

WHAT IS A GOOD BIKE NETWORK?

THE ART* OF METRIC DEVELOPMENT

*(definitely not science)

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The Secret of Metric Development

- It's all about making decisions
- So. Many. Decisions.
- Five entire stages of decision-making

Stages of decision-making

- Vision & Goal: what do we want to see in the world?
- Theory of change: how do we think we'll get there?
- Measure concept: how can we capture the current state?
- Measurement: can we put a number on it?
- Reporting: how do we want to slice this number in meaningful ways?

Process of decision-making

- Clarity on the high level is important in order to make the right decisions further down
- Frequent check-ins with advisors and communities, because many decisions need to be made at every level
- Evaluate trade-offs
 - Simplicity vs effectiveness
 - Concept integrity vs data availability
 - Timeliness vs accuracy
- Continuously improve measures as more data and understanding becomes available

Stage 1: Vision & Goal

- Vision & Goal: what do we want to see in the world?
 - Biking in Massachusetts will be a safe, comfortable, and convenient option for everyday travel.



Goal decisions: are all trips created equal?

- Vision: Biking in Massachusetts will be a safe, comfortable, and convenient option for everyday travel.
- Who are we talking about?
 - The vision applies to everyone: young, old, rich, poor, urban, rural... people who currently cycle, and people who do not
- What behavior do we want to focus on?
 - “Everyday travel” – Focus on purposeful travel (rather than recreational)
 - Concept of “everyday trips” with a purposeful Origin and Destination (e.g. from Home to the Park)
 - We don’t expect to generate new trips; we want to convert existing trips onto the cycling mode
 - Cycling as an option: We don’t expect 100% conversion, just for more people to have cycling as an option
- When we combine the Who and the What in our vision, we get strong implications that:
 - Although the easiest way to increase cycling trips → get Anna to go from 50% cycling mode share to 90%, this is not our focus
 - A cycling trip from a new rider is more important than extra cycling trips from existing riders
- And so we set a goal that would mean we’re successful in our vision:
 - Increase the percentage of everyday trips (trips under 6 miles) made by biking

Stage 2: Theory of Change

- Vision & Goal: what do we want to see in the world?
 - Biking in Massachusetts will be a safe, comfortable, and convenient option for everyday travel.
 - More everyday trips (trips under 6 miles) are made by biking.
- Theory of change: how do we think we'll get there?
 - How will trip modes shift to cycling?
 - Who, What, Where?
 - Cycling infrastructure has to be available throughout the state, comfortable enough to attract new riders, and serve destinations where people already go

Theory of Change Decision: What is comfortable?



Stage 3: Measure

- Vision & Goal: what do we want to see in the world?
 - Biking in Massachusetts will be a safe, comfortable, and convenient option for everyday travel.
 - More everyday trips (trips under 6 miles) are made by biking.
- Theory of change: how do we think we'll get there?
 - High-comfort bike network that is available for existing trips will encourage people to switch the cycling some of the time
- Measure concept: how can we capture the current state?
 - Percentage of trips under 6 miles taken in Massachusetts that could be made using the high-comfort biking network

Measure concept decision: equity measure or equity in all measures?

- One of the elements of our vision & goal was that everyone has cycling as a viable option for some of their trips
- This stage is where we make a crucial decision – do we include one equity measure, or incorporate equity into every measure?
 - One measure approach makes equity is easy to focus on and understand, but frequently misses nuance
 - Multiple measures approach makes sure equity is considered in every aspect, but can make it hard to understand and to evaluate the state of the world
- Equity Check: Can certain populations make a smaller percentage of their trips under 6 miles using the high-comfort biking network than average?

Stage 4: Measurement

- Vision & Goal: what do we want to see in the world?
 - Biking in Massachusetts will be a safe, comfortable, and convenient option for everyday travel.
 - More everyday trips (trips under 6 miles) are made by biking.
- Theory of change: how do we think we'll get there?
 - High-comfort bike network that is available for existing trips will encourage people to switch the cycling some of the time
- Measure concept: how can we capture the current state?
 - Percentage of trips under 6 miles taken in Massachusetts that could be made using the high-comfort biking network
 - Can certain populations make a smaller percentage of their trips under 6 miles using the high-comfort biking network than average?
- Measurement: can we put a number on it? We need to define:
 - Trips under 6 miles
 - Trips – Origin, Destination, Accessing the high-comfort network
 - High-comfort bike network contiguity

Measurement decision: how connected is connected?

- Percentage of trips under 6 miles taken in Massachusetts that could be made using the high-comfort biking network
- **Trips under 6 miles:** 6 miles by which path? If there's a 5-mile path on roads, but using a high-comfort bikeway makes it 6.5 miles, does that count?
- **Accessing the high-comfort bike network:** how close do the origin and destination points need to be to the network to consider them as “could be made”
- **High-comfort bike network contiguity:** Can there be breaks (e.g. for intersections that could be walked) or does it need to be completely contiguous?
- No answers here, we're still working on this one. We have some thoughts, but will be reaching out to discuss.

Stage 5: Reporting

- Vision & Goal: what do we want to see in the world?
 - Biking in Massachusetts will be a safe, comfortable, and convenient option for everyday travel.
 - More everyday trips (trips under 6 miles) are made by biking.
- Theory of change: how do we think we'll get there?
 - High-comfort bike network that is available for existing trips will encourage people to switch the cycling some of the time
- Measure concept: how can we capture the current state?
 - Percentage of trips under 6 miles taken in Massachusetts that could be made using the high-comfort biking network
 - Can certain populations make a smaller percentage of their trips under 6 miles using the high-comfort biking network than average?
- Measurement: can we put a number on it?
 - ...to come!
- Reporting: how do we want to slice this number in meaningful ways?
 - Groups of interest
 - Geography
 - Trip characteristics

Reporting decision: what happens with trips that cross boundaries?

- **Groups of interest:** which populations do we want to make sure are covered? How do we identify their trips?
- **Geography:** do we want to report this measure by county? RPA? Municipality?
 - 6 miles is a long distance; many trips will cross these boundaries - where do these trips get “assigned”?
- **Trip characteristics:** do we want to consider commute trips as different than non-commute trips? How do we identify them?
- Shockingly, no answers here yet either

Initiative 6: Continuous Evaluation

- Invest in data collection and evaluation to inform Initiatives 1 through 5 and to measure performance.
- Which has its own measures for tracking progress, emphasizing transparency about data quality:
 - Percentage of measures in the Bike Plan for which high-quality data exists and are used for evaluation
 - Equity Check: Percentage of equity measures in the Bike Plan for which high-quality data exists
- This initiative lists steps to continuously improve the measures in the Bike Plan:
 - Review approach for the measure given available data; revise approach as better data becomes available.
 - Review current state of data available, including appropriateness of data to the measure and quality of data.
 - Determine additional data needs, such as collecting new data if needed and updating old data.
 - Calculate current performance of the measure, including changes over time.
 - Set performance targets and evaluate progress towards them.

And in closing, some OPMI products

- MassDOT Tracker, for high-level transportation metrics:
<https://massdottracker.com/>
- OPMI Data Blog, for deeper dives into data and measurement, and some fun activities:
<https://www.mbtabackontrack.com/blog/>
- OPMI email: opmi@mbta.com

PERFORMANCE GOAL	PERFORMANCE MEASURE	TARGET MET?	JULY 1 2017 - JUNE 30 2018 (FY18)	CHANGE FROM FY17
	Number of fatalities (rolling avg/actual)		367/395	+4/+45
	Rate of fatalities per 100 million VMT (CY12-CY16 rolling average)		0.64	-0.01
	Number of serious injuries (rolling avg/actual)		3,132/2,980	-120/+130
	Rate of serious injuries per 100 million VMT (CY12-CY16 rolling average)		5.44	-0.33
	Number of motorcycle fatalities (CY12-CY16 rolling average)	-	49	0
	Number of bicycle fatalities (CY12-CY16 rolling average)		10	+1
	Number of pedestrian fatalities (CY12-CY16 rolling average)		79	+2
	Fatalities in roadway work zones (CY12-16 rolling avg/actual)	-	5	0

