Closing the Gap

Reaching the Last Mile

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INTRODUCTION

We have previously explored how mobility infrastructure and its manipulation unlock the mobility ecosystem. However, we have yet to examine the mobility challenges that come with getting to the boundaries of a network. We have also not examined how they influence intervention effectiveness. We'll discuss both here. Additionally, we'll introduce the concept of the last mile and explain its application in public health and the public sector. Finally, we'll also discuss how Orange Sparkle Ball's work addresses some last mile problems we see.

THE PROBLEM AS EXPLAINED BY NETWORK THEORY

So far, much of our focus has been on introducing network theory, so it makes sense to start with some. In every network, there are always nodes at the periphery. They have very few links to anyone and seem to serve a very small function. Yet, in some cases, they represent vital connections to populations or resources disconnected from the rest of the network. For example, a clinic that serves only their local area in a part of a city far from other primary health systems. So how do you get to that last mile? Why is it so critical to do so?

WHAT IS THE LAST MILE ANYWAY?

These ideas can be abstract, so we'll offer a concrete analogy. Imagine a tree. For a tree to survive, resources like water and nutrients must reach every cell. The majority of the tree's cells are contained within the trunk. This makes it easier to distribute resources to those cells because they are very central, connected, and close to each other. It takes more work for a tree to pump water and nutrients into its branches. The vast majority of the tree's cells, contained within the trunk and larger, central branches, can be accessed with little work. However, those few cells making up the thinnest, most far-reaching branches and leaves take disproportionately more work to reach and maintain. Consequently, those are the branches that die off. Their role in a tree is that of the last mile.

Likewise, imagine now that whatever service or good you offer to a community comes from a single point (or points), like the tree's nutrients from the ground. They travel throughout the community through central, well-maintained, and populated channels, like the tree trunk, and then reach further out into the community, like the branches. The further away from the highly populated, central source(s) of goods and services, the higher the cost to reach what is usually a much smaller population. This increases the marginal cost of each good. As an explanation, the marginal cost is the cost of producing one more unit of a good or the cost of one more person using a service (MasterClass, 2022) In delivery, it's the problem of moving goods from the warehouse/store to the customer's door (Hayes, 2022).

WHAT ARE THE PRIMARY CAUSES OF THE LAST MILE PROBLEM?

As alluded to in the analogy above, one of the primary causes of the last mile problem is cost. It is simply more expensive per user to service those on the last mile. This is because the further away from the highly populated, central source(s) of goods and services, the higher the cost to reach what is usually a much smaller population. This increases the marginal cost of each good. As an explanation, the marginal cost is the cost of producing one more unit of a good or the cost of one more person using service (Krugman, 2022) According to one estimate, in shipping, last mile costs can make up as much as 53% of the total cost of a good (Dolan, 2023).

It can also be, particularly in the realm of physical mobility, time-consuming and labor-intensive to set up the appropriate infrastructure necessary to reach the last mile (Franke, 2021). In the case of service and program delivery, the unpredictability of having actual human beings use the service or program and the busy lives they live can cause severe last mile problems (Nesterak, 2015). For example, a person might not be home at the appointed time to pick up a package or have the resources necessary to take advantage of a resource.

OUR WORK AND THE LAST MILE PROBLEM

At Orange Sparkle Ball, we run into last mile issues frequently. In fact, much of our work revolves around solving last mile problems in both physical and socioeconomic mobility. In the physical mobility space, that often looks like using autonomous vehicles to help goods get to harder-to-reach areas. In the realm of the less physical aspects of mobility, we work on improving community-based programming to ensure services and programs reach hard-to-reach populations in our communities. Each of the solutions that we implement, no matter what sector, are all collaboratively designed with our community partners with our Immersive Innovation Labs model. Last mile problems often require highly contextual solutions best designed by the community in which they will be implemented, which is at the heart of the Orange Sparkle Ball approach.

CONCLUSION

Solving mobility challenges is about getting goods and services to people as and when they need them. Whether it's physical mobility and the need to deliver goods to difficult to reach locations, or socioeconomic mobility and the need to guarantee access to essential services, these challenges need to be addressed. In particular, populations along the last mile have a special need to be plugged into mobility ecosystems and networks. Our work at Orange Sparkle Ball in addressing the last mile focuses on providing innovative solutions that ensure goods and services reach their destination quickly and efficiently. We are dedicated to ensuring those in need have access to essential services, and that our solutions improve the lives of all those involved.

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