



INTERNATIONAL JOURNAL OF ENGINEERING SCIENCES & RESEARCH TECHNOLOGY

BUS RAPID TRANSIT SYSTEM (BRTS) IN HYDERABAD

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ABSTRACT

Bus rapid transit is applied to a variety of public transportation systems using buses to provide faster, more efficient service than an ordinary bus line. The goal of these systems is to approach the service quality of rail transit while still enjoying the cost savings and flexibility of bus transit. Those are Alignment in the center of the road to avoid typical curb-side delays, Stations with off-board fare collection to reduce boarding and alighting delay related to paying the driver. Station platforms level with the bus floor will reduce a boarding and alighting delay caused by steps and Bus priority at intersections to avoid intersection signal delay. In Hyderabad one of the most hectic Problems is traffic. Even though we have many roads, but do not have a proper traffic system. The rapid growth in the number of Motor vehicles has resulted in severe traffic congestions and air pollution not only in Hyderabad but also many cities of the country. To have traffic less end to reduce pollution, the BRT System should come in to the implementation. So, study has been made to make a project on BRTS to develop the BRT System in Hyderabad.

KEYWORDS: BRTS, Traffic congestion, Transportation, Level of Service.

INTRODUCTION

India is one of the largest and fastest growing economies in Asia and the entire world especially in transport. The transport is important for the development of a country. Growth of urban population has created serious challenges and imposed greater demand on the resources of municipal governments in India. Bus rapid transit (BRT) is a bus-based mass transit system. It is a new technology is used to decrease the congestion of traffic, travel time, air pollution. BRT aims to combine the capacity and speed of metro with the flexibility, lower cost and simplicity of a bus system. The Selection of a corridor is done by conducting various numbers of surveys in Hyderabad by which the BRTS can be easily implemented in it.

Need for the study

Hyderabad population has crossed 12 million as of 2014 census. At present, the numbers of vehicles in Hyderabad are more than some of the major metropolitan cities. The registered numbers of vehicles in Hyderabad have significantly increased over the years. Total number of vehicles in Hyderabad doubled from 15 lakhs in 2005 to 44 lakhs in 2015. It is the well known fact that an efficient public transport system is the best alternative to cater the increasing traffic. Thus it is the need of the hour to improve the efficiency of bus transport system by providing BRT system.

Objectives of the Study

- To relieve the traffic congestion.
- To analyze the present traffic condition.
- To provide good level of service during the peak hours.
- To provide ridership attraction.
- To encourage people to opt for public transportation for the welfare of government.
- To present BRTS as a clean, modern, fast, safe, and reliable transportation solution to the public.
- Better quality, better service and providing value for the investment.

About City

The Hyderabad is a huge developed city. It is the capital of Telangana and Andhra Pradesh state. This city occupies 650 square kilometers area. The famous historical places are there in Hyderabad. The Hyderabad city has different transport facilities such as Airways, railways and roadways. Hyderabad is well connected to many other locations in India. The highway (express way) network linking Hyderabad to various parts of the country is very good. Traffic in Hyderabad is terrible, there is no single reason for this, and it's a complex problem. Hyderabad city is having high traffic congestion, as of 2014 there are over 3.5 million vehicles operating in the city.

REVIEW OF LITERATURE

Agarwal P K, Sharma Anupama, Singh A. P (2010), "An Overview on Bus Rapid Transit System". An important advantage of BRTS is its flexibility. This approach lends itself to incremental learning of the problem, and eliminating mistakes as the development proceeds.

Anuj Jaiswal, K. K. Dhote, R. Yadu Krishnan, Devansh Jain (2012). Bus rapid transit system: a milestone for sustainable transport: a case study of Janmarg BRTS. BRTS Ahmadabad has improved access for local riders and advanced public transportation systems while reducing the environmental impacts of transportation.

Tuhin Subhra Maparu and Debapratim Pandit (2010). A Methodology for Selection of Bus Rapid Transit Corridors: A Case Study of Kolkata. The paper aims at formulation of a methodology for selection of corridors for introduction of BRTS in urban areas in India and Kolkata in particular in the context of present challenges like increasing traffic congestion and car ownership, lack of road and transport infrastructure and gradual deterioration of LOS of bus transit system.

Bhanu Kireeti Chanda & Addali Sai Satya Goutham (2014). Introduction to corridor selection & assessment for Bus Rapid Transit System (BRTS) in Hyderabad. Bus Rapid Transit System (BRTS) takes part of its name from "Rapid Transit", which describes a high-capacity transport system with its own right-of-way, implemented using buses through infrastructural and scheduling improvements, to provide a high level of service.

DATA COLLECTION

With the help of the Hyderabad city map there are 3 national highways and 5 state highways in Hyderabad. From the information given by survey of India office, national highway, state highway, places and routes in Hyderabad were found. Collection of data from BUS BHAVAN Office for knowing how many buses and bus shelters, bus trips, bus routes are there in Hyderabad. These data is used to know the highest bus trips along with routes. With the help of this data found the frequent bus route, that frequent route is selected as BRTS corridor. That route is Panjagutta to Miyapur.

Study Area

Primarily the corridor selection is made on the basis of the traffic volume in the city and the people in the corridor suffering from the heavy traffic, traffic jams and traffic congestions may make use of BRTS.

The Selected corridor is from Panjagutta to Miyapur (via Kukatpally) shown in Fig.3.1. The total distance of this stretch is 14km. In these stretch there are 15 stops. The traffic volume in this corridor is fairly high because it is fully commercial area, there are educational areas Mitrivanam, S.R nagar, Kukatpally, JNTU, business centre like Panjagutta, Shopping malls in Kukatpally, this stretch connects to the industrial areas like Balanagar, Bell, and Patancheru, and the most crowded area like Ameerpet, ESI, and Erragadda. The corridor consists of 5 junctions they are,

1. Panjagutta 2.Mitrivanam 3.Moosapet Y-Junction 4.JNTU 5.Miyapur.

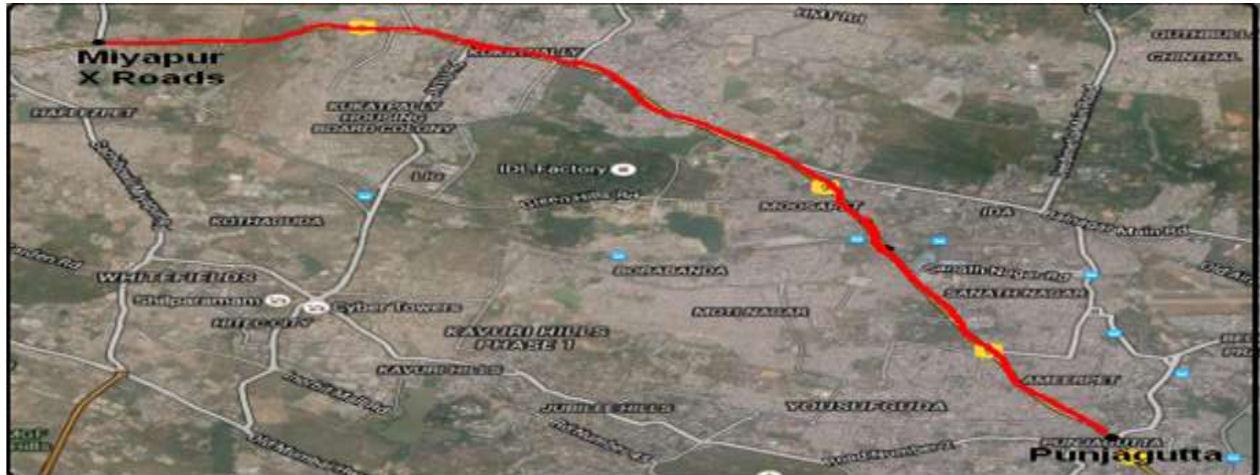


Fig 3.1 Map of selected corridor in Hyderabad

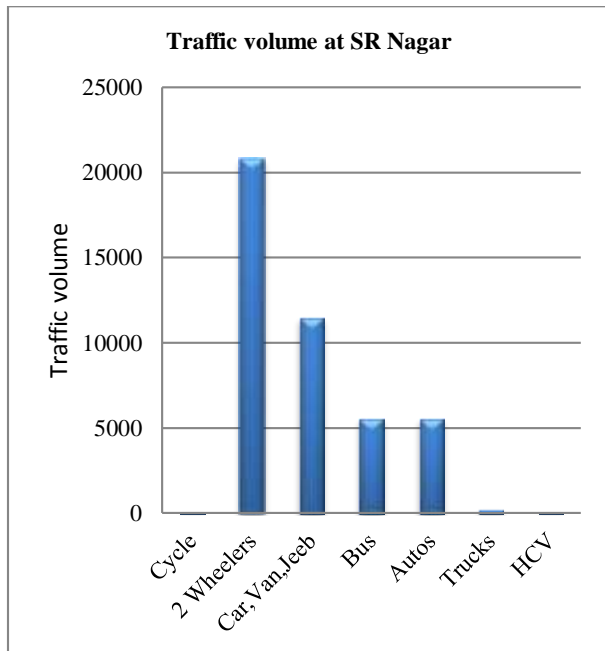
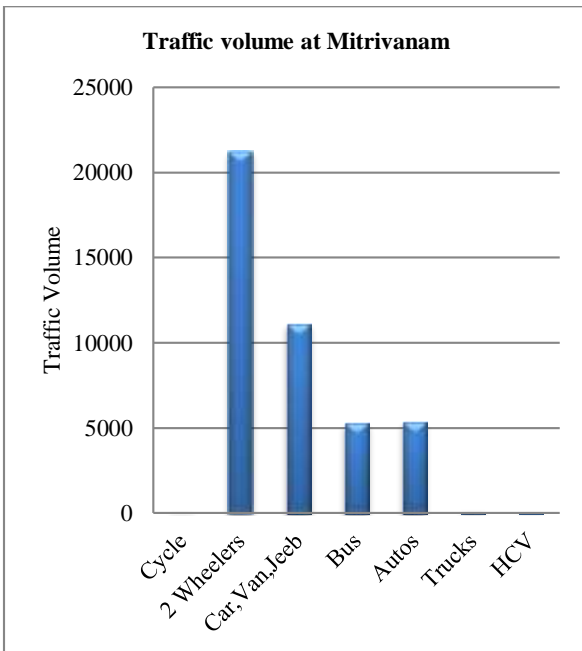
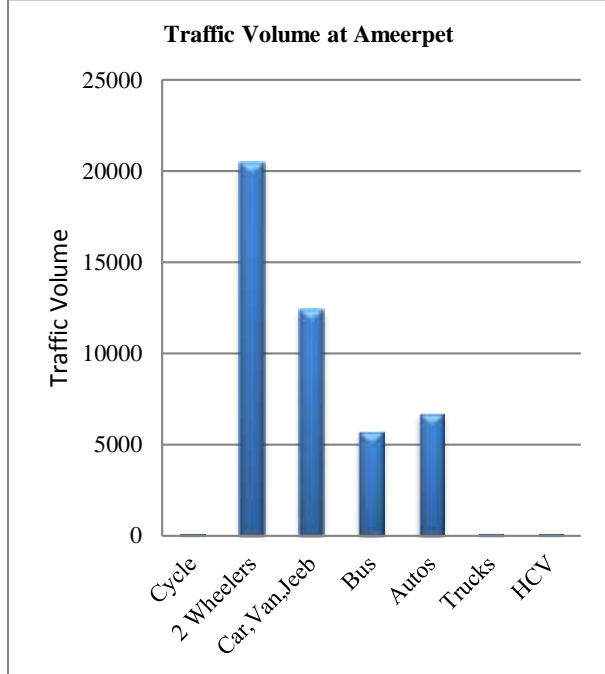
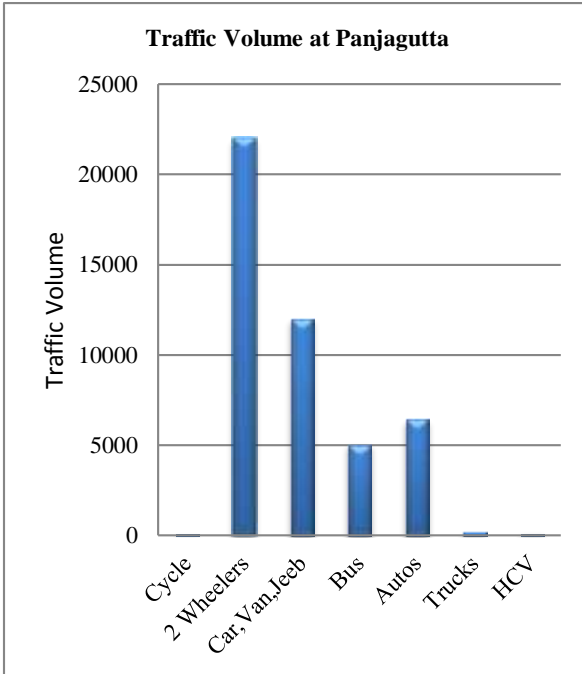
OBSERVATION & RESULTS

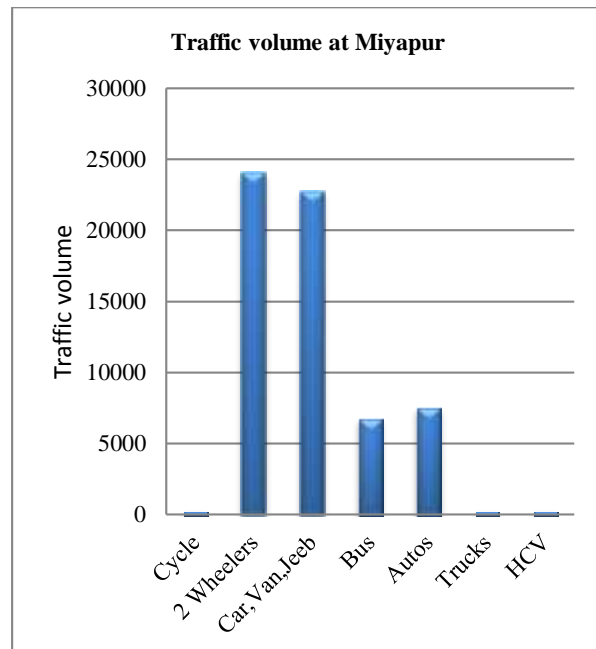
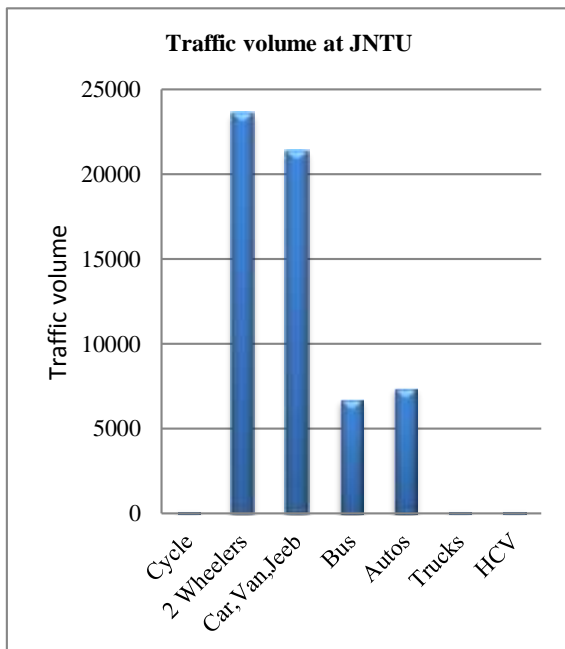
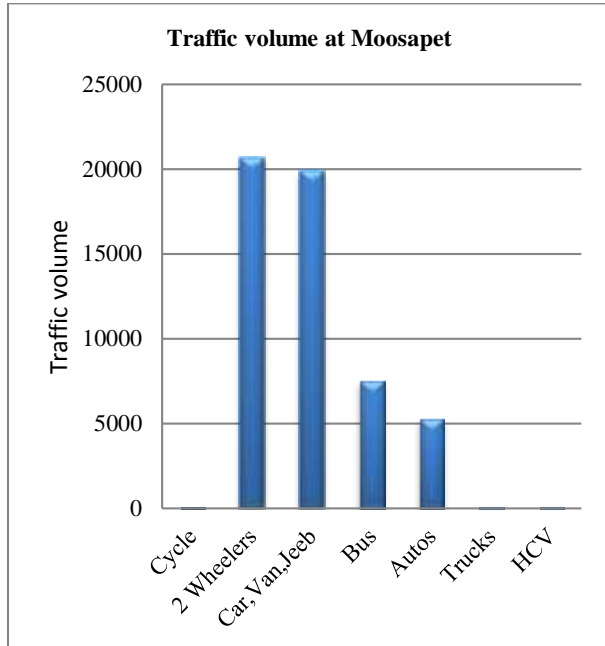
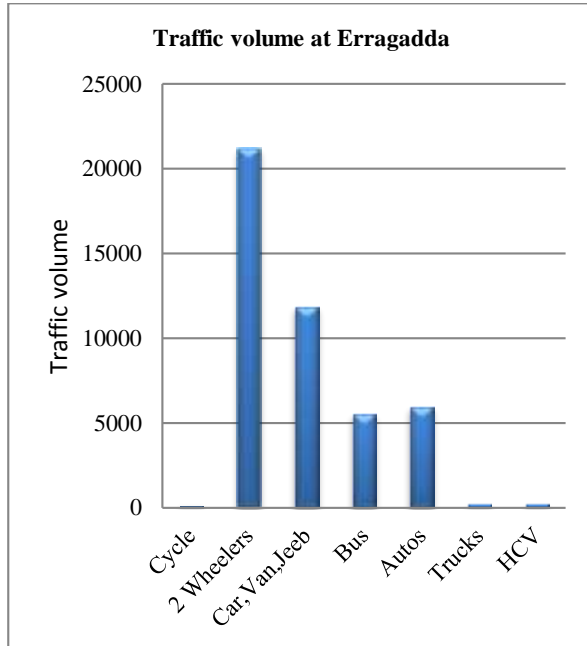
The general traffic volume count is done in important places where the traffic condition excess from Panjagutta to Miyapur cross road. After survey of a week, for two way road the average volume is considered. Survey was done considering peak hours. The traffic volume count is as shown in bellow table.

Table 4.1 Traffic volume count in selected corridor

Vehicle Type	Panjagutta	Ameerpet	Mitrivanam	SR nagar	Erragadda	Moosapet	JNTU	Miyapur
Cycle	69	95	39	47	64	42	94	125
2 Wheelers	10854	9408	9432	8884	9402	10285	11519	11512
Car, Van	4800	5101	4581	4442	4573	7817	10314	11495
Bus	2171	2979	2577	2611	2607	3322	3165	3165
Auto	2601	2847	2367	2382	2467	2534	3307	3334
Truck	99	92	82	106	146	96	89	131
HCV	114	96	67	47	130	126	124	138

The area wise variation in the vehicle volume is shown in the graph below.





Level of service

Level-of-Service is introduced by HCM to denote the level of quality one can derive from a local under different operation characteristics and traffic volume. HCM proposes LOS as a letter that designates a range of operating conditions on a particular type of facility. Six LOS letters are defined by HCM, namely A, B, C, D, E, and F, where A denote the best quality of service and F denote the worst. Fig.1. 1 illustrates the quality of services or Level-of-Services (A to F) and the various operating conditions.

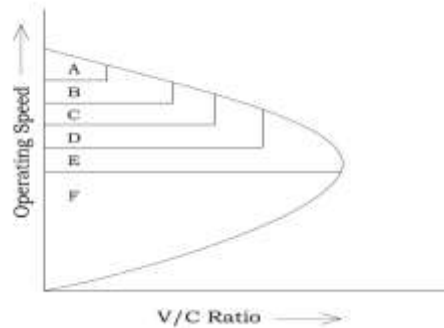


Figure 4.1: The Level of Service chart

Level of service for each area is found out by taking 1 hour traffic count for all types of vehicles. It is given by
Level of service (LOS) = Volume (V) / Capacity (C)

V = Highest volume of vehicle

C = 2200 (as per traffic engineering text book) is multiply with no. of lanes.

The condition of level of service in each area is given bellow.

Level of service at Panjagutta

Los = 10394.5/8800

Los = 1.18 > 1

The Level of Service in 'F' condition.

Level of service at Ameerpet

Los = 11445/8800

Los = 1.3 > 1

The Level of Service in 'F' condition.

Level of service at Mitrivanam

Los = 9450/8800

Los = 1.07 > 1

The Level of Service in 'F' condition.

Level of service at SR Nagar

Los = 10781/13200

Los = 0.8 < 1

The Level of Service in 'D' condition.

Level of service at Erragadda

Los = 11010/13200

Los = 0.83 < 1

The Level of Service in 'D' condition.

Level of service at Moosapet

Los = 12794.5 / 13200

Los = 0.9 < 1

The Level of Service in 'E' condition.

Level of service at JNTU

Los = 12811 / 15400

Los = 0.83 < 1

The Level of Service in 'D' condition.

Level of service at Miyapur

Los = 13414 / 15400

Los = 0.87 < 1

The Level of Service in 'D' condition.

CONCLUSIONS

1. There is heavy traffic in the stretch from Panjagutta to Miyapur.
2. Level of service is F condition in Panjagutta, Ameerpet, Mitrivanam areas which is known to be Fully Congested. After applying BRTS the condition will change from F to B or C condition.
3. Level of service is E condition in Moosapet area which is known to be congested. After applying BRTS the condition will change from F to B or C condition.
4. Level of service is D condition in SR Nagar, Erragadda, JNTU, Miyapur areas which is known to be unstable flow. After applying BRTS the condition will change from D to B condition.
5. Where provide good level of service during the peak hours, it provides good level of service during the peak hours.
6. It gives the Better quality, better service and providing value for the investment.
7. It presents as a clean, modern, fast, safe, and reliable transportation solution to the public.
8. Increasing ridership attraction.

RECOMMENDATIONS

1. Construct foot over bridge to reduce pedestrian crossing on road, which increases the moving time of traffic.
2. Elevated BRT System is suitable for which area roads have 2, 3 lanes and less width of the roads with highly traffic in Hyderabad.
2. Provide footpath for pedestrians.
3. No permission should be given to road side vendors and stalls.

4. Market should be allotted a place far away from the road side.
5. RTO should give limited permission to two wheelers per house.
6. Different timings should be allotted for opening and closing of different public, private and educational centers.

REFERENCES

- [1] Agarwal P K, Sharma Anupama and Singh A. P (2010), “An Overview on Bus Rapid Transit System”, Journal of Engineering Research and Studies.
- [2] Anuj Jaiswal, K. K. Dhote, R. Yadu Krishnan and Devansh Jain (2012). Bus rapid transit system: A mile stone For Sustainable Transport: A Case Study of Janmarg Brts, Ahmedabad, India, OIDA International Journal of Sustainable Development.
- [3] Tuhin Subhra Maparu and Debapratim Pandit (2010), “A Methodology for Selection of Bus Rapid Transit Corridors: A Case Study of Kolkata”, Institute of Town Planners, India Journal.
- [4] Madhuri Jain, Arti Saxena, Preetvanti Singh and P.K. Saxena. “Developing bus rapid transit system in India”.
- [5] Devarshi Chaurasia (2014). “Bus Rapid Transit System (BRTS): A Sustainable Way of City Transport (Case Study of Bhopal BRTS)”, International Journal of Engineering and Advanced Technology.
- [6] Geetam Tiwari, Dinesh Mohan, Sandeep Gandhi, B. Sriram, Sonia Kapoor, Ruchi Verma, Dheeraj Gupta, Mahesh Gaur (2005), “First Delhi brt corridor, A design summary Ambedkar nagar to Delhi gate”. Transportation Research and Injury Prevention Programme.
- [7] Bhanu Kireeti Chanda & Addali Sai Satya Goutham (2014), “Introduction to corridor selection & assessment for Bus Rapid Transit System (BRTS) in Hyderabad, American Journal of Engineering Research (AJER).
- [8] H.S. Kumara (2009), “Planning for Bus Rapid Transit System in Indian Metropolitan Cities: Challenges and options”, Institute of Town Planners, India.
- [9] Ajay Mishra, Saxena Anil Kumar, Purohit Pradee, “Study of Bus Rapid Transit system In Respect to Growing Cities of India”, International Journal of Engineering Research & Technology.
- [10] “Principles and Practice of Highway Engineering” by Dr.L.R.Kadiyali, Dr.N.B. Lal, Khanna publishers Delhi-6.
- [11] S.C.Wirasinghe, L. Kattan, M.M. Rahman, J. Hubbell, R. Thilakarathne and S. Anowar, “Bus rapid transit – a review”, International Journal of Urban Sciences, 2013.
- [12] Darshit M. Shah, Deepa Akshay Patel, “Impact of Brts on Urban Traffic a Case Study of Ahmedabad” GRA – Global Research Analysis.

