of a weak effect.

This is the plot of studies (Y-axis) against low income percent of population (X-axis) between 0 and 1, where 0.318 = 31.8%), with the regression line.



As Betsy Harvey pointed out to me, detailed quantification of benefits coming from any particular study is difficult to impossible to estimate. However, studies presumably provide **some** value to the communities they are conducted for, and the more studies, the more value to the communities. My analysis of the UPWP data by community shows me indications that communities with higher percent low income populations both have **different** outcomes with respect to number of studies (based on ANOVA), and **worse** outcomes, with fewer studies per 10,000 population (based on regression modeling).

Based on this preliminary worrying finding, I'd encourage the MPO to have skilled analysts actually carry out some of the proposed next steps outlined in UPWP documents, as well as other possible ways to check for signs of inequity in UPWP work.

Comment #4

While conducting the analysis above, I noticed a few inconsistencies in the UPWP tables.

Appendix H, FFY 2017 UPWP Table D-1 numeric inconsistencies:

- Inner Core Subtotals look like they should be 19 for 2016, and 174 for Total, based on adding the numbers in the column above.
- MAGIC Subtotals look like they should be 2 for 2016, and 80 for Total, based on adding the numbers in the column above.

Appendix H, FFY 2018 UPWP Table D-1 numeric inconsistencies:

- Stoughton 2010–2017 Total looks like it should be 4 based on adding the preceding columns in the row.

Equity analyses to be done

Comment #5

In section 3.3.2 it says:

“In 2016 and 2017, MPO staff undertook a UPWP study, Systemwide Title VI/ Environmental Justice Assessment of TIP Projects.”

According to Betsy Harvey, that project has not yet completed, but will be posted to the MPO web site when it is completed.

I hope that the MPO will use the findings to improve equity analyses, programming and funding in the region.

Confusion and concerns about Accessibility metrics, identical charts and similar highway and transit numbers

Comment #6

Accessibility metrics of average travel time to jobs and hospitals within a 40-minute transit trip and 20-minute seem troublesome because of their apparent circularity, and because of the low thresholds.

Appendix F, Accessibility Analysis, beginning on page 7-7, includes these metrics, among others:

- Average travel time to industrial, retail, and service jobs within a 40-minute transit trip and a 20-minute auto trip
- Average travel time to hospitals, weighted by number of beds, within a 40-minute transit trip and a 20-minute auto trip

These metrics seem circular, in that the quantities averaged (average travel time) are defined by the measure itself (travel times under the threshold). Some other examples may make this circularity clearer:

- Average height of adults under 5 feet 9 inches, and
- Average price of loaves of bread under \$2.

I understand that these thresholds might be used to keep extreme outliers from skewing analyses.

However, the 40-minute transit and 20-minute auto trip time thresholds seem low for this use.

First, from my own experience, and what I hear from others when I ask other people about their commutes and other trips, many trips are above these thresholds, not just extreme outliers.

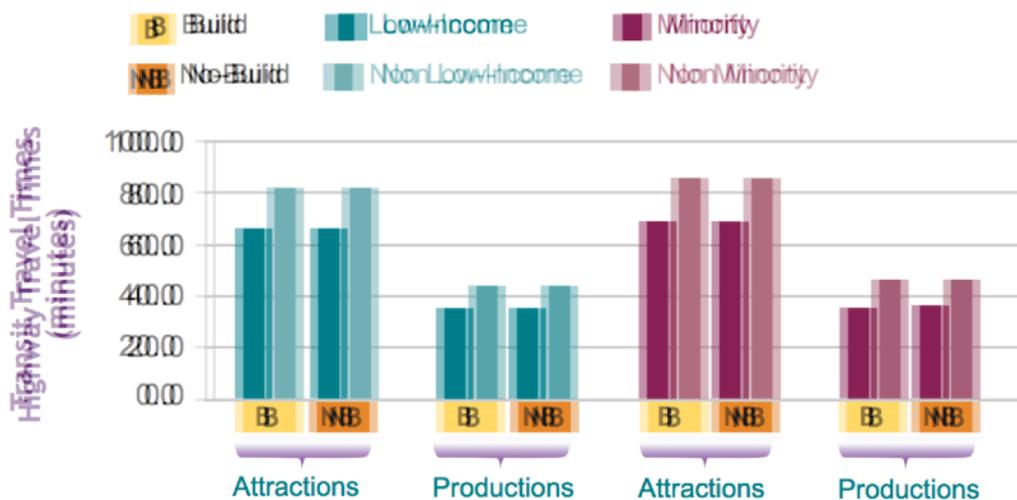
Second, the most of modeled average travel times in Tables 7.3 and 7.4 are above the 40-minute transit and 20-minute auto trip time thresholds.

Between the circularity of these metrics' definition and the apparently low thresholds, I hope the MPO and CTPS will consider different accessibility metrics — or at least raise the thresholds so that only a small fraction of actual or modeled trips are excluded from the averages.

Comment #7

Appendix F, Figures 7.6 and 7.7 look identical. Here they are superimposed and shifted horizontally slightly, and there is no discernible difference between the heights of any of the bars. (I do apologize for how unpleasant this visualization is to look at.)

FIGURE 7.6
Average Highway Travel Times for Equity Analysis Zones in the 2040 No-Build and 2040 Build Networks



While the figures seem to be based on data in Tables 7.3 and 7.4, which are very close to one another, I'd expect some differences to be visible, since differences between numbers in the tables are in some cases over 10%.

Comment #8

Appendix F, Tables 7.3 and 7.4 transit and highway numbers are surprisingly similar to one another.

From my own experience, and what I hear from others when I ask other people about their commutes and other trips, transit time is almost always significantly longer than highway travel time.

I hope the MPO and CTPS will look more closely at these modeled travel times to see that they correspond well with people's actual travel experiences.

Limited contents of Executive Summary and impacts for public involvement and language accessibility

Comment #9

The four-page Executive Summary describes the framework and process undertaken, but contains no findings. There's not even a reference to where to locate findings in the full report. I believe the emphasis on framework and process and the lack of any findings makes it difficult for people coming to the report with little prior background to begin to understand and become involved as a member of the public.

I hope that the MPO will include summaries of the findings of the analyses conducted along with the processes in the Executive Summary. To keep the Executive Summary brief, I suggest that the sections ES.1 and ES.2 could be summarized more briefly with reference to details in Chapters 1 and 2.

Comment #10

The Abstract on Page 10 says that the Title VI program "is consistent with the principles, federal laws and guidelines, and related requirements of Title VI, and is responsive to the needs of beneficiaries." It's not clear to me whether it's only asserting that the process meets requirements, or that all the findings of the process are also consistent with "the principles, federal laws and guidelines, and related requirements of Title VI" and the activities that the MPO is reporting on are "responsive to the needs of beneficiaries" and/or whether there are disparate impacts or disproportionate burdens.

I hope that the MPO will clarify this language as to whether it refers to the process, the findings, or both.

Comment #11

Because, as I understand, only the Executive Summary is routinely translated, the findings themselves are not routinely translated, since they are not contained in the Executive Summary (as indicated above in Comment #9). This seems to me to be a barrier to access to important information in the Report for people with low English proficiency.

As indicated in Comment #9, I hope that the MPO will include summaries of findings in the Executive Summary and will be routinely translated to make them easily accessible to people with low English proficiency.

Appendices contents, page labeling and numbering

Comment #12

The Appendices PDF file posted on the MPO web site does not include a table of contents. To understand and navigate the appendices, a reader needs to refer to a page in the main Draft Report document.

I hope the compilers of the Report and Appendices will include a table of contents in the document itself.

Comment #13

The Appendices do not have page numbers on them in the context of the overall Title VI Report. This lack of page numbers makes it very difficult to navigate and refer to particular contents.

I hope the compilers of the Report and Appendices will include page numbers or some other Appendix labels or footers to make it easy to navigate and refer to specific contents.

Thank you again for considering my comments.

Sincerely yours,


Carl Seglem



Massachusetts Institute of Technology
Department of Urban Studies and Planning
Building 7-337
77 Massachusetts Avenue
Cambridge, MA 02139-4307

July 16, 2017

Boston Region Metropolitan Planning Organization
10 Park Plaza, Suite 2150
Boston, MA 02116

RE: Comments on the 2017 draft Triennial Title VI Report: Improving Transportation Equity Analyses

Thank you for the opportunity to comment on the Boston Metropolitan Planning Organization's (MPO's) 2017 draft Triennial Title VI Report. As researchers at MIT's Department of Urban Studies and Planning, we have been studying transportation equity analyses that public agencies across the US employ to guard against potential civil rights violations.

Under the Boston MPO's current framework, the benefits or burdens from a project can be distributed unequally as long as the difference in treatment does not exceed twenty percent. The draft Title VI report explains that the MPO "proposed a 20 percent threshold based on the belief that a 10 percent differential would be meaningful, plus the model's 10 percent margin of error." We believe that the twenty percent threshold does not reflect best practices in transportation equity analyses.

First, the policy states that differential treatment by race or income is not meaningful if the size of the difference is below a 10 percent threshold. The purpose of Title VI of the Civil Rights Act of 1964 is to ensure that federal money does not perpetuate discrimination, either intentional discrimination or unintentional discrimination, through a policy's disparate impacts. In recognition of the seriousness of discrimination at any scale, the application of Title VI is not limited by statute to disparities above any set threshold. Rather than imposing an additional barrier to the realization of civil rights, MPOs like the Metropolitan Transportation Commission in San Francisco define disparate impact as any statistically significant difference that disadvantages a protected class.¹

¹ MTC Title VI 2014 Compliance Report. Available at:
http://files.mtc.ca.gov/pdf/title_vi/MTC_Title_VI_2014_Compliance_Report-Final.pdf

Recognizing that any statistically significant difference that disadvantages a protected class constitutes a disparate impact better advances equity while avoiding both the risks of disparities compounding over time and the subjective exercise of defining an arbitrary cutoff for “meaningfulness.”²

The second reason given for the higher 20 percent threshold is to account for uncertainty in the model. There are better ways to address uncertainty in an equity analysis than by changing the definition of a disparate impact. These include constructing a confidence interval or using a t-test or chi-square test, as the New York Metropolitan Transportation Authority does.³ The 20 percent threshold creates an additional barrier to finding a disparate impact without providing certainty.⁴ It should be removed in favor of a more workable and transparent test of statistical significance.

The methodology used for assessing disparities in project impacts is a critical part of the Boston MPO’s overall civil rights program. For this reason, the draft report rightfully highlights the importance of reviewing and updating the methods the MPO uses to evaluate the civil rights implications of its programs. We applaud this effort and urge the MPO to consider replacing the 20 percent threshold method with a more accurate, more reliable method for determining whether a proposed suite of projects is likely to have a disparate impact or disproportionate burden.

Please let us know if you would like additional details about this recommendation. We would be pleased to discuss in more detail. You can contact Peter Damrosch at (917) 863-9952 or peterdam@mit.edu.

Sincerely,

Peter Damrosch
Master’s Candidate

Jeffrey Rosenblum
PhD Candidate

Justin Steil
Assistant Professor of Law and Urban Planning

² It can be hard to explain, for example, why the 5% threshold used by WMATA is any less valid than a 20% threshold.

³ MTA New York City Transit and MTA Bus Company: Major Service and Fare Change Policy . Available at: <http://web.mta.info/mta/compliance/pdf/Title-VI-NYCT-Bus-Policies.pdf>

⁴ This becomes an issue a few times in the draft report. For example, Table 7.5 shows an equity analysis with the result of a disproportionate burden. The report then notes that given the model’s wide margin of error, the finding may not be reliable. The 20% threshold was ultimately not helpful in determining how confident we should be in the results.