

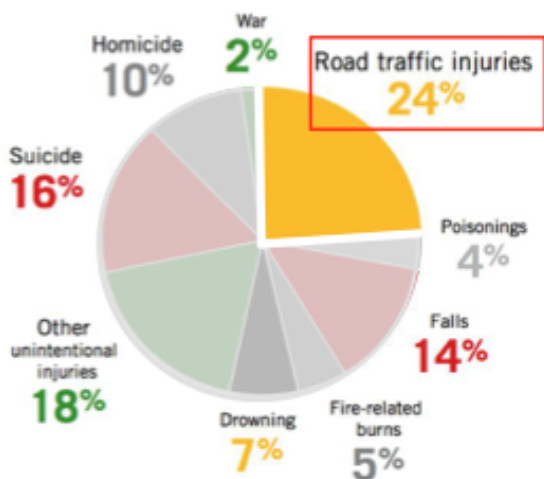
CroXwise

TRAVEL SAFE, LIVE FULLY

*2016 University of Washington
Health Innovation Challenge*

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THE PROBLEM



Traffic accidents are a leading cause of death in the U.S., particularly affecting young people and those in their prime. Through the first six months of 2015, almost 19,000 people died, a 14 percent increase over the previous year, making it the deadliest since 2007.¹

Injuries requiring treatment (2.3 million) increased 30 percent at an estimated cost—including medical expenses, wages and lost productivity, and property damage—of \$152 billion, a 24 percent increase. Although prevention is cost-effective, the reduction in traffic fatalities apparent in the 1970s and 1980s appears to have plateaued, suggesting the need for extra steps to further reduce these rates.

Figure 1. Burden of injury shows no signs of easing.

Traffic accidents account for ¼ of the worldwide total number of fatalities due to injuries.

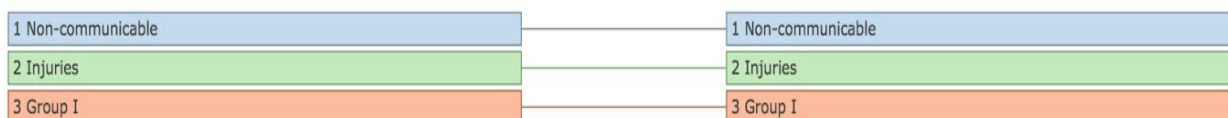


Figure 2. Burden of injury shows no signs of easing. In the U.S., traffic injuries are among the top three causes of death in young people.²

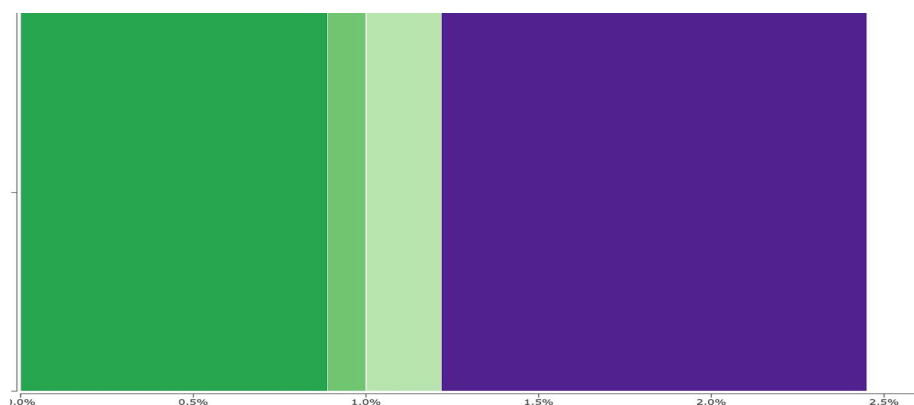


Figure 3. Percent of total deaths children >5 years old and teenagers. Pedestrian (purple) and cyclist (light green) injuries from traffic accidents constitute over 75% of casualties within this population.³

¹ WHO Global Health Estimates, 2014

² IHME, GHDx, Viz Hub. <http://vizhub.healthdata.org/>

³ IHME, GHDx, Viz Hub. <http://vizhub.healthdata.org/>

THE SOLUTION

CroXwise, a mobile application providing pedestrians and cyclists with risk data about their routes, addresses this problem. Although other mapping applications are widely available and contain such features as real-time traffic data and incident alerts, information on the relative hazards facing vulnerable groups, such as cyclists and pedestrians, is conspicuously absent. CroXwise would provide risk data that addresses the user’s preferences and lifestyle. CroXwise integrates DOT fatal accident data with traditional GPS-based mobile mapping. In its simplest form, CroXwise provides an overlay of spatial points, each containing information on the count, timing, and severity of injury accidents or fatalities of cyclists or pedestrians.

By controlling for the background traffic rate at a given intersection, CroXwise would highlight locations of excess risk for this population. Users could access a heat-map style overlay on the mapping application, alerting them to potential “hot spots” en route. For those in transit, programmed alerts would trigger in proximity to a given intersection, or even multiple intersections, above a given hazard threshold. The user experience would be both seamless and minimally distracting through the use of such tactics as haptic alerts.

User-rating of intersections would be integrated into this basic feature-set and incorporated into the overall risk score for that location. Interactive features would facilitate a growing user base, allowing for further expansion and development of an online community of supporters and transit safety advocates.

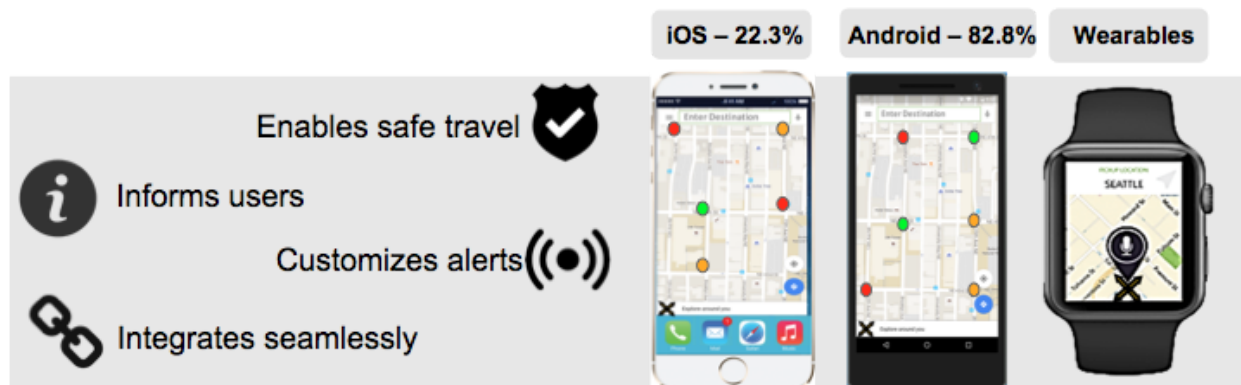


Figure 4. How CroXwise would work. Smartphones and wearables.

Android dominated the [sc1] smartphone market with a share of 82.8%. Samsung, the #1 contributor, had lower volumes QoQ and YoY. This comes in the midst of an underwhelming performance by its flagship releases, Galaxy S6 and S6 Edge. However, the Android share has seen a rise compared to 2015Q1, with strong growth in unit shipments by other players such as Huawei, Xiaomi and ZTE.

iOS saw its market share for 2015Q2 decline by 22.3% QoQ with 47.5 million shipments. Despite the seasonal decline, Apple enjoyed success thanks to consumers' insatiable appetite for the larger screened iOS devices. The popularity of the iPhone 6 Plus continued in many key markets, including China, where the overall smartphone market saw a revival in growth by 6.7%.

Windows Phone experienced a QoQ decline of 4.2% with a total of 8.8 million units shipped this quarter. Since acquiring Nokia in 2014, Microsoft has been revamping the product portfolio with Microsoft -branded Lumia devices. But now that Microsoft has decided to take a loss on its Nokia purchase, the scenario for Windows Phone looks bleaker. Acer is a new entry into the top five in this segment. Most other vendors took a beating in shipments QoQ, with the exception of Samsung, which showed an 8.5% increase with its ATIV range of phones. Blackberry OS, which saw a small increase in some regions, continued to decline in growth globally. The bulk of its volume shipments came from the Blackberry Classic.

CORE USER



Active individuals

Who value safety and understand risk



...in urban areas

Densely populated, heavily-trafficked areas



...age 20-35

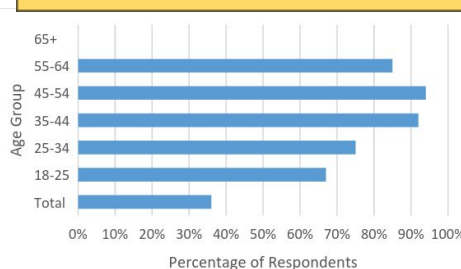
Connected, application-augmented lifestyles

The time for CroXwise’s solution is now. As the number of vehicles in operation and miles traveled increases, traffic-related deaths and injuries will continue to climb.

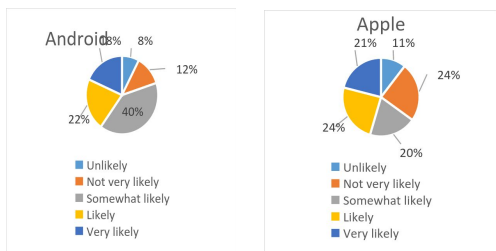
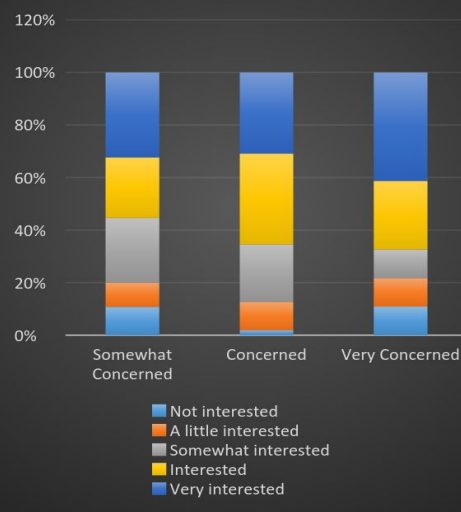
We distributed an online survey in Seattle, Portland and Boston. Two hundred and thirty one people indicated concern about dangerous intersections (44%), suggesting strong consumer awareness of the problem. Consumers want CroXwise’s mobile solution: 82% of respondents who were somewhat or more concerned about dangerous intersections expressed an interest in CroXwise’s solution.

Additionally, 26% reported walking (10%) or biking (16%) as a mode of transportation, and 28% said they use public transportation regularly. Twenty-seven percent of respondents who use smartphones indicated being somewhat interested, interested, or very interested in a standalone alert app. That level jumps to 3x when asked their level of interest in an integrated feature. Sixty-five percent of Apple users and 80 percent of Android users indicated they would be somewhat or more likely to use such a feature!

Somewhat concerned, concerned, or very concerned about dangerous intersections while traveling



Level of Interest in an Integrated Intersection Alert Feature



GO TO MARKET

Extrapolating from our survey results, we believe CroXwise has market potential for 130 million users in the United States alone. While we believe the app has the potential for worldwide adoption, our initial focus will be on the United States. According to comScore, 52% of America’s 187.5 million smartphone owners use Android, while 42% use Apple. Applying those benchmarks to our survey results, our apps will appeal to 78 million Android users and 51.1 million Apple users in the United States.

Initially, we will target cyclists and other smartphone users engaged in active lifestyles in areas of the United States with demographics in the 25-65 age range, heavy vehicle traffic, and smartphone use. King County, with an estimated 730,000 smartphone users among its 1.26 million people aged 25-65 and 984,000 vehicles on the road, will be our launching point. Our second launch area will be Los Angeles, with 1.95 million residents and 1.13 million smartphones in the target age range, and 1.5 million vehicles. As CroXwise iterates, we will continue to launch in appropriate cities in the United States, before expanding overseas.

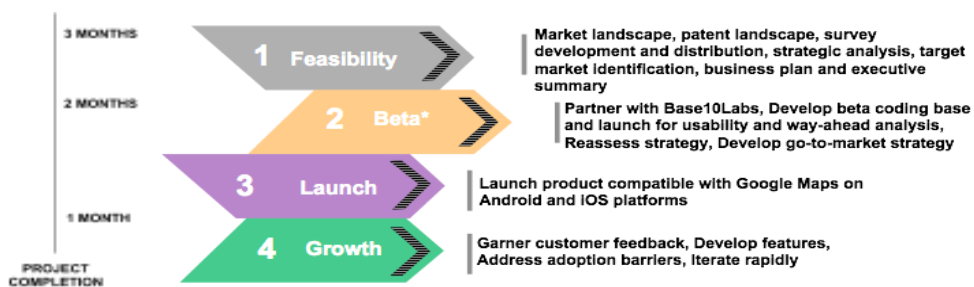
COMPETITIVE ANALYSIS AND ADVANTAGES

Our competition consists of existing map and directions applications. Some of the most popular include Waze (owned by Alphabet), Apple maps, and Google maps. In the United States, Google maps has 44.3 million users, Waze 50 million, and Apple maps 32.3 million. By developing a widget that adds onto these applications, we will leverage their existing install base.

Metrics	CroXwise	Google maps	Waze	Apple Maps
Multi-Platform	Yes	Yes	Yes	No
Traffic & Incident Data	Yes	Yes	Yes	Limited
User ratings of hazardous intersections	Yes	No	No	No
Customizable Traffic Alerts	Yes	Limited	Yes	No
Hazard heat maps	Yes	No	No	No
Customizable hazard proximity alerts	Yes	No	No	No

IMPLEMENTATION TIMELINE

Currently, we have completed a feasibility survey and begun developing our solution. We estimate the time to initial rollout of a completed product to be three months.



MARKETING STRATEGY

Building any brand can be difficult, App identity and branding are paramount to success within a community. By listening to users, getting feedback on wants and needs, engaging individuals and creating new incentives, we can achieve a better reputation, greater trust and improved health outcomes. Our branding strategy will be created in two segments:

1. **Social Media:** On Facebook and Twitter we will interact with our customers and invite word-of-mouth sharing. Data suggest posting user experience testimonies, community reviews and scientific articles that highlight the importance of preventing injury through the work being done by our App.
2. **Local Outreach:** We will leverage contacts at the UW community, including UWMC and the Harborview Injury Prevention & Research Center, the Buerk Center of Entrepreneurship, StartUp Weekend Network and others within the entrepreneurship community in Seattle. We would also engage local bike shops and retailers to invite them to be part of our launching strategy.

TRACTION

In order to move our first-move advantage, our App is set to launch in June 1, 2016. We would use iTunes and/or PlayStore for further distribution. After developing the front user interface for presentation during the UW Health Innovation Challenge scheduled for March 3, 2016; we have subcontracted Base 10 Labs for the development of a robust backend of our application, specifically database management and GPS algorithms. The first iteration would be built on iOS for iPhone and Android TBD. We are in the process of creating the project framework files and development environment to be able to host the project in github (private repository). We plan to integrate our App with Google Maps API and/or Parse API. Our beta testing/limited trial would be released on April 15, 2016.

FINANCIALS

Development Costs

An HIC Prototype Award for \$1200 will be used for a teaser proof of concept video and slide deck in case we are selected for the next round (finals). The first version of the application (Beta testing) will focus on only one platform (either iOS or Android, still to be decided), and is expected to take 125 hours of development by an app development company, with the Friends and Family discount at \$80/hour (down from \$125) for a total of **\$10,000**. UI Design will be 50 hours at \$60/hour for a total of **\$3,000** and layout and template licensing budget of **\$1,000**. As part of a long term company strategy, the innovations proposed by CroXwise could be worthy of an utility patent. Although the current plan is to keep the details of the innovations out of the public eye as a Trade Secret. Patent research and filing costs for United States market will reach approximately **\$1,000** for a provisional patent and in total **\$20,000** for the full utility patent to be filled within a year. Marketing and promotional costs for the first wave of users will be **\$5,000** for the first 6 months. The full development cost for a Minimum Viable Product within 6 months is: **\$20,000** and another **\$20,000** within a year if a full utility patent is sought.

Revenue

There are two potential revenue paths:

Path A: Ad Based revenue.

In this path, CroXwise will make use of Banner and interstitial ads. The banner ads will be shown at the bottom of the app, and will be visible all the time. Interstitial ads could be added when the user will perform one of the most advanced operations such as saving their preferred route, or starting to plan a new route. The goal is to find the sweet spot between interstitial placement, and minimize the interruptions to the user flow.

To compute the potential Ad revenue, we will use conservative numbers:

- A single platform release (Android).
- Penetration rate of 2% within the first 6 months in the US in the users that showed interest.
- About 50% of interviewees showed interest in the app. 78 million x 50% = 39 million.
- This give us 2% of 39 x million to be 780,000 installations.
- Assuming Weekly Active Users of 10%, that would be 78,000 WAU
- And an average session of 10 minutes per user.

- \$1 estimate Cost Per Mille (CPM) Mobile Ad rate
- 2 Banner ads per minute

With these estimations, the weekly revenue of the ap would be:
 weekly revenue = 78.0000 x 10x 2 x 1 / 1000 = **\$ 1560 per week.**

Path B: Sponsored

Another option is to engage local industry, state health departments and government (NIH and CDC Injury Center awards grants) to sponsor the applications in given areas. This can be done with geo-fencing, and remove ads (or show only the sponsoring institution Ad) in the areas sponsored by them. The revenue here would be dependent on the deals arranged with sponsoring institutions, but they could be on the range of **\$800 / week.**

Operating costs

Fundamental to CroXwise operation is to have updated information about the intersections in the sites of interest. After the first release, up to 80% of the revenue will be used for updating the data sources with the latest information, marketing outreach and hosting and development changes needed to grow the userbase.

 **MEET THE TEAM**



Maria Artunduaga, M.D.

M.P.H in Global Health expected June 2016

An award-winning physician-scientist and innovator who has authored more than a dozen publications in such top-tier journals as the New England Journal of Medicine and Nature. A graduate of Pontificia Universidad Javeriana in Colombia, she completed a postdoc at Harvard University followed by surgical training at the University of Chicago. She has worked for startups and NGOs developing point-of-care diagnostics and other low-cost technological solutions. Her current research involves evaluating health system implementation of trauma improvements in Latin America. Along her M.P.H. commitments, she is concomitantly pursuing a graduate certificate in Global Injury Prevention to provide her with additional tools to work on CroXwise.



Jennifer Jenks

B.S. in Human Centered Design Expected in June 2016

A senior at the College of Engineering, she gained experience in conducting user experience studies and iterative design while interning at Qualcomm, a company that designs and markets wireless telecommunications products and services. Her strong abilities in the S.T.E.M. fields have positioned her for prominent research and teaching positions. She was a lead undergraduate research assistant at the Boechler Research Group Mechanical Engineering Lab at the University of Washington, and received the Mary Gates Research Scholarship and Emerging Researchers Travel Award for her work. She won the 2014 UW Emerging Leader in Engineering scholarship and has made the Annual and Quarterly Dean's List on seven occasions.



Don Smith, M.S. in Health Information Management

PhD in Biomedical & Health Informatics Expected in 2017

Don has over 10 years of professional experience in the healthcare, IT, and academic fields. His primary research currently focuses on data mining large datasets including electronic health records, social media and genetic data. He is also focusing on applications of ontologies in translational bioinformatics. He is highly interested in developing tools to aid translation of clinical findings using our knowledge of biochemical systems and secure, ethical analysis of EHR datasets. In addition to his Ph.D. studies, he is pursuing a certificate in Comparative Effectiveness Research in the School of Pharmacy, and a certificate in Technology Entrepreneurship in the School of Business.

**Dave Zerby, J.D.**

MBA Expected June 2016

Dave practiced law for nine years before returning to the University of Washington to earn his MBA. He has served as internal counsel for a hospital and clinic system designing evaluation frameworks and tools to measure project managers' efficiency. He also has experience with healthcare startups; his job has involved market analyses and development of business strategy for biomedical devices. He has a Bachelor's Degree in English & Philosophy from Ohio State University and a Law Degree from Marshall Wythe Law School. His interests are very broad including social entrepreneurship, community economic empowerment and poverty alleviation.

 **OUR ADVISORS****Susan Ashlock**

A senior software engineer at Google Maps, before joining the company she worked for Microsoft for 10 years designing software for the Automotive Business Unit and Game Studies. Susan has an undergraduate degree in Engineering and Computer Science from Dartmouth College.

Charles Mock, M.D., Ph.D.

A trauma surgeon with vast experience in injury prevention who worked for the WHO developing activities on Emergency Trauma Care Prevention and Treatment. He is currently working at the Harborview Injury Prevention & Research Center and serves as a faculty in the departments of Global Health and Epidemiology.

Carlos Rojas, M.Sc., Ph.D.

A lead engineer with HERE Maps, a mapping and location services provider. He holds a Bachelor of Engineering from Colombia's National University, an M.Sc. in Electrical and Computer Engineering from The University of Memphis, and a Ph.D. in Computer Engineering and Computer Science from the University of Louisville.