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Prenatal Trip Assistance Cost Analysis

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School of Environment and Natural Resources
Capstone Final Project
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1. Executive Summary

This report was developed in response to a request for proposal from the City of Columbus' SmartCity project regarding a prenatal trip assistance program. A goal of SmartCity is to provide better, more reliable transportation to expecting mothers in order to reduce the high infant mortality rates in the neighborhoods around Franklin County. Our group was tasked with completing a cost effectiveness analysis in order to compare several prenatal trip assistance options to determine which option would be the most practical around Franklin County.

Our project began with two objectives. The first was to determine the cost effectiveness of the current Franklin County Non-Emergency Medical Transportation (NEMT) program and to examine its strengths and weaknesses. The second objective was to analyze the NEMT programs that have been implemented throughout cities throughout the United States and to determine how effective a similar program would be around Columbus, Ohio and the Franklin County region. We originally began by looking at statewide initiatives and more comprehensive programs. The initial idea was to integrate Franklin County's current public transportation system into a prenatal trip assistance program using pre-existing infrastructure such as the Central Ohio Transit Authority (COTA) busses and companies such as Yellow Cab, Uber, and Lyft.

After a few weeks of preliminary research, we found a program in Tennessee called BlueCare Tennessee. This program used a third party technology broker to provide non-emergency medical transportation to those who needed it, and it made it simple and patient friendly. The idea of BlueCare was to eliminate the gaps between patients and their healthcare provider, insurance companies, and transportation provider. After reporting back to Smart

Columbus with our findings on BlueCare, as well as several other different initiatives, the Smart Columbus team decided to take this lead and move forward by searching for a reliable third party technology broker that could work effectively around Franklin County.

From here, our research goal changed and we had two entirely new objectives. The first objective was to determine the cost of two third-party technology brokers who could partner with Smart City and



Image 1.1

Medicaid/Medicare to provide a fleet of vehicles for a pilot prenatal trip assistance program. The second was to determine how effective these different programs will be around Franklin County and which one is the best option for providing reliable transportation to expecting mothers. After some preliminary benchmarking research of two companies we were able to conduct a cost effectiveness analysis, where we determined that Circulation would be the best third party technology broker for Franklin County to partner with. We based our findings off of how effective this company would be at reducing costs to insurance companies and physicians, increasing the number of expecting mothers who receive prenatal care, and decreasing the occurrence of premature births, the number one cause of infant death in Franklin County.

2. Introduction

One of the greatest issues that the US healthcare system is facing today is cost. In 2016, healthcare expenditure increased 4.3% to approximately \$3.3 trillion, equating to roughly 17.9% of the overall US GDP, or approximately \$10,348 per individual (CMS, 2016). Medicaid

spending alone increased 3.9% in 2016 to approximately \$565.5 billion, and according to the Center for Medicare and Medicaid Services (CMS), an average pregnancy costs the mother \$7,540 (National Health Expenditures 2016 Highlights, 2016).

In June 2016, the City of Columbus won the Smart City Challenge. After competing against 77 cities nationwide, Columbus was granted \$10 million for their “Smart Columbus” program from Vulcan, Inc., as well as an additional \$40 million from the U.S. Department of Transportation. One of the sustainability goals of the Department of Transportation includes projects aimed at “enhanced human services” (City of Columbus, 2018). These projects seek innovative technologies that solve and prevent problems while improving overall quality of life for residents. One way they plan to do this by increasing access to transportation.

The focus of our team is to determine a cost-effective way to lower the infant mortality rate (IMR), around Franklin County. According to the Association of Maternal and Child Health Programs, IMR represents a long standing public health concern, not only as an indicator of the risk of infant death, but also as a broad indicator of community health, poverty, and socioeconomic disparities within a community (Association of Maternal and Child Health Programs, 2013). Studies have shown that women who miss their prenatal appointments have a higher chance of complications such as premature birth due to a lack of prenatal education and prenatal care (National Center for Biotechnology Information, 2002). Based on Smart Columbus’ SideWalk lab research, most women miss their appointments due to the lack of personal transportation and the inconvenience of the current public transportation system (Ng et al., 2017). Our research showed the most effective solution to be a third party technology

broker. This system would bridge the gaps between patients, physicians, insurance providers, and transportation companies.

For our report, we researched Veyo and Circulation. These two companies are among the fastest growing technology brokers that provide NEMT services by working with the city and existing companies and infrastructure. The City of Columbus' goal is to reduce IMR by working with Franklin County and Celebrate One. Our project aids in finding a solution by researching prenatal trip assistance programs, performing a cost-effectiveness analysis on available options, and providing our research to the city to aid in the decision making process.

3. Goal and Scope of Project

3.1. Goals and Objectives

The goal of this project is to determine the cost effectiveness of providing safe and reliable transportation services for expectant mothers in order to reduce the infant mortality rate in at risk neighborhoods around Franklin County. Our team had two objectives:

- I. Determine the cost of two third-party technology brokers who will partner with Smart City and Medicaid/Medicare to provide a fleet of vehicles for the pilot prenatal trip assistance program.
- II. Determine which technology broker is the best option for providing reliable transportation to expecting mothers.

3.2. Scope

Our research focused on the Franklin County area and the surrounding counties. Our analysis was done at the regional level, and any costs that were considered were costs that would be assumed by Franklin County, as well as the insurance companies, medical clinics, and

residents throughout Franklin. We were mostly interested in determining the savings that would be associated with a pilot program that would involve a third party technology broker who would provide the transportation service and bridge the gaps between patient, insurance provider, and physician. The technology brokers that were being examined were Veyo and Circulation. We focused on economic and social parameters for our analysis. More specifically, for economic parameters we looked into how these programs would reduce the cost of no-show doctors appointments to both insurance companies and physicians. For social parameters we looked at how effective a third party technology broker would be at reducing the number one cause of infant mortality in Franklin County: low birth weight/premature birth. We focus on the immediate, one year costs/savings, as a pilot program will be a short-term agreement. In addition, we decided to estimate the ten-year effectiveness of these programs in order to provide some insight on the long-term benefits, should the County decide to sign a long-term contract with the broker of their choosing. For the purpose of this study, we omit environmental costs/benefits.

4. Methods of Data Collection

4.1. Benchmarking

While our team was focused on the cost effectiveness of these third party technology brokers, we began with some general benchmarking, which is reported in section 6. Our team originally began researching different types of programs that could be implemented in Franklin County. For this, we examined how other cities with similar demographics to Franklin County have been successful at reducing infant mortality. After a couple of weeks of research, we reported our findings to Smart Columbus, who then decided to take the project in a different

direction and seek evaluations of third party technology brokers. From here we changed our goal and scope to focus on these brokers, rather than a city run, holistic approach. We began by looking at four different technology brokers. For this data collection we used the companies' own websites, public news stories, and company correspondence, in order to get specific information and review the likely success of each company if they were to conduct a pilot program in Franklin County. After a couple of months of research, sufficient data was available to evaluate Veyo and Circulation. In addition to researching these third party brokers, we conducted research regarding infant mortality in Franklin County (causes of high mortality, number of infants dying each year, etc.) and the cost of this to the County. It also included research on how the high number of no-show appointments were affecting clinics of different sizes, and how much Medicaid and other insurance providers were paying to compensate for these missed appointments.

4.2. Cost Effectiveness Analysis

For the second part of our research our team conducted a cost effectiveness analysis. Our method for this was quite simple and largely builds off of our findings from our benchmarking research. Once the data was gathered we used it to estimate how effective these brokers could be in a region like Franklin County. We determined how much the County would save by reducing missed appointments, thus eliminating a cost to both medical clinics and insurance companies and increasing the number of women who receive prenatal care. We also used data concerning the number of premature infants born in order to estimate how effective prenatal care could be at minimizing the number one cause of infant death around Franklin County. This could save the

lives of many infants and lower the costs that premature births place on medicaid and other insurance providers.

5. Barriers to Data Collection

5.1. Lack of Transparency from Brokers

One barrier to data collection that we encountered was a lack of transparency from different third party technology brokers. It was previously stated that we dropped two of the four original brokers that we were analyzing (Kaizen Health and Logisticare) because we were unable to get in contact with anyone from the company. Further, many of the websites for these companies had very limited information and did not report on-time rate, customer satisfaction, employee satisfaction, or missed appointment rates.

5.2. Lack of Transparency from Franklin County

In addition to a lack of information from the technology broker, perhaps a more difficult barrier to overcome was the lack of available information from Franklin County. It was very difficult, and at times impossible, for our team to gather information from Franklin County regarding the current costs that they face for their current NEMT program. We attempted to get in contact with several different people from several different departments around Franklin County, but were often unsuccessful.

5.3. Translating the Data to Fit Our Scope

Because there was a limited amount of information available in Franklin County, we were forced to estimate or assume many costs which will be discussed in Section 6.1.1. In addition to lack of County information, we had to translate the city or state-level stats from third party brokers to fit the regional level. While this was not difficult to do it required some

estimation on our part, which can make data analysis difficult and often times produces slightly less accurate results.

6. Findings

6.1. Benchmarking

Our team began by conducting benchmarking research on four third party technology brokers. These brokers included Kaizen Health, Veyo, Logisticare, and Circulation. We began with simple data collection from the companies' individual websites, as well as contacting each company with any basic, preliminary questions. Once we began to look further into the data, received responses back from the companies, and looked into the media coverage of the different companies, we narrowed it down to Circulation and Veyo. We eliminated Kaizen Health for several reasons. First, we were unable to get in contact with anyone from the company. Had we been able to get more information from their website and other sources, this would not have been a big problem, but this leads us to the second problem that we had with the company which was a lack of self-reported information. While we found some details on the company profile from different sources, we were not able to find any cost data, data regarding missed appointments or on-time appointments, customer satisfaction, or employee satisfaction. We eliminated Logisticare for similar reasons.

6.1.1. Current Franklin County Program

The existing NEMT-model in Franklin County, Ohio is very traditional. The Franklin County Department of Jobs and Family services makes ride arrangements for Medicaid members in the county. The County's Transportation Unit takes calls to arrange appointments, all of which must be made at least 24 hours, or one business day, before the doctor's appointment.

Pregnant residents may be put on a ‘will call’ list for the last three months of their pregnancy.

Medicaid members are eligible for Pregnancy-related service rides for two months of the infant’s

FRANKLIN COUNTY INFANT DEATHS, 2007-2011

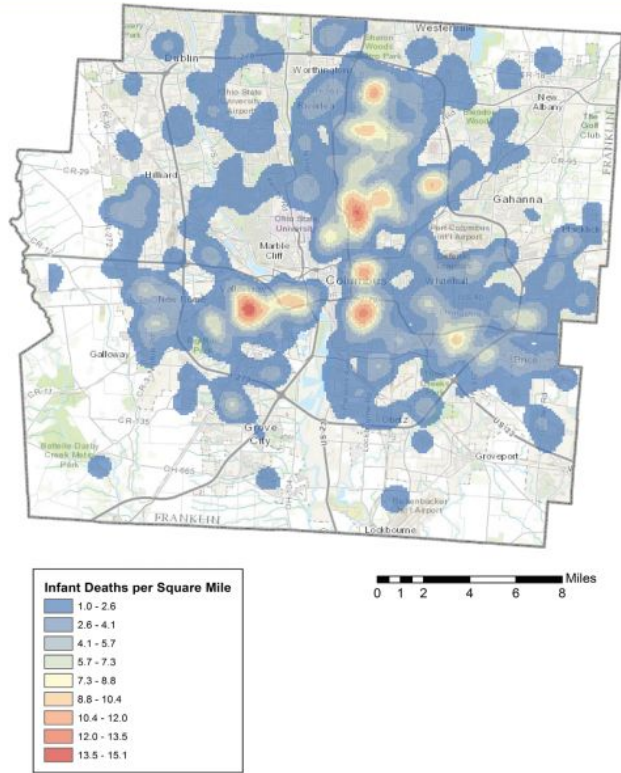


Image 2.1

life. The actual ride service is completed by a cab service. The only direct communication the customer has with the cab service is calling for a return ride. If the customer’s ride is late or if the arrangements must be changed or cancelled, all communication must happen through the Franklin County transportation unit (Medical Assistance, 2017). This is difficult for Columbus residents that have noted late or no-show service from current NEMT services.

6.1.2. Veyo

Veyo is an NEMT broker startup from San Diego, founded in 2015, from 2pointb and Total Transit (About Veyo, 2015). Veyo mixes traditional NEMT providers with a modern

Uber-type rideshare network of independent drivers. This allows Veyo to provide efficient, quality transportation that meets the riders' needs. If appropriate, members may be offered alternative modes of transport, such as mileage reimbursement or public transit. Veyo's system allows for all data to be managed through one platform (The Veyo Difference, 2016).

Patients can schedule appointments through the Veyo app, the call center, or their health plan's website (FAQ Veyo, 2016). Drivers need a smartphone to navigate using the Veyo app and a GPS tracking device. Both 3rd party transportation providers partnered with Veyo and independent drivers are paid after picking up member patients. The Veyo platform pre-maps ride routes and any changes to the route notify Veyo. This deters drivers from adding time or miles to the member's ride (The Veyo Difference, 2016).

Veyo has contracts with both states and healthcare plans. Currently, Veyo has contracts in Arizona, California, Colorado, Connecticut, Florida, Michigan, Texas, and Virginia. Veyo was also operating in Idaho for two years until Veyo terminated the three-year, \$70.4 million contract on March 6, 2018, when another broker took over the NEMT rides in the state. The company cited Idaho officials and the contract for the termination. In a letter from Veyo, the blame was put on the transportation contract being "fiscally impossible" (Dutton, 2017).

Questions from the state of Idaho regarding the company's business model increased Veyo's cost of business in the state to the extent of termination (Dutton, 2017).

Veyo began their \$52 million contract with Connecticut on January 1, 2018, and took over NEMT rides from LogistiCare. Residents have complained of long waits while trying to schedule ride appointments via call, arriving late to appointments, and being stranded after appointments when rides did not arrive. With the transition from LogistiCare to Veyo, Veyo's

President Josh Komenda, said, “there was a ton of incorrect trip information”, which led to drivers being sent out for appointments that weren’t real. He also said that the call center received nearly double the calls Veyo anticipated. The company was expecting 4,500 calls on the first day, but received approximately 8,000 calls per day within the first week. The state is taking complaints seriously and requested a corrective action plan from Veyo after a Medical Assistance Program Oversight Council meeting. William Halsey, the Director of Connecticut’s Department of Social Services, acknowledges that there is a transition period, but that the state expects serious improvement (Riggs, 2018a). Nearly a month after this article was written, Veyo reported better call-wait times for members, but complaints have continued (Riggs, 2018b).

6.1.3. Circulation

Circulation is the second NEMT provider that we examined. The company was founded in 2016 and is headquartered in Boston, Massachusetts. It works similarly to Veyo, providing a technological platform to bridge the gap between patients and their insurance companies, physicians, and transportation providers. Circulation provides both a desktop and a mobile platform from which patients can order rides. It is also Health Insurance Portability and Accountability Act (HIPAA) compliant and provides patient eligibility and ride authorization from within the company. This eliminates one more gap between the patient and their medical appointments. They self report a 4.9/5 in patient satisfaction, 95% on time appointments, and as low as an 8% prevalence of no-show appointments (the industry average was estimated to be between 20-30% depending on the year).

In 2017, the company announced a partnership with Lyft, allowing Circulation patients to book Lyft rides directly through the app. They also recently agreed to a partnership with Uber.

In February of this year, Circulation announced their successful addition of 500 new facilities within the previous six months to total over 1,500 health facilities operating across 45 states. We spoke with Circulation, who told us that they do offer a pilot program that Columbus could implement through a short-term contract and then later decide if they would like a long-term partnership with the company. The terms of the pilot program would determine how many rides Columbus is expecting to provide, the geographic area encompassed in the scope of the program, and how much Columbus is willing to invest in the project.

6.2. Cost Effectiveness Analysis

For our cost effectiveness analysis, we began by finding the data for Columbus and the programs that they have in place today. There are several numbers that are important to note that can be found in Table 1.1. First, we used a combination of County and statewide averages to

Cost of Savings								
Cost of 20%	Cost of 12%	Savings	Cost of 25%	Cost of 17%	Savings	Cost of 30%	Cost of 22%	Savings
\$150,000	\$132,000	\$18,000	\$150,000	\$124,500	\$25,500	\$150,000	\$117,000	\$33,000
\$200,000	\$176,000	\$24,000	\$200,000	\$166,000	\$34,000	\$200,000	\$156,000	\$44,000
\$250,000	\$220,000	\$30,000	\$250,000	\$207,500	\$42,500	\$250,000	\$195,000	\$55,000
\$300,000	\$264,000	\$36,000	\$300,000	\$249,000	\$51,000	\$300,000	\$234,000	\$66,000
\$350,000	\$308,000	\$42,000	\$350,000	\$290,500	\$59,500	\$350,000	\$273,000	\$77,000
\$400,000	\$352,000	\$48,000	\$400,000	\$332,000	\$68,000	\$400,000	\$312,000	\$88,000
\$450,000	\$396,000	\$54,000	\$450,000	\$373,500	\$76,500	\$450,000	\$351,000	\$99,000
\$500,000	\$440,000	\$60,000	\$500,000	\$415,000	\$85,000	\$500,000	\$390,000	\$110,000
\$550,000	\$484,000	\$66,000	\$550,000	\$456,500	\$93,500	\$550,000	\$429,000	\$121,000
\$600,000	\$528,000	\$72,000	\$600,000	\$498,000	\$102,000	\$600,000	\$468,000	\$132,000
\$650,000	\$572,000	\$78,000	\$650,000	\$539,500	\$110,500	\$650,000	\$507,000	\$143,000
\$700,000	\$616,000	\$84,000	\$700,000	\$581,000	\$119,000	\$700,000	\$546,000	\$154,000
\$750,000	\$660,000	\$90,000	\$750,000	\$622,500	\$127,500	\$750,000	\$585,000	\$165,000
\$800,000	\$704,000	\$96,000	\$800,000	\$664,000	\$136,000	\$800,000	\$624,000	\$176,000
\$850,000	\$748,000	\$102,000	\$850,000	\$705,500	\$144,500	\$850,000	\$663,000	\$187,000
\$900,000	\$792,000	\$108,000	\$900,000	\$747,000	\$153,000	\$900,000	\$702,000	\$198,000
\$950,000	\$836,000	\$114,000	\$950,000	\$788,500	\$161,500	\$950,000	\$741,000	\$209,000
\$1,000,000	\$880,000	\$120,000	\$1,000,000	\$830,000	\$170,000	\$1,000,000	\$780,000	\$220,000
\$1,050,000	\$924,000	\$126,000	\$1,050,000	\$871,500	\$178,500	\$1,050,000	\$819,000	\$231,000
\$1,100,000	\$968,000	\$132,000	\$1,100,000	\$913,000	\$187,000	\$1,100,000	\$858,000	\$242,000

Table 1.1

For the low end, we used a 20% prevalence, for medium we used 25%, and for our high end we used 30%. From here, we used the reported prevalence of no-show appointments from the different companies to determine what kind of a reduction in costs we would see if the

determine a baseline prevalence of no-show appointments. For this, we used three different numbers to determine what low, medium, and high end savings would look like.

percentages were lowered. For costs of missed appointments, we again used low, medium, and high end numbers to determine how these savings would change depending on the size of the clinic. For this, we used a low end cost of \$150,000/year in missed appointments for a small, single physician clinic (Capko, 2009), a mid-level value of \$600,000/year for a small, multi-physician clinic, and a general estimation of just over one million dollars (\$1,100,000) per year for a large, multi-physician clinic (Casarez, 2017). We increased the cost by intervals of \$50,000 (from \$150,000 to \$1,100,000) for a total of 20 data points, and used the \$600,000/year from these data points as our mid-level cost. From here, savings would change based off of the percentage by which the no-show appointments were reduced (the percentage for the individual companies). We then extended this out for a ten year projection. For this we used the mid-range

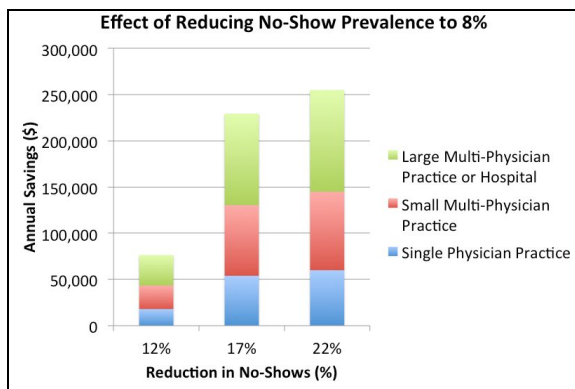


Figure 1.1

value of a 25% no-show prevalence, and created projections for the savings of the three different sized clinics for the next ten years.

For this first part of the analysis, we used

Circulation’s self reported 8% prevalence of

no-show appointments. This would reduce the

baseline average for prevalence of missed appointments by anywhere from 12-22%. In Figure 1.1 you can see these three percentages, and the total savings to different sized clinics.

The blue blocks represent single physician clinics such as private practices around Franklin County, the red represent small, multi-physician clinics such as Planned Parenthood, and the green represent large, multi-physician clinics and hospitals such as Riverside Methodist Hospital or Ohio State’s Wexner Medical Center. We can see that the graph estimates saving

anywhere from \$18,000 to \$242,000 depending on the size of the clinic and the actual reduction in missed appointments. In Figure 1.2 we present the ten year projections for the three different size clinics. Again, we used the mid-range average of a 25% prevalence of missed appointments.

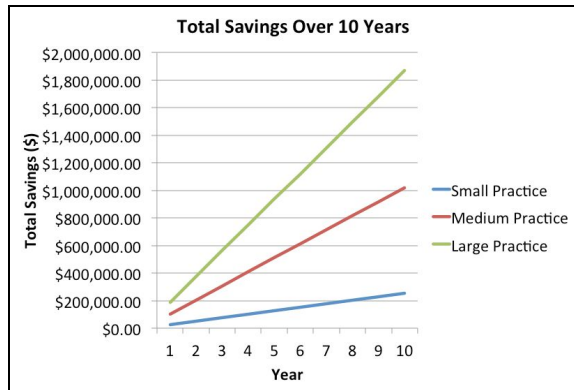


Figure 1.2

With Circulation, this would decrease by 17% to give a middle-ground savings projection over ten years. After this amount of time, small clinics can see as high as \$255,000 total savings on missed appointments, medium clinics \$1,020,000, and large clinics \$1,870,000. Because we were not

able to find any reports by Veyo for missed appointment rates, we were not able to determine how much Veyo would save clinics. The lack of information regarding missed appointment rates within the company is particularly concerning, considering this is one of the most important aspects of providing prenatal trip assistance.

After determining the cost of no-show appointments and how much clinics and insurance companies could save by reducing their frequency, we looked at how effective getting expecting mothers to their appointments would be at reducing infant mortality. For our project, we focused on the effects of prenatal care on reducing the number of low weight, premature births. In Franklin County, it is reported at the number one cause of infant

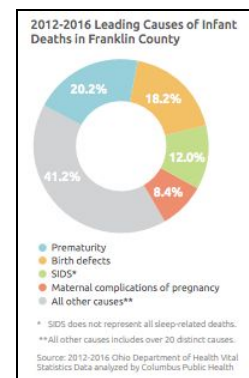


Image 2.2

death is premature birth, causing 20.2% of the infant deaths. It is also reported that roughly 2,302 babies are born preterm each year in Franklin County. According to research reported in the National Center for Biotechnology Information (NCBI), providing

prenatal care to expecting mothers can reduce the prevalence of premature birth between 13-19%. Medicaid claims that these preterm births can cost an average of \$38,000 in the first year of a child’s life alone, as opposed to the average \$4,000 of a healthy baby. Using these numbers, we determined how many babies could be saved from premature birth and possibly death if we were able to provide prenatal care. We conducted our analysis by multiplying the

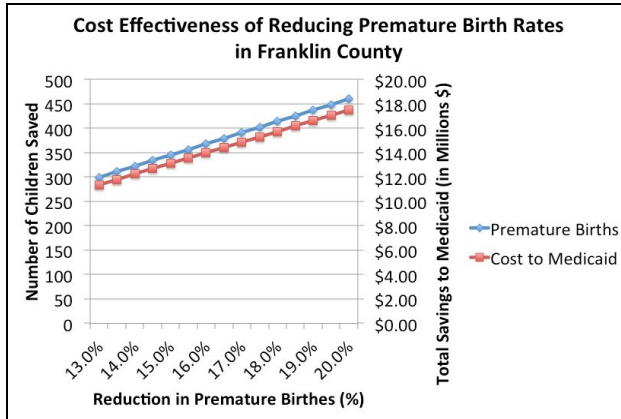


Figure 2.1

would save each year with this reduction in preterm births. In Figure 2.1 we show

how many infants can be saved with a low end estimation of a 13% reduction in premature births, all the way up to the high end of 20%. In Franklin County, this can save between 299 and 460 infants from being born premature. In costs to medicaid, the savings can be between \$11,371,880 and \$17,495,200 in the first year of a child’s life alone.

These two analysis provide insight into how much money can be saved by patients, clinics, and insurance companies each year if we were to reduce the number of missed appointments. They then go on to show what kind of an effect reducing missed appointments can have on infants and their chance for life.

7. Final Recommendations

SmartCity Columbus will be using their budget to implement a pilot program of a third-party technology broker for Franklin County. The hope is that bringing in a third-party company that specializes in NEMT will provide Columbus the best results in reducing the infant mortality rate at a cost that is feasible.

When comparing companies, we looked at each company's no-show rate, their grievance rate, if they are willing to work at a County level, and past projects they have done in other locations. Reducing the current number of missed appointments among Franklin County residents will not only save the hospitals and insurance companies money, but will also provide expecting mothers a more reliable way to attend their prenatal doctor appointments to keep their baby and themselves healthy. It was important to take into account the amount of customer grievances each company had, as we want to provide expectant mothers with a service that will keep their distress minimal. Since the goal of this project is to provide Franklin County with a prenatal trip assistance service it became important that we learned if each company would be willing to work at to County level.

7.1. Third Party Technology Brokers Review

7.1.1. Circulation

Circulation has showed interest in working with the city of Columbus on a pilot program. The company has also made it clear to us that the cost to implement a pilot program would be well within the "Smart Columbus" budget of \$500,000 to \$700,000, but would vary depending on this distance the company would cover or the number of rides the County would need. Circulation has a self-reported number of an 8 percent no-show rate. The average no-show

appointment rate in the Franklin County area is around 20-25%, so reducing this down to Circulation's 8% will cut the average in Franklin County by more than half. This reduced no-show rate has the potential to save hospitals \$18,000 to \$242,000 in missed appointments, depending on the size of the practice.

Circulation has reported a 4.9 out of 5 patient satisfaction rating. The customer satisfaction of each company was a very important aspect during our research, since many of the residents of Franklin County stated feeling unsafe and unable to rely on Franklin County's current NEMT service. During our research, we did not find any instance of Circulation customers reporting grievances that mirrored the current concerns of the current Franklin County NEMT users.

7.1.2. Veyo

Veyo has also expressed an interest in providing a pilot program, although they have never done a pilot program before nor have they worked at the regional level as they usually work at the state level. They did not state their company's "no-show" rate, which leaves out an important piece of information to being able to determine the amount of cost savings from reducing the number of missed appointments in Franklin County. Veyo has reported a low grievance rate of 0.05 percent which is an improvement from Franklin County's current NEMT service, although we did find more customer complaints for Veyo than we did for Circulation during our research.

Both Circulation and Veyo could help Franklin County and expectant mothers by providing them with necessary transportation to get to their prenatal doctor's visits. Overall, based on the information available for both companies, we would recommend that Franklin

County explores a pilot program with Circulation. This recommendation is due to the cost savings and the positive human health implications that come from Circulation's high performance of low no-show rates, high patient satisfaction, and flexibility in meeting different patient and healthcare provider needs.

Accessible and safe transportation to prenatal appointments is just a piece of the puzzle in reducing Franklin County's infant mortality rate. We believe that the best results to lower the infant mortality rate will come from a comprehensive approach. This includes providing prevention education and addressing issues such as drinking and smoking while pregnant and safe sleeping habits. Circulation and Veyo would provide Franklin County with a necessary service, but we believe that more research and investment into the education and development of the most at risk neighborhoods in Franklin County in addition to improved prenatal trip assistance will bring about the most meaningful change in Franklin County.

8. Conclusions

Across Columbus neighborhoods and Franklin County, the infant mortality rates are evidence of the unequal distribution of healthcare access. The Smart Columbus pilot program will give a non-emergency medical transportation broker the opportunity to work in the Franklin County area. Beyond the inherent benefits of reducing infant mortality rates, there are cost savings to reducing the no show rates for doctor appointments, which in turn could reduce the number of preterm and/or underweight babies. Both preterm deliveries and underweight infants increase the likelihood of infant mortality, and survival requires serious medical assistance and care. Reducing the number of these pregnancies will reduce the expenditure of Medicaid's budget on high-risk pregnancies.

There are a growing number of non-emergency medical transportation brokers that utilize both traditional and evolving transportation technology. GPS tracking devices and apps, such as Uber and Lyft, have revolutionized transportation and NEMT brokers have integrated these systems into their own. These types of systems allow for customers to arrange a ride and track its route. The potential elimination of a ‘middle man’ through an app, and the ability of GPS tracking for customers to safely monitor their rides, is desirable to Franklin County residents that have dealt with drivers arriving late, or not arriving at all, to pick up patients for their doctor appointments.

A reliable, secure, and efficient NEMT service is necessary to reducing the gap in healthcare access. Pregnant residents with better access to transportation and medical assistance will have safer pregnancies and the opportunity to address any potential harm to themselves or their infants. For this report, Veyo and Circulation were the two NEMT brokers that were finalized for recommendation, but there are several other brokers and NEMT programs that have sought to solve the same concern of infant mortality across the nation.

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10. Appendices

10.1. Appendix I- Graphs

Figure 1.1: Cost Effectiveness of Reducing Premature Birth Rates in Franklin County

Source: Cost information from

<https://wexnermedical.osu.edu/obstetrics-gynecology/pregnancy/moms2b>

Description: Displays potential cost-savings of reducing the number of premature birth rates in Franklin county. When a premature baby is born it will cost Medicaid approximately 9 times as much as a full-term baby in the first year of life.

Figure 1.2: Total Savings Over 10 Years

Source: Used graph and figures created by Casey Beam and extended these numbers out over 10 years. Cost information from

<https://wexnermedical.osu.edu/obstetrics-gynecology/pregnancy/moms2b>

Description: Displays cost-saving for different size practices that will be incurred from reducing the amount of missed appointments over a 10-year period. Implementing a new prenatal trip assistance service will provide a reduction of missed appointments. These savings will become more prevalent over time.

Figure 2.1: Effects of Reducing No-Show Prevalence to 8%

Source: “No-Show” rate reduction information from <https://www.circulation.com>

Description: Displays the annual savings for medical practices from lowering the industry average “no-show” rate to 8 percent. The average industry “no-show” rate varies from 20-30 percent, this graph shows the annual saving from a 20, 25, and 30 percent no show rate. The annual cost savings differs depending on the size of the practice.

Table 1.1: Cost Data Used to Show the Effectiveness of the Low, Medium, and High End Savings with 8% Reduction in Missed Appointments

Source: Cost of missed appointment information from

<https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/downloads/highlights.pdf>

Description: This table show the total savings to health care provider and physicians based off of an 8% reduction of missed appointments, and provides estimated savings according to our low, medium and high end estimates for the prevalence of missed appointments without providing transportation.

10.2. Appendix II-Images

Image 1.1: Comparison of Columbus' Infant Mortality Ranking

Source: Greater Columbus Infant Mortality Task Force. (2014, June). Final Report and Implementation Plan

Description: This image is from a report by CelebrateOne. It explains Columbus' ranking in terms of state, national, and international standings. The image slowly shrinks the scope to show the viewer how serious the problem is in this small pocket of the world.

Image 2.1: Heat map of Franklin County Showing High Levels of Infant Mortality

Source: Greater Columbus Infant Mortality Task Force. (2014, June). Final Report and Implementation Plan

Description: This map shows Franklin County and all of the places around the region with particularly high levels of infant mortality. It is important that Smart Columbus finds a broker who is able to work in and around these areas, because if any of the hot spots are missed, we will not see the necessary changes to infant mortality that we have been striving for.

Image 2.2: Distribution of Causes for Infant Mortality in Franklin County, Showing that Premature Birth is Reported to be the Number One Cause of Infant Mortality

Source: CelebrateOne Annual Report

Description: This image provides proof from the city of Columbus and CelebrateOne that Premature birth is the number one cause of infant mortality in Franklin County.