

**Proposal Title:**

**Reducing AUB related Parking Problems through a Park-and-Ride System**

A research proposal for the Neighborhood Initiative at the American University of Beirut

**Proposal Outline:**

- Abstract
- Introduction
- Case-study Profile
- Literature review
- Research proposal
  - Research question
  - Research Hypothesis/Intervention
  - Research objectives and significance
- Methodology
- Intervention and implementation strategy
- Bibliography

## **Abstract:**

Parking shortage around the campus of the American University of Beirut (AUB) is a daily problem facing its students, faculty and staff. AUB administration and through its Neighborhood Initiative (NI) is seeking for solutions that would help addressing this problem. This research proposal suggests an AUB Operated Park-and-Ride System that combines the best service provided to its users with an income generations for AUB. The proposed methodology represents the relevant suggested tools to complete the research. The proposal also highlights the need of a multidisciplinary research team to design and implement relevant strategies to enable the success of the proposed project.

## **Introduction:**

With their two millions residents, Beirut Municipal and its suburbs suffer from daily congestions problem and parking shortage. The city of Beirut is well-known for its deficiency of public transportation where 70% of all trips made in Beirut are by private passenger cars and only 30% are made by bus, shared and unshared taxis.<sup>1</sup>

Ras Beirut Neighborhood contains a diverse set of land uses (residential, office, retail, hotel, restaurant, educational, health, etc.) that make it an attractive place to live in and visit. Therefore and due to the huge numbers of cars entering the neighborhood every day, Ras Beirut becomes an unfriendly pedestrian neighborhood since cars are dominating its streets and its pedestrian paths. On the other hand, the problem of parking in the neighborhood is expected to worsen for the reason of the planned expansion of the American University of Beirut Medical Center (AUBMC).

Parking shortage is not only affecting the public realm, but also is affecting different private institutions in the neighborhood, including the American University of Beirut. Students, faculty and staff face a major problem every day to find a car parking around the campus area of AUB. Students tend not to worry about their studies as much as they worry about finding a parking spot before their classes start.

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<sup>1</sup> Source: Presentation by Kayssi, A. in the Urban Transit Symposium - AUB, 2010

In order to solve the problem of parking shortage in the surrounding neighborhood, the director of the Office of Financial Planning and Budget at AUB Drew Wickens states that: “the administration is keeping an open mind to workable and affordable solutions that would help students commute to AUB.” While the dean of Students Affairs Nizameddine adds that the new Vice President for University Advancement Richard Brow is open to any proposal as long as it is “scientific” and meets AUB standards.<sup>2</sup>

Also, the Neighborhood Initiative (NI) addressed the problem of parking shortage through its Neighborhood Congestion Studies in 2010 and is working on parking studies and thinking of alternate modes of transportation to commute to the campus. The research team composed of faculty and students from Civil Engineering and Urban Design have explored different scenarios for parking in the neighborhood, as well as innovative solutions for improving public transportation serving AUB committee and Ras Beirut. Congestion Studies are one aspect of the NI intending to propose measures to AUB and the larger community that would reduce parking demand, traffic congestion, and pedestrian-vehicular conflicts in the neighborhood, while improving the accessibility of AUB.

At the end of the Congestion Studies, the NI primarily proposed that “AUB commuters would best utilize a mass transport system which combines the professionalism and comfort of private taxis with the vehicle occupancy of shared taxis, for a one-time, semester fee arranged between the university and the operator”<sup>3</sup>. This “private taxi proposal” by the NI is a very practical solution, where it needs minimal funding from the AUB administration but also, this proposal has several limitations, such as the private operator is not accountable to AUB, provided services do not meet AUB standards and the time of users is wasted by waiting for other passengers.

On the other hand and while the NI proposed a shared taxi transit system, which is based on the service of a private operator, I propose an AUB Operated Park-and-Ride system that meets AUB standards, best serve

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<sup>2</sup><http://www.nowlebanon.com/NewsArchiveDetails.aspx?page=2&ID=235187&MID=0&PID=0&FParentID=0&FFParentID=0&orderdir=desc>

<sup>3</sup> Sources: NI: 2010 Congestion Studies

its users (Students, faculty and staff) and combines both users' safety and comfort with important income generation for AUB.

The rest sections of the proposal are organized as follows: *Case study profile* that explains in detail the situation of parking around AUB; *Literature review* that represents how similar case studies have solved the parking shortage problem; *Research proposal* that includes the Research Question, Research hypothesis/Intervention, and Research objectives and significance; *Methodology* highlighting the proposed tools for the research; and *Intervention and implementation strategy* that best help to complete the proposed project.

### **Case-study Profile:**

AUB campus in Ras Beirut with more than 7,500 students and more than 1,935 employees is a major generator and reason of congestion and parking shortage in its surrounding neighborhood. Finding a parking space around AUB campus is a big challenge and a nightmare for AUB commuters due to the high demand for parking with very limited parking spaces. Faculty, staff and students are facing the problem of time and energy daily wasted searching for a parking space before starting their working day. Based on a personal experience, around 45 minutes are daily lost trying to find a parking lot around the campus and sometimes I end up paying for valet parking service.

The cost of a paid valet parking service has become very expensive; it costs 10,000LL/day or 83,500 L.L (\$55)/month<sup>4</sup>. Therefore, commuters are forced to park very far away from AUB or they are forced to park their cars in no parking zones to avoid being late for class.

The only parking area that is owned by AUB is the Cornice parking lot located next to the OSB Olayan School of Business building. This parking area that is available for students has a capacity of 200 spaces only. In order to create additional 40 to 50 new parking spaces, AUB contracted the lot to a private valet company, and hence the daily fees of parking tripled up to become 7000 L.L. per day. On the other hand, the dean of Student Affairs declares that this allocated parking area by AUB for

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<sup>4</sup> Sources: NI: 2010 Congestion Studies

student is only a temporary solution, since this existing parking space is planned to become a construction site.<sup>5</sup>

On the other hand, the results obtained from the NI Congestion Studies, and as per the ITE parking generation rates for different land uses, it demonstrates that the parking deficit in the neighborhood is estimated to be 1156 spaces during the daytime peak while a surplus of 219 is typical during the evening peak. This deficit number in spaces are also reflected by the obtained results of the study that demonstrates that 74% of AUB employees and 70% of AUB students use motorized vehicles to reach the campus. And consequently, 60% of AUB employees and around 62% of AUB students that use a motorized transport mode, are dissatisfied with commuting between their residence and AUB.

AUB and the NI set their mission and vision to become better neighbours and to benefit the surrounding neighbourhood. Therefore, they both can be key factors in proposing changes to the problematic situation by making use of the academic nature of both institutions, specifically through AUB students and faculty to share their knowledge and contribute in developing and supporting the proposed AUB Operated Park-and-Ride system as an alternate mode of transportation to commute to the campus and reduce the AUB related parking problem. The initiative, including the two members Ms. Cynthia Myntti and Ms. Tonnie Choueri, can work as an active mediator between AUB faculties and neighbourhood stakeholders using AUB's key network and connections to support through funding and implementation of the proposed project.

### **The literature review:**

The literature review of my proposal is based on relevant articles written about different proposed solutions for similar case studies of campuses addressing the problem of parking shortage. These case studies introduce different solutions and interventions that have proved to be successful interventions almost anywhere. These approaches are mainly based on the concept of shared mass transit system to and from the

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<sup>5</sup><http://www.nowlebanon.com/NewsArchiveDetails.aspx?page=2&ID=235187&MID=0&PID=0&FParentID=0&FFParentID=0&orderdir=desc>

campus. Shared mass transit system is a mode of transport in which travelers share one vehicle in commuting and includes car-sharing or carpooling system where commuters share the use of a car for a specific journey, park-and-ride service where commuters park their cars in car parks located outside the city and ride an alternative shared transit service, U-Pass Program which is a program that gives students unlimited access to local transit, The I System that integrates a new system of circulating campus bus routes with the existing regular routes of the local transit district, etc...

## **Research Proposal:**

### **Research Question:**

How can the American University of Beirut and the Neighborhood Initiative partially reduce congestion and campus parking problems in the neighborhood?

### **Research Hypothesis / Intervention:**

Based on the experience of other universities, which are presented in the literature section, by addressing the problem of parking shortage in a similar context to AUB, I propose an AUB Operated Park-and-Ride System that meets AUB standards and form a very important income generator for AUB administration.

The AUB Operated Park-and-Ride System is a service based on parks located on the outer edges of Beirut City and allow commuters to AUB campus to park their vehicles there and ride/transfer to a shuttle service for the rest of the trip.

### **Research Objectives & Significance:**

The proposed project aims to:

1. Reduce the stress associated with parking. Users will commute to campus without worrying if they would be able to find a parking space or not.
2. Save time, money and resources by eliminating the need to wait, search and pay every day for parking.

3. Help to reduce the number of cars entering into the neighborhood every day, and thus decrease traffic and congestion in Ras Beirut.
4. Provides social interaction opportunities with students, faculty and staff during shuttle trips and waiting times.
5. Offer an alternative mobility option for people who are economically, physically and socially disadvantaged.
6. Reduce environmental pollution.

### **Research Methodology:**

In addition to adopting and using the existing data and results gathered by the 2010 AUB Congestion Studies by the NI, this research proposal is intending to use both quantitative and qualitative research method.

#### **1. Formal interviews:**

Formal interviews with a questionnaire will be held with AUB students, faculty members and staff asking about their personal experience with parking problems around AUB campus.

#### **2. Video Taping**

A video recording difficulties, wasted time and level of stress spent every day to find parking spots around AUB campus.

#### **3. Focus Group discussions:**

In order to negotiate, discuss and research the preliminary proposed ideas of incentives, many focus group discussions will be held with the different users and the parents. The project will be explained and presented for the parents and demonstrate its value in term of safety, quality and that it is an AUB operated system to gain their support and trust. This strategy is expected to appeal to parents to help in encouraging the students to start using the proposed service.

#### **4. Cost Benefits Analysis**

In order to assess the value of the proposed project, an economist will be hired to complete a cost benefits analysis and compare between the invested costs and the expected benefits.

## **5. Survey:**

The survey will be conducted among only the 74% of AUB employees and the 70% of the AUB students that use motorized vehicles to reach the campus. The survey will be sent through the AUB I-mail, it will be done online and it will be designed in a way to give the employees/students the ability “to stop at any time” and complete it later. Incentives will be offered to people completing the online survey: their ID will be added into a lottery for a gift.

### Survey Design:

A small and brief description of the proposed shuttle service will be sent to the participants with the questionnaire before asking them to respond to the questions. The questions will cover the following:

- Willingness to use the AUB shuttle service to come to campus.
- Desired attribute for the design of the shuttle service like number of pick-ups and drop-offs, the size of a shuttle vehicle, acceptable number of riders, travel time, and wait time...
- Routing characteristics like intermediate stop options, travel time, waiting time, number of stops...
- Willingness to pay for the service.

The survey will start with the first question<sup>6</sup> that aims to limit the participants only to the users using motorized vehicles to reach the campus and it will include a question about the willingness of AUB participants to share and partner up the AUB Park-and-Ride service with other users from different institutions located in the AUB neighborhood to share the costs.

The institutions are: Lebanese American University (LAU), Haigazian University, Ecole Supérieure des Affaires, Saint-Mary's school, American Community School, International College and Banque du Liban.<sup>7</sup>

## **6. Geographic Information System (GIS)**

The best locations of the proposed Park-and-Ride Service locations and the best circulation routes for the shuttles to use in the city are to be determined by using the GIS software.

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<sup>6</sup> Refer to Appendix 1

<sup>7</sup> Refer to Figure 1, Appendix 2



## **7. Project Phasing**

The first phase is to assess where people commute the most from to AUB campus and start implementing the proposed project from there. Also, the achievement of the project will start first with the construction of the parking and the waiting areas before the actual development of the projects. The purpose is to learn from the first phase of the project before implementing and developing the other Park-and-ride shuttle service locations.

### **Intervention and Implementation strategy:**

For parking shortage to be addressed, the NI supervised many researches, strategies and recommendations that fell within its scope, but these proposals had several limitations. These proposals are such as:

1. A Proposed shared taxi transit system operated by a private Taxi Company. This proposal is a mode of transport that usually takes passengers living in the same area on a fixed or semi-fixed route without timetables, but instead departing when all seats are filled. Passengers will share one vehicle to commute to campus. AUB might consider this proposal as a very practical and efficient solution in terms of cost investment, time management and also AUB does not have to buy the taxi cars but it can simply arrange a deal with a private operator that already has the cars, team and drivers. But, this shared taxi transit proposal has several limitations:
  - Subletting the proposal to a private operator where people in charge of the system are not accountable to AUB and do not meet its safety and ethics standards will not best serve, satisfy and attract the users.
  - Users will face the problem of time wasted waiting and roaming in the city to collect the other passengers in their vehicle instead of coming directly to the campus.
2. Increasing of parking supply by building a parking garage on HSBC plot. This proposal aims to establish a 12-storey garage building with a capacity of 564 parking spaces. But by satisfying the desire of more parking spaces, this proposal will encourage users to shift to commuting by driving their private car to campus. The NI

Congestion Studies demonstrate that 54% of AUB employees and students are likely or very likely to switch and hence increasing congestion and traffic in the neighborhood.

Also, creating a parking garage with such a huge capacity of cars will have its negative traffic impact on the neighborhood and its narrow streets. On peak hours, the proposed garage building will become another major generator and reason for congestion and traffic in its surrounding neighborhood because of cars entering to and leaving from the proposed building.

On the other hand, the proposed AUB Operated Park-and-Ride System provides an easy and cost effective way for students, faculty and staff to reach the AUB campus. Users can park their cars in a covered, safe and secured parking building, and use the shuttle service provided by AUB to reach the campus directly within a preset time schedule. Users of the proposed service will benefit from a pleasant and well-serviced passenger waiting areas covered with free internet Wi-Fi and air-conditioned, served with food shop, cafeteria, car wash and toilets.

The locations of the proposed shuttle parking areas are to be proposed outside the neighborhood of Ras Beirut, mainly at the three main entrances/exits of the city. And In order to avoid re-creating parking problems elsewhere, AUB has to identify wide plots, in medium-density neighborhoods to purchase and implement these projects.

At this stage, it seems the most suitable locations for these projects could be at the South entrance (within the Jnah area), at the North entrance (within the Quarantina area) and at the East entrance (within Hazmieh area).<sup>8</sup>

AUB Park-and-Ride service will operate several times a day from Monday till Friday following a regular and preset time schedule. Many trips for the shuttle will be scheduled to and from the campus, thus providing users with sufficient daily trips to accommodate their needs. Users of the proposed service will have to wait for a maximum of 15 minutes in the pleasant and well-serviced waiting areas to take the next shuttle. On weekends and during vacation days, the Shuttle service will operate during a different schedule.

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<sup>8</sup> Refer to Figure 2, Appendix 3

The values added to AUB and to the NI through my proposal are creative and diverse. The purchased and developed plots outside the city of Beirut will not be limited to only one function, which is the parking service. These plots will be developed to accommodate multipurpose usages and they can function as important income generators for AUB. Parking areas can be limited to underground, while the upper building/floors can accommodate different functions and utilities.

AUB administration can capitalize on the fact that they bought these large plots outside Ras Beirut and they can use them in different ways in relation to university needs and/or market needs. AUB community is distributed all around the city and is not only limited inside Ras Beirut. NI, through these multifunctional buildings outside Ras Beirut, can benefit its immediate neighbors and reach out to the larger AUB community. In addition to the parking service, these proposed buildings and depending on the needs of AUB and/or the market, can function as:

- Off-campus residential apartments (housing for students and faculty). This proposal can thus be part of the housing initiative in AUB.
- A community place for the neighborhood providing spaces for meetings, conferences, workshops...
- Off-campus offices or medical units managed by AUBMC.

Therefore, this proposal is not only limited to the Park and Ride Service and has multi-functional ends related to housing, office-space, community development and real-estate development. Additionally, if a public transportation system is established in the city, and AUB decides to stop the proposed Park and Ride Service, AUB could re-sell these buildings and they will not be considered a lost investment for AUB.

Simultaneously, and to encourage the shift of users to the proposed AUB Operated Park-and-Ride Service, a set of preliminary incentives strategy is proposed to be put in place. These preliminary ideas for incentives are to be researched and discussed with the users during a series of focus group discussions. For the time being, they are categorized as follows:

- **Incentives for all 3 users:**

- Gift cards for bookstore.
- All users of the shuttle program are eligible to earn rewards. For every round trip shuttle ride, one punch will be added to an “AUB Shuttle Card”. Users can either cash in the card for a reward or save the punches for a larger reward (like professional development training or materials).
- Family members of only subscribed users can use the shuttle service at discounted charges after showing a valid specific card.
- Users will be given 4 free day passes per semester (1 per month) to park within campus parking if they have any appointment or a commitment outside the campus and wants to use their car from campus.
- If users are living within a walking distance of the shuttle proposed parking areas, they can keep their car parked in the parking area for free.

- **Incentives for Students:**

1. Waive parking fees on students.
2. Free movies passes
3. Free food & beverage cards

- **Incentives for Faculty:**

1. Provide cheaper parking costs in the suggested parking facilities
2. Gift cards

- **Incentives for Staff:**

1. Free food & beverage card
2. Provide cheaper parking costs in the suggested parking facilities
3. One personal day off per semester

## **Multidisciplinary research team**

To promote the success of the proposed project through a relevant implementation strategy, a multidisciplinary research team will be formed. This team will be led by a transportation planner and an economist from the AUB faculty and composed of students from different departments of the university. It will work on identifying the best plots locations, designing

shuttle routes and facilitating institutional setup of the project. Additionally this team will help in resolving difficult cases facing the project, coordinating between different stakeholders and working closely with people in AUB in order to discuss and implement the previously proposed incentives.

Appendix 1  
Survey proposal

The first question will be:

How do you get to AUB campus most of the days?

In a motorized vehicle                       non-motorized vehicle

If the answer to the above question is "motorized vehicle", please continue the survey; otherwise, please stop the survey.

The purpose of this question is to limit the participants only to the users using motorized vehicles to reach the campus.

At the end of the survey, the last question will be again about how interested are the users to use the shuttle service but this time after presenting the offered incentives for the users of the service.

Placing the incentives at the end of the survey is for avoiding influencing the participants at the beginning. This question will reflect the strength and the validity of the proposed incentives:

Suppose a Park-and-Ride service that will be available to and from AUB campus, and users of the service will receive free movies passes, free food & beverage cards, Gift card, Gift cards for bookstore, rewards, and 4 parking free day passes to campus per semester... How interested would you be in this type of shuttle service?"

Not at all interested               Not Interested               Not sure

Interested                               Very interested

Appendix 2

Figure 1

**FIGURE 1 Map of AUB and various other institutions in Municipal Beirut**  
(image: Google Maps). (Sources: NI: 2010 AUB Travel Surveys)



### Appendix 3

Figure 2

Locations of proposed Park-and-Ride parking areas outside Ras Beirut



Ali Zeineddine, 2011: Locations of proposed Park-and-Ride parking areas outside Ras Beirut



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