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# *Springfield Walking Conditions Evaluation*

## *Springfield, MA - Fall 2019*

MAKING MASSACHUSETTS MORE WALKABLE
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## Introduction

Between April 2013 to September 2017, WalkBoston conducted twelve walk audits in Springfield, Massachusetts. Seven of these walk audits were conducted around public schools as part of the Massachusetts Department of Public Health's Mass in Motion (MiM) program. The other five were neighborhood walk audits funded through the Massachusetts Executive Office of Public Safety and Security (EOPSS).

After each walk audit, WalkBoston created and shared a report assessing safety, accessibility and comfort for people walking in these areas, and included short- and long-term suggestions for how the City of Springfield could make improvements along these walking routes. This study tracks the progress of WalkBoston's recommendations in subsequent years, seeking to understand which factors made the City more likely to implement recommendations. The purpose of this study is to assess how WalkBoston can direct its efforts and project the success of different types of recommendations.

## Methodology

Each walk audit route was revisited between Spring 2018 and July 2019 to assess whether and to what degree WalkBoston's recommendations had been implemented. Recommendations were evaluated on a scale of 0-2, where a value of 0 indicated that no change had been made, 1 indicated that the recommendation had been partially implemented, and a value of 2 meant that the recommendation was fully implemented. Table 1 includes the average implementation score for each walk audit conducted in Springfield.

Not all implementation scores were filled, as WalkBoston was not able to ascertain whether each individual recommendation was

### Table 1: Springfield Walk Audit Overview

| Audit Location | Date of Audit | # of Recommendations | Average Score |
|---|---|---|---|
| *Neighborhood Audits* | | | |
| Brightwood | Nov '15 | 35 | 1.19 |
| Liberty Heights | Sept '17 | 24 | 0 |
| Metro Center | Sept '15 | 23 | 0.83 |
| Old Hill | April '17 | 16 | 0.7 |
| South End | Nov '16 | 39 | 0.125 |
| | | | |
| *School Audits* | | | |
| Boland | Nov '13 | 28 | 0.67 |
| Brookings | July '13 | 22 | 0.65 |
| Dorman | March '14 | 17 | 0.31 |
| Gerena | April '13 | 17 | 1.5 |
| Lincoln | Nov '15 | 39 | 0.38 |
| Milton Bradley | July '14 | 20 | 0.6 |
| Rebecca Johnson | March '15 | 30 | 0.6 |

completed. Recommendations to complete traffic studies and engage local business owners, for example, were harder to follow up on than the obvious painting of a new crosswalk. City officials gave WalkBoston data on some of these study-based and engagement recommendations, but the implementation record is still incomplete. Of the 310 recommendations made in total, implementation score data has been collected for 259 recommendations (83.55%) as of August 2019.

Missing data was unevenly distributed across the walk audits. While most school walk audits had data on all or almost all recommendations, neighborhood walk audits had up to 41% of their data missing. Only 3.47% of school walk audit data is missing, while 32.85% of all neighborhood walk audit data is missing. Table 2 shows how much data has been collected for each walk audit thus far.

The underlying motivation behind this study was to gain a better understanding of which factors influence the City's likelihood of implementing recommendations. Particularly, we were interested in whether certain types of recommendations were more likely to be implemented than others. For this reason, all recommendations were coded by 'improvement types', which included: signage, pavement markings, curb ramps, traffic signals, signal timing, sidewalks, road design, other maintenance, lighting, vegetation, street furnishings, enforcement, policy and study.

## Table 2: Missing Recommendation Data

| Audit Location | Total Recommendations | Recommendations with Data | Recommendations Missing Data | % Missing Data |
|---|---|---|---|---|
| *Neighborhood Audits* | | | | |
| Brightwood | 35 | 21 | 14 | 40% |
| Liberty Heights | 24 | 14 | 10 | 41.7% |
| Metro Center | 23 | 23 | 0 | 0% |
| Old Hill | 16 | 10 | 6 | 37.5% |
| South End | 39 | 24 | 15 | 38.5% |
| *School Audits* | | | | |
| Boland | 28 | 28 | 0 | 0% |
| Brookings | 22 | 20 | 2 | 9.1% |
| Dorman | 17 | 16 | 1 | 5.9% |
| Gerena | 17 | 14 | 3 | 17.7% |
| Lincoln | 39 | 39 | 0 | 0% |
| Milton Bradley | 20 | 20 | 0 | 0% |
| Rebecca Johnson | 30 | 30 | 0 | 0% |



The data was then analyzed to see which improvement types were more likely to be implemented. A list of examples for each improvement type can be found in Appendix A.

We also analyzed the data to see if there were correlations between the frequency of implementation and the time that had elapsed since the walk audit was conducted, the socioeconomic and racial demographics of the walk audit neighborhood, as well as the people and agencies who participated in the walk audit. For projects that were implemented, we explored whether there was a correlation between the degree of implementation (whether items scored '1's or '2's more frequently) and the public funding source used for implementation.

## Results

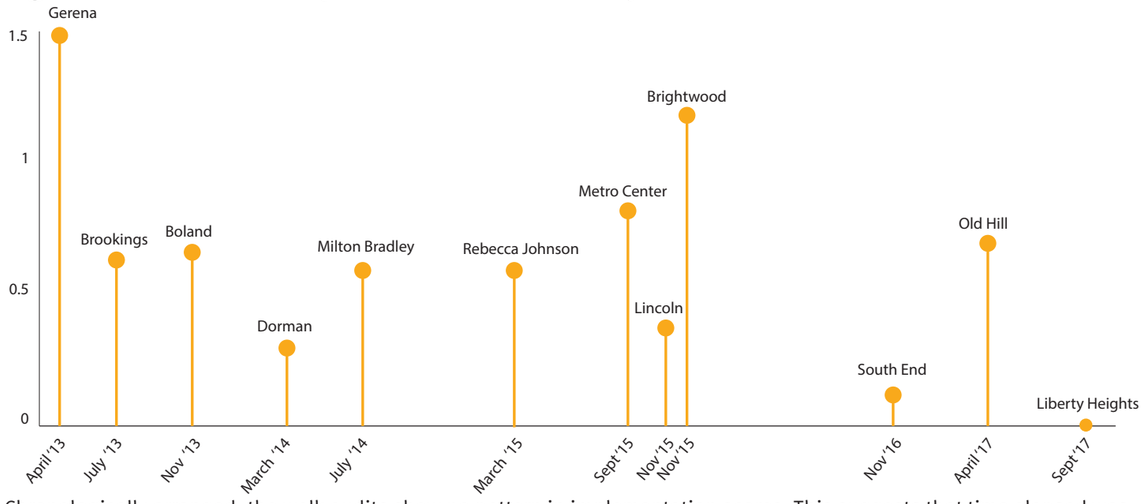
The average implementation score across all recommendations was 0.63. As this low score indicates, many items received a score of 0: 161

At the intersection of West Street and Riverside Road, a pedestrian countdown signal has been installed but no wayfinding signs are posted.

## Table 3: Walk Audits with Scores Above the Mean in Orange

| Audit Location | Date of Audit | # of Recommendations | Average Score |
|---|---|---|---|
| *Neighborhood Audits* | | | |
| Brightwood | Nov '15 | 35 | 1.19 |
| Liberty Heights | Sept '17 | 24 | 0 |
| Metro Center | Sept '15 | 23 | 0.83 |
| Old Hill | April '17 | 16 | 0.7 |
| South End | Nov '16 | 39 | 0.125 |
| *School Audits* | | | |
| Boland | Nov '13 | 28 | 0.67 |
| Brookings | July '13 | 22 | 0.65 |
| Dorman | March '14 | 17 | 0.31 |
| Gerena | April '13 | 17 | 1.5 |
| Lincoln | Nov '15 | 39 | 0.38 |
| Milton Bradley | July '14 | 20 | 0.6 |
| Rebecca Johnson | March '15 | 30 | 0.6 |

## Figure 4: Walk Audit Implementation Scores by Date of Walk Audit




Chronologically arranged, the walk audits show no pattern in implementation scores. This suggests that time elapsed was not a factor in the likelihood and degree to which recommendations from walk audits were implemented.

out of 259 recommendations (62%) received a score of 0, meaning that no part of the recommendation had been implemented. Six of the 12 walk audits received scores above 0.63, with half of these being neighborhood walk audits and half school audits. Overall, school walk audits scored higher than neighborhood walk audits, with average scores of 0.68 and 0.57 respectively.

### *Time*

The most recent walk audit was completed 1 year and 10 months before the time of data collection. Implementation scores were ordered by the date on which each walk audit was completed to assess if there was a downward trend in implementation in more recent years. A downward trend in implementation scores would indicate that recommendations were completed gradually, and that given more time, the City would be more likely to implement recommendations. However, findings did not show that more recent walk audits had lower implementation scores than older ones. As Figure 4 demonstrates, the scores had no correlation to the time elapsed since the walk audit was completed.

On West Street, the continued lack of a marked mid-block crossing and pedestrian median mean that walkers cross fast traffic without protection to get to the bus stop.



## Table 5: Degree of Completion by Funding Source

| Funding Source | Administrative Level | # of Projects | Sum Score | Average Completion | % Partially Completed | % Fully Completed |
|---|---|---|---|---|---|---|
| MassDOT | State | 15 | 29 | 1.93 | 6.7% | 93.3% |
| MassDOT Complete Streets | State | 8 | 15 | 1.88 | 12.5% | 87.5% |
| Chapter 90 | State | 8 | 14 | 1.75 | 25% | 75% |
| CDBG – DR | Federal | 2 | 2 | 1 | 100% | 0% |
| MassWorks – City | City | 3 | 3 | 1 | 100% | 0% |
| City Funds | City | 1 | 1 | 1 | 100% | 0% |

Along Plainfield Street, new ladder crosswalks with curb ramps have been installed.

### *Funding Source*

The data was analyzed to assess whether the funding source for implementation influenced how fully the recommendation was completed. All recommendations that scored either 1 or 2 (i.e. those that were partially or fully completed) were organized by the funding source used to finance their implementation. There were 6 funding source categories: MassDOT, MassDOT Complete Streets, Chapter 90 projects, Community Development Block Grant Disaster Recovery Program (CDBG – DR), MassWorks – City, and city funds. Projects funded through the former three members of this list (direct state funds) were more likely to fully follow WalkBoston's recommendations. Table 5 shows how this data was distributed.

Though this data shows state funded projects being more completely implemented, this finding is not conclusive as only 6 projects were federally or locally funded in comparison to the 31 state-funded projects.

### *Improvement Type*

We hypothesized that recommendation types such as signage and vegetation would have high implementation scores because they are relatively low cost and do not demand extensive studies beforehand.  Likewise, we expected that road design and traffic signaling would have lower implementation scores. However, the study findings indicate a different reality, where the ease of execution did not match actual implementation. To more accurately measure this relationship, improvement types with five or fewer entries (signal timing, street furnishings, other maintenance, policy/programming, and enforcement) were excluded from the analysis.

Pavement markings, traffic signals, lighting, and curb ramps all had values at or above 0.63, the average score for all WalkBoston recommendations in Springfield. Signage and vegetation, predicted to have high implementation scores, are amongst the lowest scores. This indicates that either there is another factor that determines which improvement types are likely to be implemented or there is no pattern at all to the frequency of the recommendation adherence.

The sidewalk along US 20 has overgrown vegetation, making it challenging for pedestrians to walk along fast-moving traffic.

**Table 6: Average Completion Scores of Common Recommendation Types**

| Improvement Type | # of Suggestions with Data | Average Score |
|---|---|---|
| Traffic Study | 6 | 0 |
| Signage | 40 | 0.35 |
| Vegetation | 6 | 0.5 |
| Sidewalks | 21 | 0.57 |
| Road design | 58 | 0.58 |
| Pavement markings | 80 | 0.63 |
| Traffic signals | 16 | 0.63 |
| Lighting | 6 | 0.83 |
| Curb ramps | 19 | 1.42 |



### *Participants*

The relationship between who attended the walk audit and its implementation score was analyzed in two ways. First, an average score was created for every individual who attended a walk audit to assess whether the consistent presence of a few key individuals impacted the eventual implementation of recommendations developed during the walk audit. For this analysis, all participants who attended no more than one walk audit were excluded, as were the Mass in Motion coordinators, as they necessarily attended all walk audits. This left eight participants. These participants' scores were determined by averaging the implementation scores of all walks they participated in. As Table7 shows, Jimmy Pereira from MassBike and Karen Pohlman from Baystate Health have the highest participant scores. They are also the only two members of this list who did not attend the Liberty Heights walk audit, which scored a 0 on implementation as none of the recommendations had been completed at the time of data collection. Adding this 0 score to their averages lowered all other participants' scores.

An analysis was also run on the types of groups that participants represented on the walk audit. This would tell us whether the presence of a representative from PVPC or DPW, for example, impacted the efficacy of walk audits. Table 8 shows the average scores of walk audits attended by seven key group types. This analysis reveals that when walk audits at which representatives from community-based organizations, schools, or the Pioneer Valley Planning Commission have their implementation scores averaged, the average score is higher than the average implementation score across all walk audits (0.63).

Data on who attended the Metro Center/Downtown walk audit is incomplete, so participant scores do not include values accumulated from this walk audit.

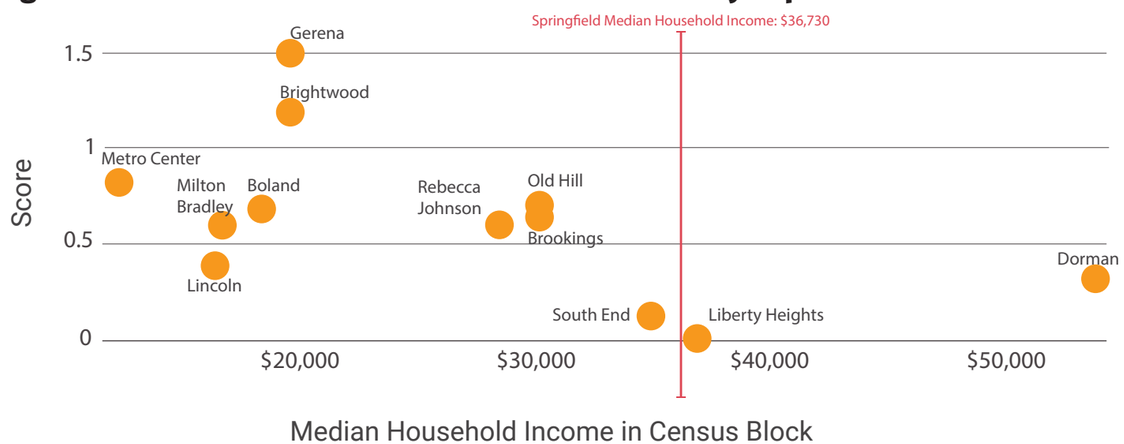
**Table 7: Recurring Participant Scores**

| Participant | Affiliation | Walks Attended | Score |
|---|---|---|---|
| Jimmy Pereira | MassBike | Dorman, Boland | 0.77 |
| Mike Tully | Springfield Dept of Parks & Recreation | South End, Liberty Heights, Old Hill, Boland, Gerena | 0.6 |
| Matt Sokop | Springfield Dept of Public Works | Brightwood, South End, Liberty Heights, Old Hill, Lincoln | 0.48 |
| Hector Velez | Springfield Dept of Public Works | South End, Liberty Heights, Rebecca Johnson | 0.24 |
| Karen Pohlman | Baystate Health | Brightwood, Dorman, Boland, Brookings, Gerena, Lincoln, Milton Bradley,  Rebecca Johnson | 0.74 |
| Sgt. Mel Kwatowski | Police Department | South End, Liberty Heights | 0.06 |
| Jeff McCollough | Pioneer Valley Planning Commission | South End, Liberty Heights, Boland, Brookings, Gerena, Lincoln, Milton Bradley, Rebecca Johnson | 0.57 |
| Kathy Wicks | Partners for a Healthier Community | South End, Liberty Heights, Brookings | 0.26 |

## Table 8: Scores for Major Group Types

| Group Audit | Walk Audits Attended | Score |
|---|---|---|
| CBOs | Brightwood, Old Hill, Dorman, Boland, Brookings | 0.71 |
| Schools | Dorman, Boland, Brookings, Gerena, Lincoln, Milton Bradley, Rebecca Johnson | 0.67 |
| PVPC | Brightwood, South End, Liberty Heights, Boland, Brookings, Gerena, Lincoln, Milton Bradley, Rebecca Johnson | 0.64 |
| Residents | Old Hill, Dorman, Rebecca Johnson | 0.54 |
| SHA | Old Hill, Dorman | 0.51 |
| Police | Brightwood, South End, Liberty Heights, Old Hill, Lincoln, Milton Bradley, Rebecca Johnson | 0.51 |
| DPW | Brightwood, South End, Liberty Heights, Old Hill, Lincoln, Rebecca Johnson | 0.5 |
| RHA | South End, Liberty Heights, Old Hill, Brookings, Milton Bradley | 0.42 |

## Figure 9: Median Household Income in Census Block by Implementation Score




There was no visible pattern to indicate a relationship between median household income in the walk audit route's census block and the implementation score.



*Demographics*

Last, we explored possible connections between the demographic characteristics of the walk audit neighborhoods and the degree to which suggested changes were made. We compared the median household income in the census block where each walk audit was conducted to the implementation scores these walk audits received. We conducted the same analysis between the percentage of white people living in the census block where walk audits were conducted. The range of demographic characteristics was not evenly distributed, as WalkBoston conducted walk audits primarily in lower-income and more racially diverse neighborhoods.

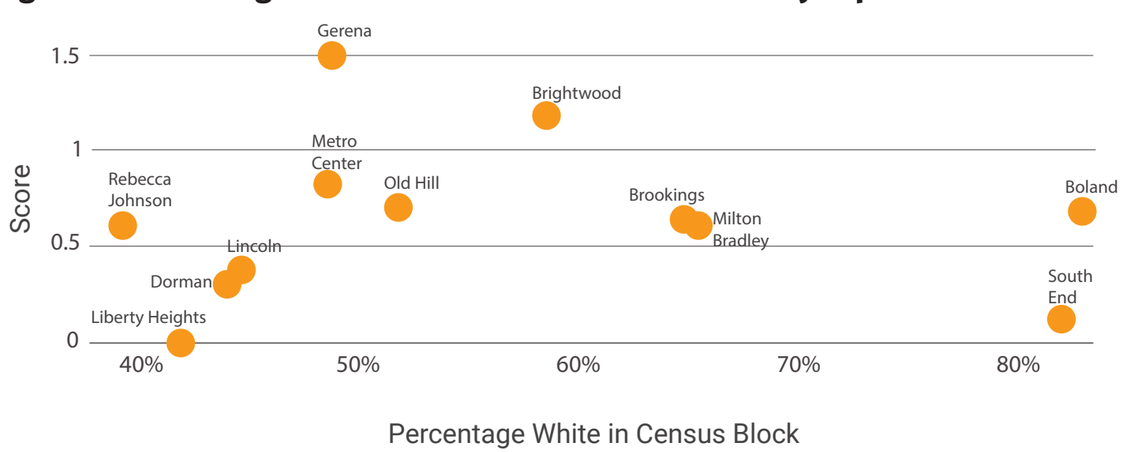
Results (shown in Figure 9 and Figure 10) show that there was no strong correlation between either the median household income and implementation level or the percentage of white residents in the neighborhood and implementation level.

## Conclusion

The results of this study were inconclusive. For those relationships where we sought to determine whether a specific correlation occurred, such as between demographic information and implementation score, and time and implementation score, we found no correlation. For other analyses we ran, there were no easily distinguishable explanations for the score hierarchies we found – such was the case for participant data and improvement type data. For instance, why did walk audits with school representatives and residents score better than walk audits with a representative from DPW?

There was an interesting finding from the analysis of funding sources: projects funded through the state were more likely to be fully implemented than projects paid for through city or federal funds. While there was not enough data collected from projects using federal and local funds to make this a clear comparison, this is an area of study that WalkBoston can continue to monitor and evaluate to determine whether state funds go further in improving the built environment than local and federal funds.

## Figure 10: Percentage of White Residents in Census Block by Implementation Score




No correlation between the percentage of white residents within the walk audit route's census block and the walk audit's implementation score was identified.

## Appendix A: Categories of Improvement Types

| Category | Description |
|---|---|
| Signage | Install advance pedestrian crossing signs |
| | Install pedestrian crossing signs at crosswalk |
| | Install school zone signs |
| | Install speed limit signs |
| | Install flex posts |
| Pavement Markings | Paint new crosswalk |
| | Repaint existing crosswalk - no change in pavement marking design |
| | Repaint existing crosswalk - change in pavement marking design |
| | Paint new fog lines/edge lines |
| | Repaint existing fog lines/edge lines |
| | Paint parking lanes/stalls |
| | Repaint existing parking lanes/stalls |
| | Paint bike facilities (lanes or sharrows) |
| | Paint bus stops |
| Curb ramps | Install new curb ramps and detectible warning panels |
| | Repair existing curb ramps/warning panels |
| Traffic signals | Replace bulbs/Repair existing pedestrian signal head |
| | Replace broken/aging pedestrian head with accessible countdown signals |
| | Install pedestrian signal head |
| | Install School Zone Flashing Beacon |
| | Install RRFB |
| | Install Ped Hybrid Beacon |
| | Install new traffic signal |
| Signal timing | Change pedestrian phase: concurrent or exclusive |
| | Shorten wait time for pedestrian phase |
| | Recalibrate WALK time |
| | Add LPI |
| Sidewalks | Repair existing sidewalk |
| | Install new sidewalk |
| | Alter sidewalk layout (e.g., verge or location) |
| Road design | Tighten curb radii |
| | Install curb bump-out |
| | Install raised crossing |
| | Install raised intersection |
| | Implement road diet |
| | Remove right-turn slip lane |
| Other maintenance | Sweep street/sidewalk |
| | Trash/litter removal |
| Lighting | Install new light poles |
| | Relocate existing light poles |
| | Replace broken bulbs |
| | Other lighting strategy |
| Vegetation | Plant trees |
| | Trim vegetation |
| Street furnishings | Add benches or other seating |
| | Add trash receptacles |
| | Enforcement |
| Enforcement | Policy/Programming |
| Study | Traffic study |