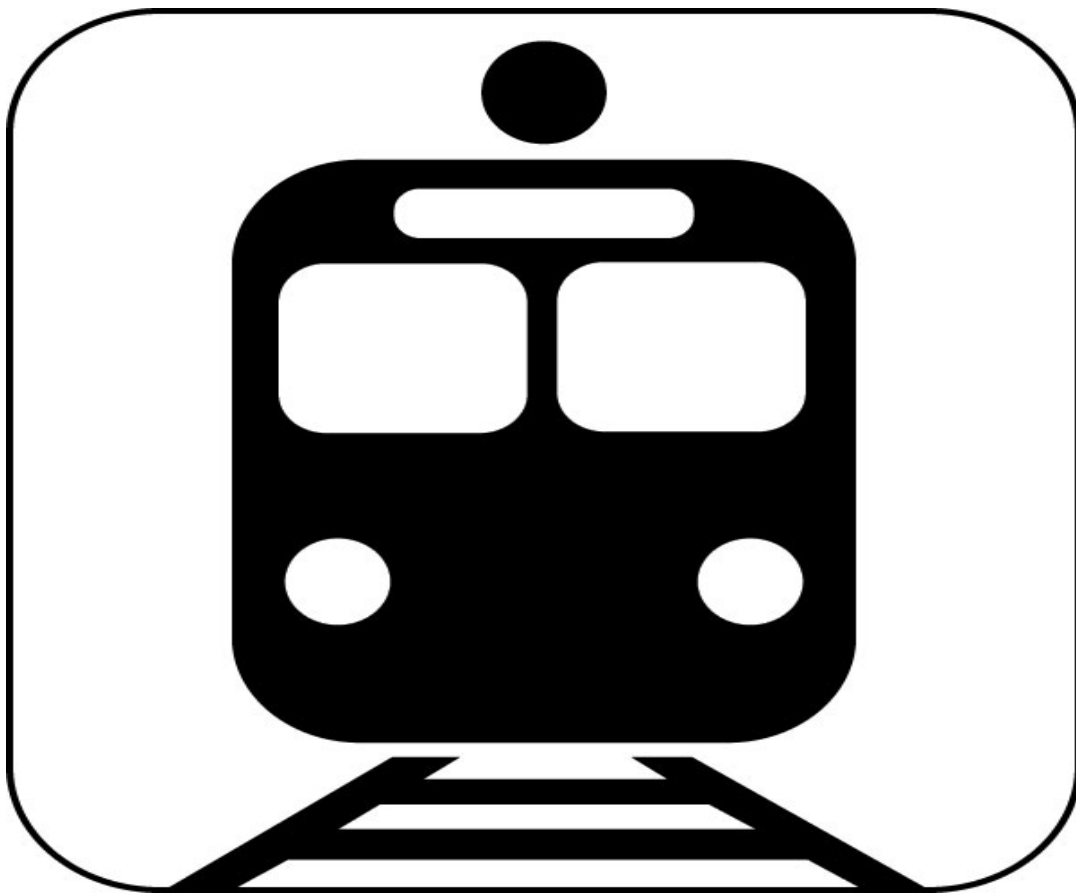


S U M A T R A

For Competitive, Efficient, Quality and Safe Transport Services

**Surface and Marine Transport Regulatory Authority
Mamlaka ya Udhibiti Usafiri wa Nchi Kavu na Majini**

**PERFORMANCE INDICATORS AND BENCHMARKS FOR RAILWAY
SUBSECTOR IN TANZANIA**



SUMATRA

July, 2011

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RAILWAY PERFORMANCE INDICATORS AND BENCHMARKS

1.0 BACKGROUND

Railway Performance Indicators and Benchmarks have been established in accordance with SUMATRA Act. Section 6 of the Act requires the Authority to establish standards and subsequently monitor performance of regulated services. Establishment of standards for regulated services entails setting of benchmarks while monitoring of performance requires development of performance indicators and reporting system.

1.1 Railway Performance Indicators and Benchmarks

Rail Performance Indicators are measures through which developments in the railway subsector can objectively be monitored, evaluated and eventually suggest a plan for future development. On the other hand, Railway Benchmarks are levels of railway performance that are superior to existing railway performances. The benchmarks must be acceptable and achievable.

1.2 Need for Performance Indicators and Benchmarks in Railway Subsector

The ultimate goal of developing performance indicators and benchmarks for railway subsector in Tanzania is to improve its performance by changing the way railway internal activities or processes are conducted. Specifically, performance indicators and benchmarks for railway subsector serve to:

- (a) identify important areas of operations which need urgent intervention;
- (b) justify an appropriate level of railway financing to the government and other interested parties;
- (c) justify an appropriate level of railway tariff;
- (d) provide a better understanding and forecasting of operating costs and revenues; and
- (e) monitor contractual performance and trigger actions for rectification of situations.

1.3 Organization of the Report

The report is divided into 7 parts. Part one introduces the subject in consideration. Part two provides a brief on railways of Tanzania. Part three narrates the entire process of developing railway performance indicators and benchmarks. Part four outlines a common set of performance indicators for the rail sub sector. Part five dwells on assignment of benchmarks to selected performance indicators. Part six is about data submission plan, monitoring, evaluation and timeframe for review of Benchmarks and set of Indicators. The report ends by presenting conclusions drawn from the entire process of establishing rail performance indicators and Benchmarks.

2.0 BRIEF ON RAILWAYS OF TANZANIA

2.1 TANZANIA RAILWAYS CORPORATION/ TANZANIA RAILWAYS LIMITED

Tanzania Railways Corporation (TRC) was formed in 1977 following the break-up of East African Railways Corporation (EARC). In 2007 TRC was concessioned to RITES India for a concession period of 25 years and formed a new company named Tanzania Railways Company Limited (TRL). In the concession agreement the RITES India owned 51% shares and the Government of Tanzania owned the remaining 49% shares of TRL.

The TRC/TRL rail network is a meter-gauge network of 2,708 route kilometers. It is linked to Kenyan network at Taveta, also to Kenyan and Ugandan rail networks by rail ferry through Lake Victoria. TRL network can also exchange cargo with TAZARA at DSM port and Kidatu station.

TRL operates 1000 mm gauge as opposed to 1067 mm gauge operated by the rest of the central and Southern African Railways.

2.1.1 Performance

The peak performance of TRL was in the year 2002 when it moved 1.446 million tones of freight and 683,000 passengers per annum. The performance of TRC started to deteriorate from that time after the donors stopped supporting TRC. In the year 2007 TRC transported 570,000 million tones of freight. After concession the performance of TRL continued to deteriorate. In the year 2010 TRL performed 256, 000 tonnes of freight and 290,000 passengers.

The anticipated objective of improving TRL performance after concessioning was not achieved. The Government of Tanzania decided to buy back the 51% shares from RITES India and invest in the railways to improve performance. The RITES India handed over TRL management to Tanzania Government TRL interim Management on 27th July, 2011.

2.1.2 Challenges

Notable challenges facing TRL include the following:

- (i) Old age of the infrastructure- Some of permanent way materials, especially between Tabora- Kigoma stations are of German type manufactured way back 1909.
- (ii) Low availability and reliability of mainline locomotives, wagons and passenger coaches. This has been caused by non recapitalization which could allow new procurements.
- (iii) Deferred maintenance of the old equipment.
- (iv) Low staff morale due financial constraints and difficult working conditions
- (v) Lack of competent staff in various fields due to retirement of competent staff, lack of training and recruitment.
- (vi) High running cost contributed by high fuel prices. TRL purchase fuel with the added road toll for road maintenance used by road haulers the railway transport competitor. For fair competition the permanent way should also be maintained by the Government.
- (vii) Diversion of goods to other routes due to inefficiency of TRL and DSM port

- (viii) Poor signaling and communication after the overhead open wire system suffered rampant chronic vandalism and theft of copper wires.
- (ix) Vandalism of permanent ways materials, bridges, buildings, rolling stock parts and signaling and telecommunication system

2.1.3 Strategies

Strategies in place to redress operational challenges and hence better performance include

- (i) Procurement of new locomotives and rehabilitation of the old ones to improve capacity;
- (ii) Track relaying with heavier rail sections in the areas where rails are old and of light section;
- (iii) Improve signaling and communication in the railway system;
- (iv) Lobbying in the two Governments for exempting TRL from paying excise duty and fuel levy;
- (v) Struggle to curb vandalism and theft of railway properties;
- (vi) Recruit competent employees and training the existing staff to acquire new technologies; and
- (vii) Improve staff welfare to enhance morale.

2.2 TANZANIA ZAMBIA RAILWAY AUTHORITY

Tanzania and Zambia Railway Authority (TAZARA) is a statutory body established under TAZARA Act No. 4 of 1995 (Reviewed Act No. 23 of 1975) and is jointly owned on 50:50 by the Government of the United Republic of Tanzania and the Government of the Republic of Zambia.

TAZARA line runs from Dar es Salaam in Tanzania to New Kapiri Mposhi, a distance of 1,860 km, with 975 km in Tanzania and 885 km in Zambia. The line constitutes one component of the Southern African Development Community (SADC) railway network, which links eleven of the Regional body's member states and which all have the same

gauge, i.e. 1067 mm (the Cape Gauge). TAZARA is physically interlinked to the Railway Systems of Zambia (RSZ) network at Kapiri Mposhi, while TAZARA and Tanzania Railway Limited (TRL) interface at Kidatu and at the sea port of Dar es Salaam.

TAZARA primarily transports goods between Zambia and the Port of Dar es Salaam. The railway also handles substantial quantities of domestic freight traffic within Tanzania, between the Southern Region and Dar es Salaam. TAZARA also offers international and domestic passenger services, with trains operating between Dar es Salaam and New Kapiri Mposhi.

2.2.1 Performance

TAZARA line was constructed under the assistance of the People's Republic of China. The design capacity of TAZARA railway line was 5 million tonnes per year, but since its inception it reached its peak performance in 1986 when it moved 1.2 million tonnes. Between 2007 and 2010, freight traffic performance has averaged 479,995 tonnes per annum and passenger traffic performance has averaged 850,124 passengers per annum.

2.2.2 Challenges

Notable challenges facing TAZARA include the following:

- (i) Non recapitalization since inception;
- (ii) Deferred maintenance of locomotives, wagons and coaches leading to low reliability and availability;
- (iii) Stiff competition from road transport services;
- (iv) Diversion of goods to other routes due to inefficiency of DSM port;
- (v) Poor signaling and communication after the overhead open wire system suffered rampant chronic vandalism and theft of copper wires;
- (vi) The poor state of permanent way in the selected areas especially the land slide area about 79kms between Mlimba and Makambako stations and in areas in the black cotton soil; and
- (vii) Vandalism of permanent ways, bridges, buildings, rolling stock and signaling and telecommunication system.

2.2.3 Strategies

Strategies in place to redress notable challenges include:

- (i) Procurement of new locomotives and rehabilitation of the old ones to improve capacity;
- (ii) Improve permanent way in the problematic selected areas;
- (iii) Improve signaling and communication in the railway system;
- (iv) Lobbying in the two Governments for exempting TAZARA from paying excise duty and fuel levy; and
- (v) Struggle to curb vandalism and theft of railway properties.

Improvement in the rolling stock, permanent way and signaling and communication is possible if capital is injected in TAZARA. The shareholders should budget for the TAZARA railway improvement, and arrange funds from donors.

The improved TAZARA railway operations will allow it to compete with other modes of transport and other routes.

3.0 THE PROCESS OF DEVELOPING PERFORMANCE INDICATORS AND BENCHMARKS

SUMATRA initiated the process of setting up performance indicators and benchmarks for railway subsector in year 2010. Considerations were made with regard to the needs of different stakeholders i.e. the regulator (SUMATRA), railway companies, the Government - through the Ministry and users of railway services. Extensive consultations were made with railway stakeholders to ensure participation in the entire process of development. Such consultations included the following:

- (i) kick-off meeting on development of railway performance indicators and benchmarks, between SUMATRA and railway operators held on 28th April, 2010 in Dar es Salaam. The objective of the meeting was to initiate a process of evolving performance indicators and benchmarks for railway subsector. Specifically, the meeting targeted at formulating a Working Group (WG) on the subject;

- (ii) study visit to the National Railways of Zimbabwe (NRZ). The visit was conducted in June, 2010 to facilitate sharing of experiences in the process of developing railway monitoring and evaluation systems;
- (iii) an experts' workshop drawing participants from railway companies, SUMATRA and the Ministry of Transport. The objective of the workshop was to evolve a minimum set of indicators necessary for monitoring and evaluating railway performances.
- (iv) Stakeholders Meeting on 14th April, 2011. The meeting involved a wide spectrum of stakeholders in the railway industry including operators, users of railway services, a regulator and the Ministry of Transport. The objective of the meeting was to critically review the proposed performance indicators and benchmarks as presented by the Working Group.

3.1 Formation of Working Group

The WG on development of performance indicators and benchmarks for the railway subsector in Tanzania was formed during the above mentioned kick-off meeting, which was held on 28th April, 2010.

Members of the WG were drawn from five institutions listed below:

- (i) TAZARA - 4 members;
- (ii) TRL - 4 members;
- (iii) RAHCO - 1 member;
- (iv) MOID - 1 member; and
- (v) SUMATRA - 6 members

Details of WG members, including names and their positions in organizations are shown in Appendix I.

3.2 Study Visit to National Railway of Zimbabwe

From 14th to 17th June, 2010, senior officers from SUMATRA participated in the study visit to National Railways of Zimbabwe (NRZ).

3.2.1 Objectives of the Study Visit

The visit objectives were to:

- (i) Learn how to oversee a process of setting up tools necessary to facilitate monitoring and evaluation of railway performance;
- (ii) Revisit indicators and benchmarks used in other railways in the region with a view to developing own set of indicators and benchmarks which are consistent regionally to guarantee competitiveness of Tanzanian railways;
- (iii) Facilitate sharing of experiences in the development of railway monitoring and evaluation systems; and
- (iv) Create functional relationship with other railways in the region.

3.2.2 Lessons From the Study Visit

Various lessons were learnt from the study visit to NRZ; notably:

- (i) The need to put in place stringent Monitoring and Evaluation systems to ensure that railway concessioning projects reap the intended benefits;
- (ii) The need to develop indicators and benchmarks which not only cater for the present situation but also, provide for future existence and growth of the business. More importantly, the need to accord due attention to learning, innovations and customer care;
- (iii) The need to encourage local train companies to revamp their workshops with the long term objectives of carrying out all major repairs and maintenance locally, thus improving availability of locomotives, wagons and coaches and ultimately the general performance.

- (iv) The need for railway operators to emphasize on minor measures which add value significantly in the services. Such measures include maintaining cleanliness of stations and surroundings;
- (v) The need to think beyond financial and operational terms while devising railway performance indicators and benchmarks; and
- (vi) The need to consider other aspects that impact on performance, such aspects include customer care, innovations and learning initiatives;

Generally, the visit added value to the understanding of railway monitoring and evaluation systems. Delegates learnt how a Balanced Score Card concept could be used in railway performance Management System.

3.3 Workshop to Develop Initial Set of Performance Indicators

On 6th and 7th September, 2010 a workshop was organized by SUMATRA in Morogoro. All members of the WG participated. The objectives of the workshop were to:

- (i) propose a methodology to be adopted in developing railway performance indicators and benchmarks;
- (ii) evolve a minimum set of indicators necessary for monitoring and evaluating railway performance ; and
- (iii) propose benchmarks for selected indicators;

Upon completion of the workshop, it was agreed that:

- (i) Managements of the two railways should facilitate in-house teams in setting benchmarks on critical common set of indicators;
- (ii) The two teams should submit proposed benchmarks to SUMATRA;
- (iii) SUMATRA should organize a meeting with the teams to review the proposed benchmarks;

- (iv) SUMATRA to consult with respective railway Managements on the agreed benchmarks and thereafter convene stakeholders meeting in order to collect views on the agreed benchmarks;
- (v) The two railways to adopt the agreed indicators and railway specific benchmarks ; and
- (vi) SUMATRA to establish means of ensuring compliance with agreed indicators and benchmarks

3.3.1 Initial set of performance Indicators and Benchmarks

Initial set of Performance Indicators developed during the WG Workshop in Morogoro between 6th and 7th September, 2010 is attached as Appendix II.

3.4 Stakeholders Meeting in Dar es Salaam

On 14th April, 2011 a Meeting of railway stakeholders was held in Dar es Salaam. The meeting involved a wide spectrum of stakeholders in the railway industry including operators, users of railway services, SUMATRA and the Ministry of Transport. The meeting critically reviewed performance indicators and benchmarks proposed by the WG.

The meeting recommended several improvements on the set of Performance Indicators and Benchmarks proposed by the WG. Specifically, the meeting recommended the following:

- (i) To provide clear definitions of performance indicators in order to facilitate usage and interpretations;
- (ii) To state clearly the review period of the benchmarks;
- (iii) To reflect properly the vision of the transport sector in setting benchmarks;

- (iv) To add in the proposed list, indicators on (1) age of railway personnel and (2) expenditures on maintenance of the assets adjusted to number of locomotives, wagons and track kilometer;
- (v) To introduce an indicator reflecting the extent of claims in the business;
- (vi) To revise benchmarks for
 - revenue per kilometer and cost per kilometer so that revenue per kilometer is higher than cost per kilometer to ensure surplus in the sector;
 - fuel consumption index especially for TAZARA;

Detailed report of the stakeholders meeting held on 14th April, 2011 is attached as Appendix III

3.5 Benchmarking Methodology

As earlier stated, benchmarking is a means through which a level of performance that is superior but acceptable and achievable is located. A typical benchmarking process at an organization level would require answers to the following:

- (i) Where is the organisation trying to get to? (i.e. the vision);
- (ii) What needs to be achieved in order to get to the destination? (i.e. Critical Success factors); and
- (iii) Where is the organisation now? (Identification of key business Processes and measuring performances of the processes)

The answers to the three questions above are pivotal to the benchmarking process at an organisation level. In practice, benchmarking is about measuring organisation performance in a particular area against best practice in a similar area. **The ultimate result of benchmarking is to change** the way certain activities are done in order to **improve** performance. Hence a simplified benchmarking process could be represented as in Figure 1

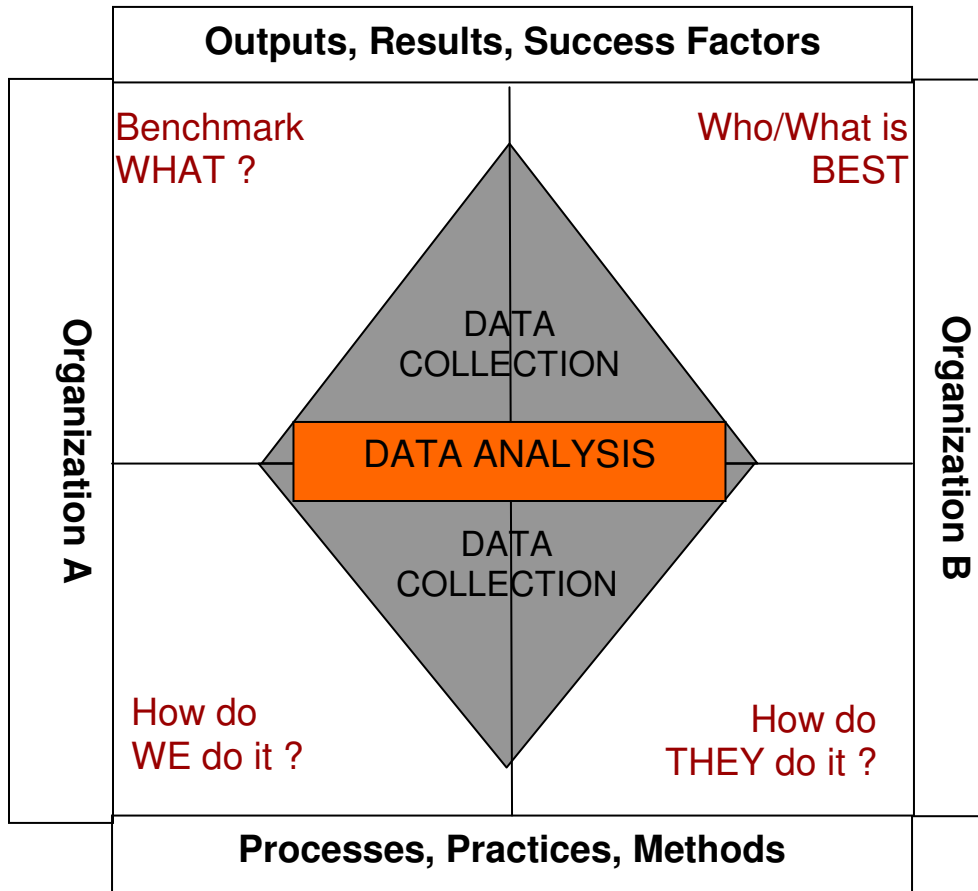


Figure 1: Schematic Presentation of a Benchmarking Process

Benchmarking framework at sectoral level however, need to be customized to acknowledge the fact that the railway sector has many and varied stakeholders besides railway operators. Therefore, at sectoral level, there was a need to agree on the following:

- (i) broad vision¹ of the railway subsector;
- (ii) Focus of the benchmarking process;
- (iii) broad success factors;
- (iv) a minimum set of Performance Indicators;
- (v) Indicators to be benchmarked; and
- (vi) what should be regarded as best in the areas that were to be benchmarked

¹ The vision at subsectoral level was general and reflected sectoral vision as specified in the National Transport Policy (2003).

3.5.1 Vision

The common vision was derived from the National Transport Policy (2003) with slight adaption to railway subsector. For the purpose of benchmarking process, the agreed vision was *to have efficient and cost-effective railway transport services to all segments of the population and sectors of the economy with maximum safety and minimum environmental degradation.*

3.5.2 Focus of the Benchmarking Process

As benchmarking was being carried out at sectoral level as opposed to the organization level, it was agreed that focus should be on the outputs and success factors rather than the methods and practices. It was remarked that individual railway companies should later on rearrange internally and change processes, practices and methods, where necessary, in order to be able to deliver on the expected outputs.

3.5.3 Success Factors

In establishing broad success factors for the railway subsector, Balanced Score Card (BSC) concept was used. With this concept, the aim was to integrate financial indicators with other measures which in totality guarantee sustainability of the railway business in the face of stiff competition from other modes of transport.

Therefore, the railway business was looked at from four distinct but related and interdependent perspectives; namely:

- (i) Customer perspective;
- (ii) Financial perspective;
- (iii) Innovations and learning perspective; and
- (iv) Internal business perspective.

3.5.3.1 Customer Perspective

Generally, stakeholders agreed that customers' perspective was the priority and key to the sustainability of the railways. This was due to the fact that under normal circumstances *"customers needed transport services and not railway transport services.*

Therefore if they were not satisfied with railway transport services they would simply turn to other modes of transport”.

It was noted that, with customer perspective, customers concerns evolved around four aspects: time, quality, performance and cost. Indeed, common sense dictated that it was not enough to simply bring down the cost of an item but the delivery time and the manner in which the customer was handled were of paramount importance.

3.5.3.2 Internal Business Perspective

Improved internal operations within the railways companies were perceived as critical in satisfying customer needs. It was therefore crucial to repeatedly assess whether internal operations addressed the needs and expectations of customers.

3.5.3.3 Financial Perspective

Financial perspective involved assessing results of the company’s operations in monetary terms and also company’s capacities to carry on with business sustainably.

3.5.3.4 Learning and Innovation Perspective

The learning and Innovation perspective was targeted to address infrastructure necessary for the achievement of the other three perspectives. The Learning and Innovation perspective was about the ability to continue improving. The Learning and Innovation Perspective was necessary to allow adaptation to changes in operating conditions. Therefore, according due weight to this perspective was an acknowledgement of the fact that conditions which enabled the railway subsector to perform in the past might not necessarily work in the future.

4.0 COMMON SET OF INDICATORS FOR THE RAILWAYS

After in-depth consultations, a set of railway performance indicators was established. The set measured performance of railways in different aspects. Indicators were categorized into four perspectives cited in section 2.5.3.

Common set of indicators for use in the two railways, as defined in Glossary of terms, were agreed to be:

4.1 Customers Perspective

- (i) Number of Customers' complaints;
- (ii) Number of customers' claims
- (iii) Time taken to process claims;
- (iv) Time taken to advice passenger of train delays;
- (v) Punctuality ;
 - a. Passenger trains;
 - b. Freight trains;
- (vi) Time taken to meet wagon request;
- (vii) Time taken to deliver the cargo (Transit time);
- (viii) Number of wagons supplied against request ;
- (ix) Proportion of rail freight rates to road freight rates; and
- (x) Proportion of passenger train fares to road passenger fares;

4.2 Internal Business Perspective

- (i) Wagon turn-round time;
- (ii) Loco availability;
- (iii) Wagon availability;
- (iv) Loco reliability;
- (v) Loco utilization;
- (vi) Wagon utilization;
- (vii) Speed restrictions;
- (viii) Average load per wagon;
- (ix) Coefficient of Empty Return Ratio;
- (x) Mean occupancy ratio (passenger);
- (xi) Average lead;
- (xii) Average haul of freight;
- (xiii) Labor productivity;
 - a. Tonnage-km per employee;
 - b. Passenger-km per employee;

- (xiv) Specific Fuel Consumption Index;
- (xv) Safety status of rail operations (train accidents per mil ton-km);
- (xvi) Number of death/injuries per mil ton-km;
- (xvii) Line availability;
- (xviii) Average train speed;
 - a. Passenger trains;
 - b. Freight trains;
- (xix) Tonnage loaded;
- (xx) Ton-km;
- (xxi) Passengers carried over time;
- (xxii) Passenger-km;
- (xxiii) Freight Revenue;
- (xxiv) Passenger Revenue; and
- (xxv) Average age of railway personnel

4.3 Financial Perspective

- (i) Total operating cost to revenue ratio;
- (ii) Operating cost per ton-km;
- (iii) Revenue per ton-km;
- (iv) Revenue per passenger-km;
- (v) Passenger to Freight revenue ratio;
- (vi) Average debt collection period;
- (vii) Revenue per employee;
- (viii) Wage bill to revenue ratio;
- (ix) Capital expenditure to net surplus ratio;
- (x) Expenditure on maintenance
 - Per Locomotive
 - Per Wagon
 - Kilometer of track

4.4 Innovation & Learning Perspective

- (i) Number of employees going through training/exposure sessions;
- (ii) Number of employees seconded /attached to other organizations;

5.0 RAILWAY SPECIFIC BENCHMARKS

5.1 Survey of Railway Performance Benchmarks

A survey of railway performance in the region and around the world was carried out in order to understand performance of Tanzanian railways and the extent to which they are subjected to regional competition. Such survey was carried out fully aware of limitations embedded in the use of performance indicators for comparison purposes.

A comparison between companies on a set of performance indicators poses challenges due to the fact that:

- (i) Firms may belong to different operating environment e.g. degree of economic development or regulatory frameworks which render the comparison irrelevant;
- (ii) Variables collected by different firms could be subjected to different measurement errors;
- (iii) Different firms may have different service mix, technique of production, investment levels, organization styles, size of shipments and length of haul; and
- (iv) External factors such as weather and topography may vary widely between firms;

Cognizant of the comparison limitations cited above, Table 1 presents a summary of best practice levels according to World Bank (Gannon and Shalizi; 1995) and Australian Bureau of Industry Economics. The last column show targets set by the National Railways of Zimbabwe (NRZ).

Desirable levels of performance indicators correspond to the outcome of a competitive market and serve ideally as the best comparator (or "benchmark") levels. In practice, however, "best practice" level is considered achievable.

Table 1 Best Practices in Railway Performance

Performance Indicators	Best Practice	Desirable	NRZ Target
Passenger revenue/passenger-km (in TZS) ²	61.20	68	
Freight revenue/ton-km	32.3	51	
Punctuality (%)	96	90 - 95	100
Average train speed (kph)	300	60 - 100	
Train accidents (per Million train-km)		0	0
Occupancy level per coach (%)	-	-	70
Tons-km per employee (in thousand)	11000	>750	
Availability of locomotives (%)	90	>80	90
Wagons availability (%)		>90	90
Wages and Benefits as share of revenue (%)	< 20	40	
Passenger to Freight revenue ratio (%)	>2	>1	
Freight Tonnage Moved (tons)			6,000,000
Passengers moved (intercity)			1,325,000
Time taken to deliver the cargo (days)			2.5
wagons supplied per request (%)			100
Time to advice passenger of train delays (hrs)			< 2
Proportion of freight to road rates (%)			70 - 80
Locomotive reliability (km)			30,000

² At exchange rate of 1 USD to TZS 1,700

5.2 Steps followed in Establishing Railway Specific Benchmarks

In arriving at the agreed benchmarks for TRL and TAZARA, five basic steps were followed; these were:

- i. Individual railway companies proposed initial benchmarks basing on the situation analysis ;
- ii. Compared and contrasted initial proposals with best practices and performance in other competing railway systems in the region;
- iii. Reviewed past performance trend of the railway companies on the targeted processes;
- iv. WG proposed a benchmark value taking into considerations outcomes of the previous steps;
- v. Refined WG proposed benchmarks basing on stakeholders and users expectations through Stakeholders Meeting

Agreed Benchmarks for TRL and TAZARA are indicated on Table 2 and 3.

Table 2 Agreed Benchmarks for TRL

Perspectives	Indicators	Unit	Benchmarks
Customers	Customer complaints	Number	0
	Time taken to process claims	days	21
	Time taken to advice passenger of train delays	minutes	15
	Punctuality - Passenger trains	%	98
	Punctuality - Freight trains	%	75
	Time taken to meet wagon request	Days	7
	Wagons supplied against request	%	100
	Proportion of rail freight rates to road freight rates	%	63
	Proportion of passenger train fares to road passenger fares	%	45
Internal Business	Wagon turn-round time	Days	12
	Loco availability	%	70
	Wagon availability	%	90
	Loco reliability	Km	10,000
	Loco utilization	Km/day	460
	Wagon utilization	km/day	150
	Speed restrictions	%	16
	Average load per wagon	Tonnage	35.6
	Coefficient of Empty Return Ratio	%	36
	Average lead	Km	700
	Average haul of freight	Km	1,100
	Tonnage-km per employee		390,000
	Passenger-km per employee		120,000
	Safety status of rail operations (train accidents per mil ton-km)		0
	Death/injuries per mil ton-km	Number	0

Perspectives	Indicators	Unit	Benchmarks
	Average train speed –Passenger trains	Km/hr	28
	Average train speed –Freight trains	Km/hr	25
	Freight loaded per year	Tonnage	1,300,000
	Ton-km per year	Ton-km	1,200,000,000
	Passengers carried per year	Number	700,000
	Passenger-km per year	Pax-km	400,000,000
	Freight Revenue per year	TZS	45,000,000,000
	Passenger Revenue per year	TZS	8,500,000,000
Financial	Revenue per ton-km	TZS	77
	Revenue per passenger-km	TZS	20
	Passenger to Freight revenue ratio	%	20
	Average debt collection period	Days	30
	Revenue per employee per year	TZS	14,400,000

Table 3 Agreed Benchmarks for TAZARA

Perspectives	Indicators	Unit	Benchmarks
Customers	Number of Customer complaints		0
	Time taken to process claims	Days	21
	Time taken to advice passenger of train delays	Minutes	15
	Punctuality - Passenger trains	%	85
	Punctuality - Freight trains	%	80
	Time taken to meet wagon request	Days	7
	Time taken to deliver the cargo (Transit time)	Days	4
	Wagons supplied against request	%	100
	Proportion of rail freight rates to road freight rates	%	75
	Proportion of passenger train fares to road passenger fares	%	80
Internal Business	Wagon turn-round time	Days	15
	Loco availability	%	90
	Wagon availability	%	80
	Loco reliability	Km	13,000
	Loco utilization	km/day	500
	Wagon utilization	Km/day	50
	Speed restrictions	%	3
	Average load per wagon	Ton	45
	Coefficient of Empty Return Ratio	%	20
	Mean occupancy ratio (passenger)	%	90
	Average lead	Km	500
	Average haul of freight	Km	1,500
	Tonnage-km per employee		400,000
	Passenger-km per employee		200,000
	Specific Fuel Consumption Index	ltr/ton-km	7
	Safety status of rail operations (Accidents per mil ton-km)		0
Number of death/injuries per mil ton-km		0	

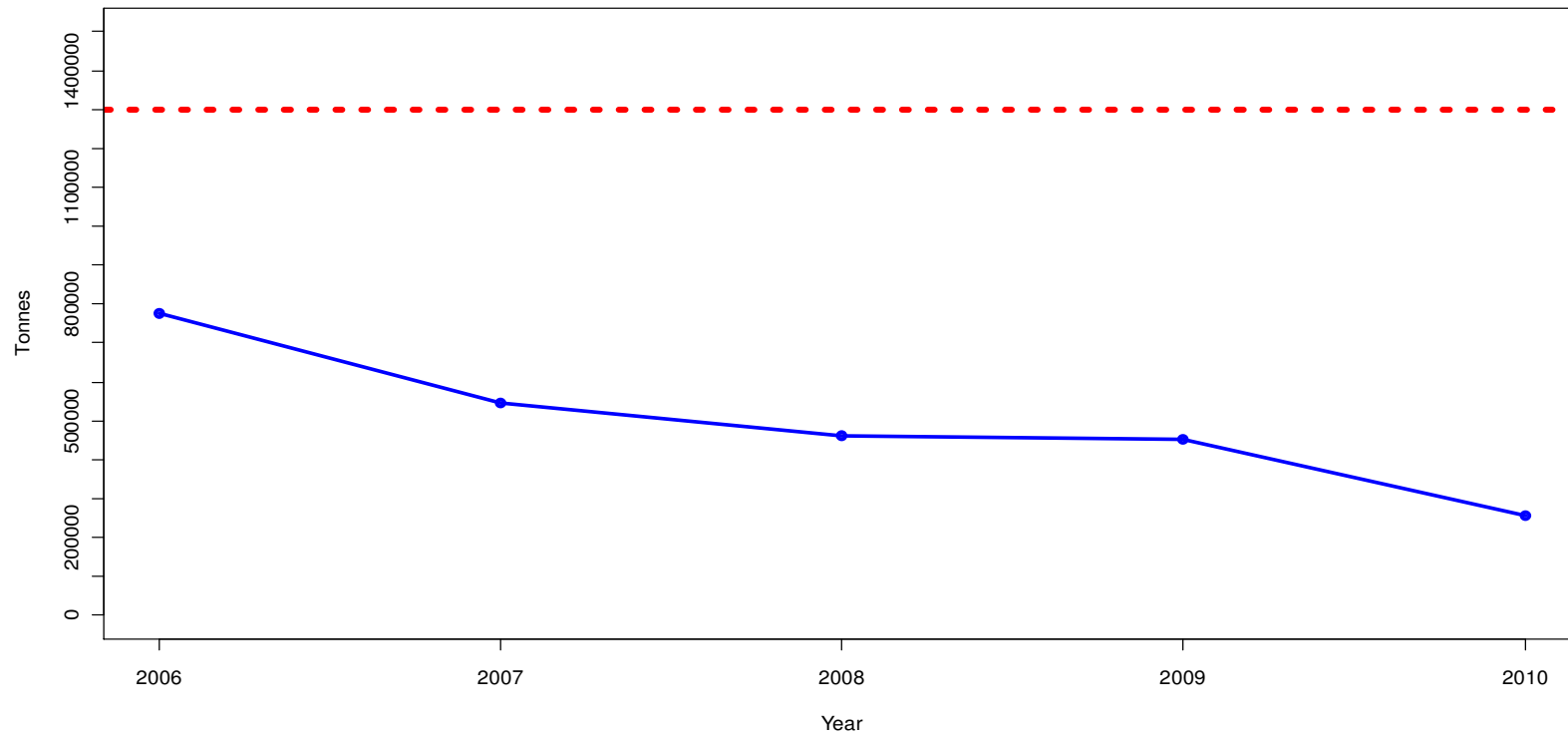
Perspectives	Indicators	Unit	Benchmarks
	Line availability (in hours)	%	90
	Average train speed –Passenger trains	Km/hr	70
	Average train speed –Freight trains	Km/hr	40
	Tonnage loaded per year	Ton	1,000,000
	Ton-km per year	000	1,500,000
	Passengers carried per year		1,500,000
	Passenger-km per year		750,000,000
	Freight Revenue per year	USD	80,000,000
	Passenger Revenue per year	USD	11,250,000
Financial	Total operating cost to revenue ratio	%	80
	Operating cost per ton-km	USD	0.048
	Revenue per ton-km	USD	0.053
	Revenue per passenger-km	USD	0.015
	Passenger to Freight revenue ratio		15
	Average debt collection period		30
	Revenue per employee per year	USD	24,000
	Wage bill to revenue ratio	%	30
	Capital expenditure to net surplus ratio		80
Innovation & Learning	Number of employees going through training/exposure sessions		300
	Number of employees seconded /attached to other organizations		20

5.3 Comparison of Agreed Benchmarks and Past Performance Trends

Trend of performances by railways companies for the past several years was analyzed. The agreed benchmarks were then superimposed on the established trend. The intention was to show both the superiority of the benchmarks on the trends and the likelihood of achieving the agreed benchmarks.

5.3.1: Review of Past Performance - TRL

Figure 2 TRL: Tonnes Hauled per Year




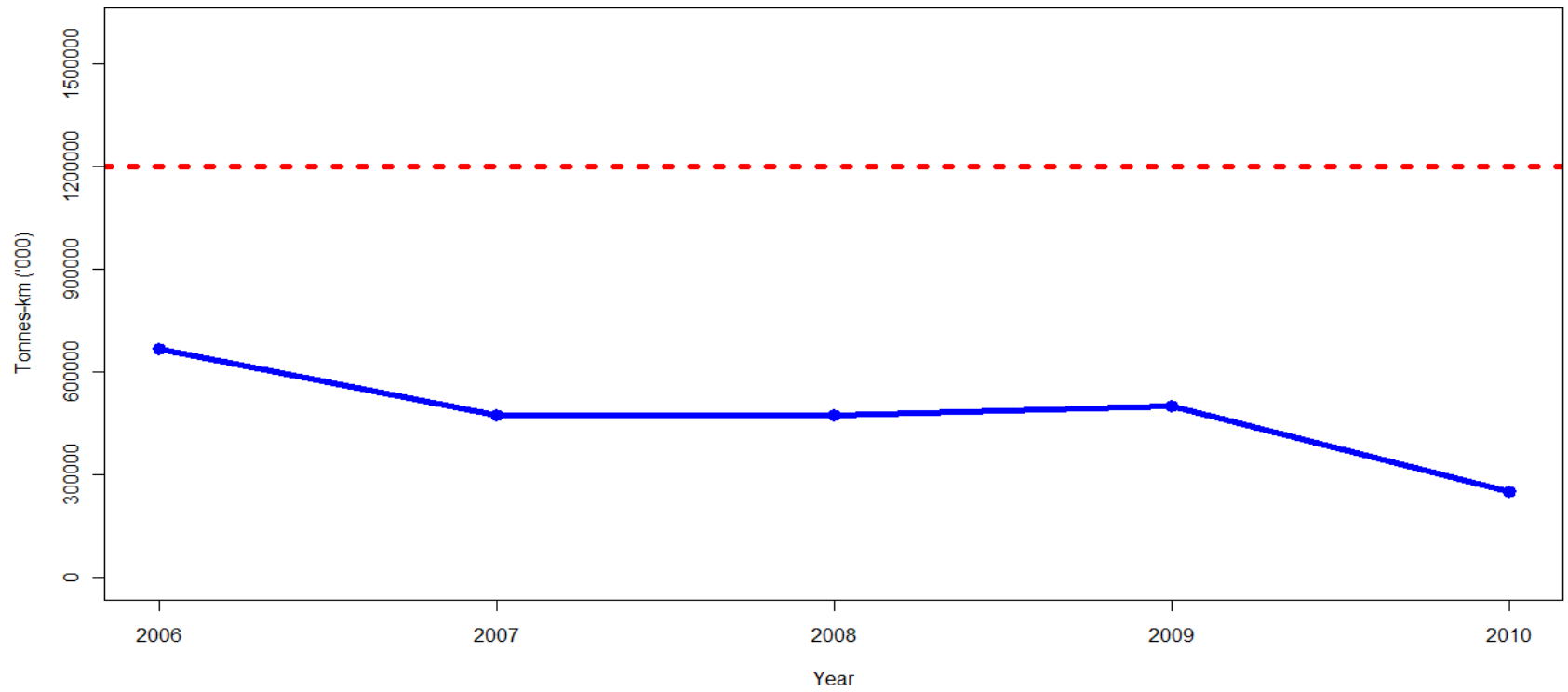
Note:  Agreed Benchmark : 1,300,000

Figure 3 TRL: Ton-km per year




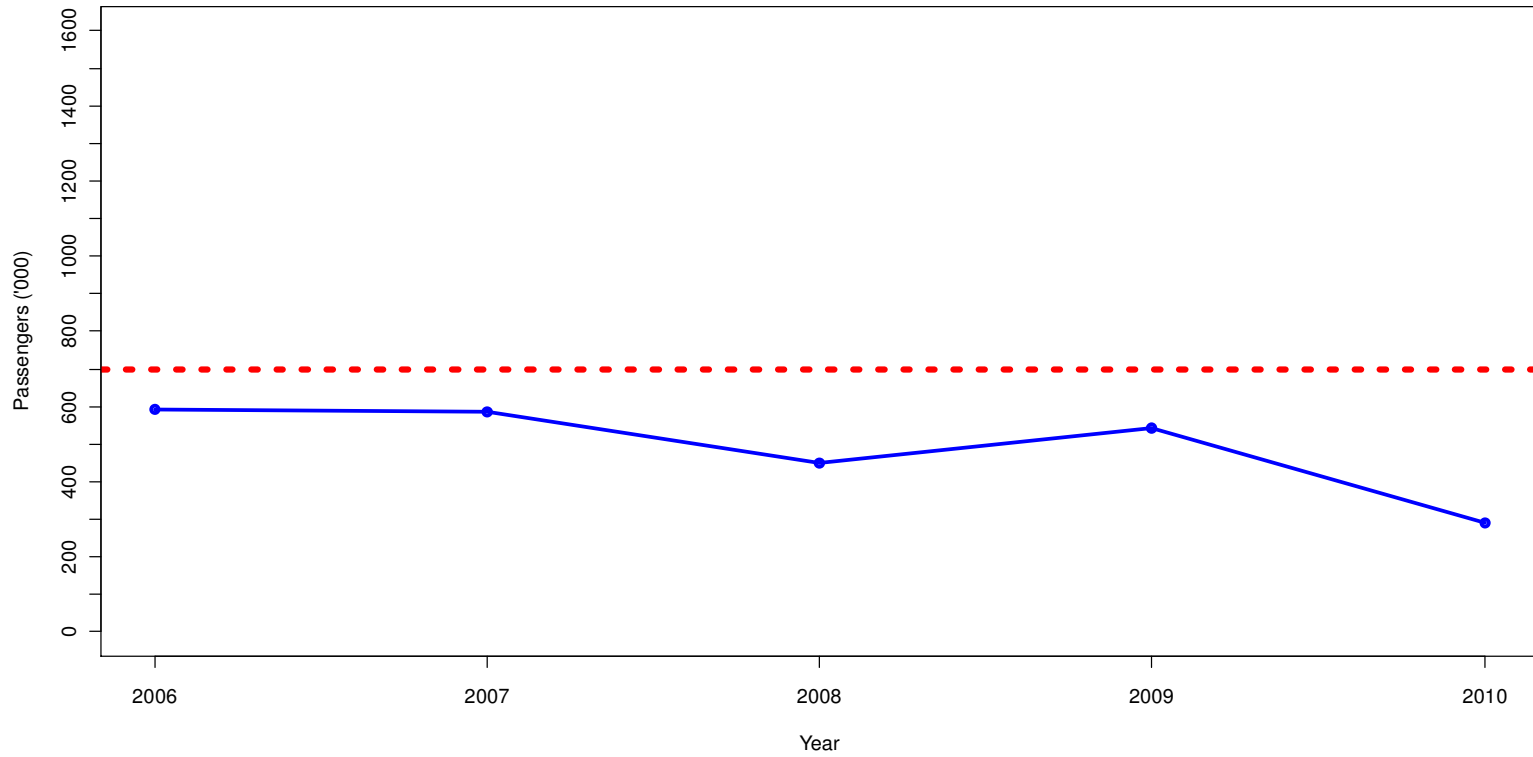
Note:  Agreed Benchmark: 1,200,000,000

Figure 4 TRL: Passengers Loaded per year




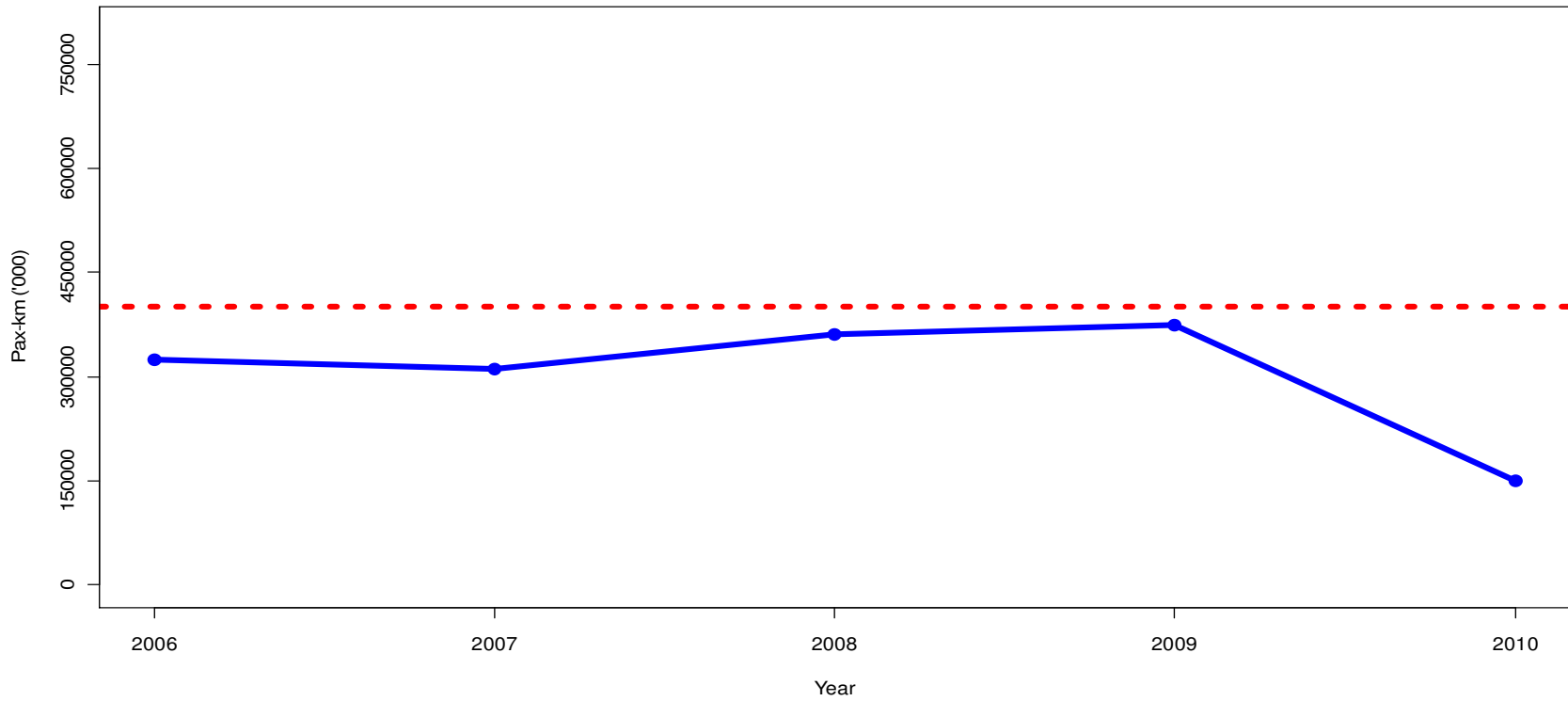
Note:  Agreed Benchmark: 700,000

Figure 5 TRL: Passenger-km per Year




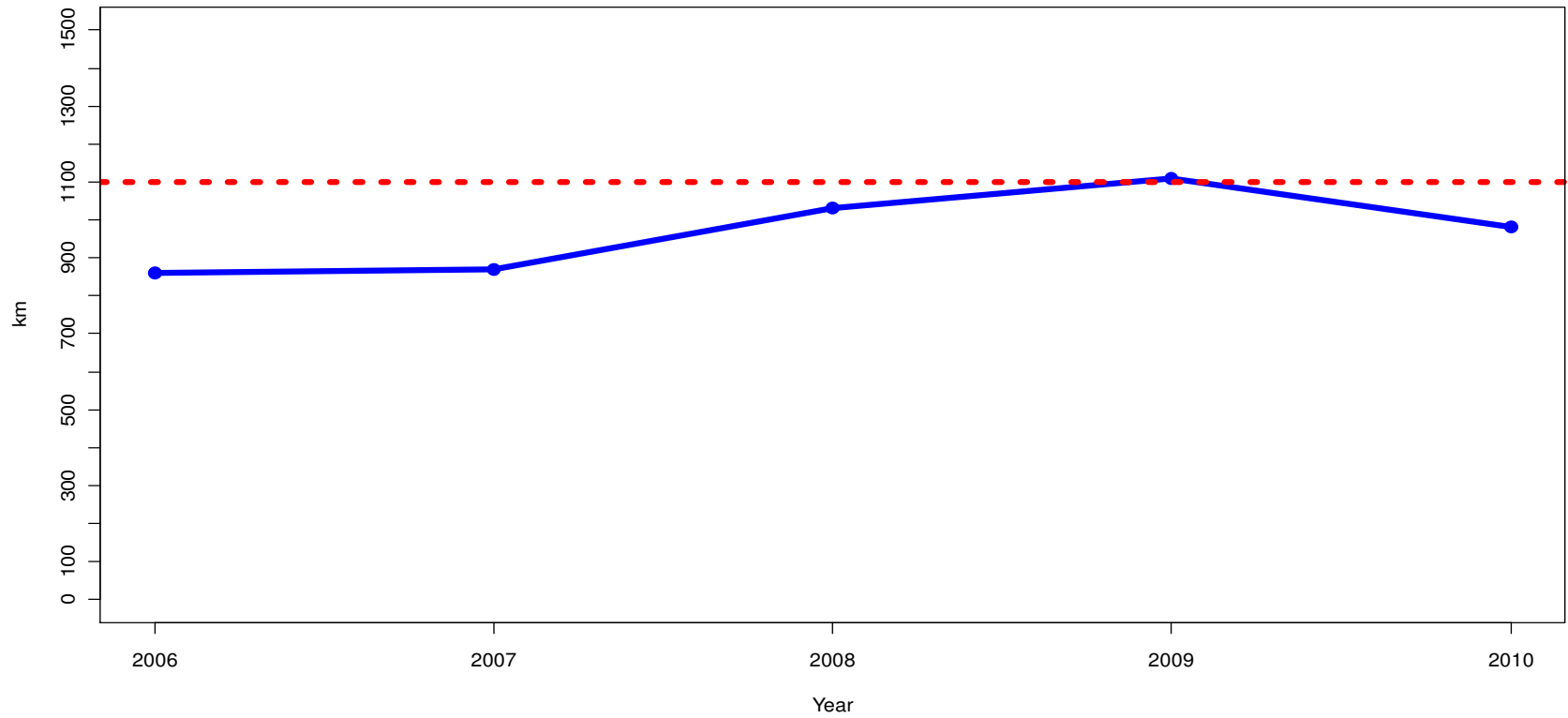
Note:  Agreed Benchmark: 400,000,000

Figure 6 TRL: Average Freight Haul




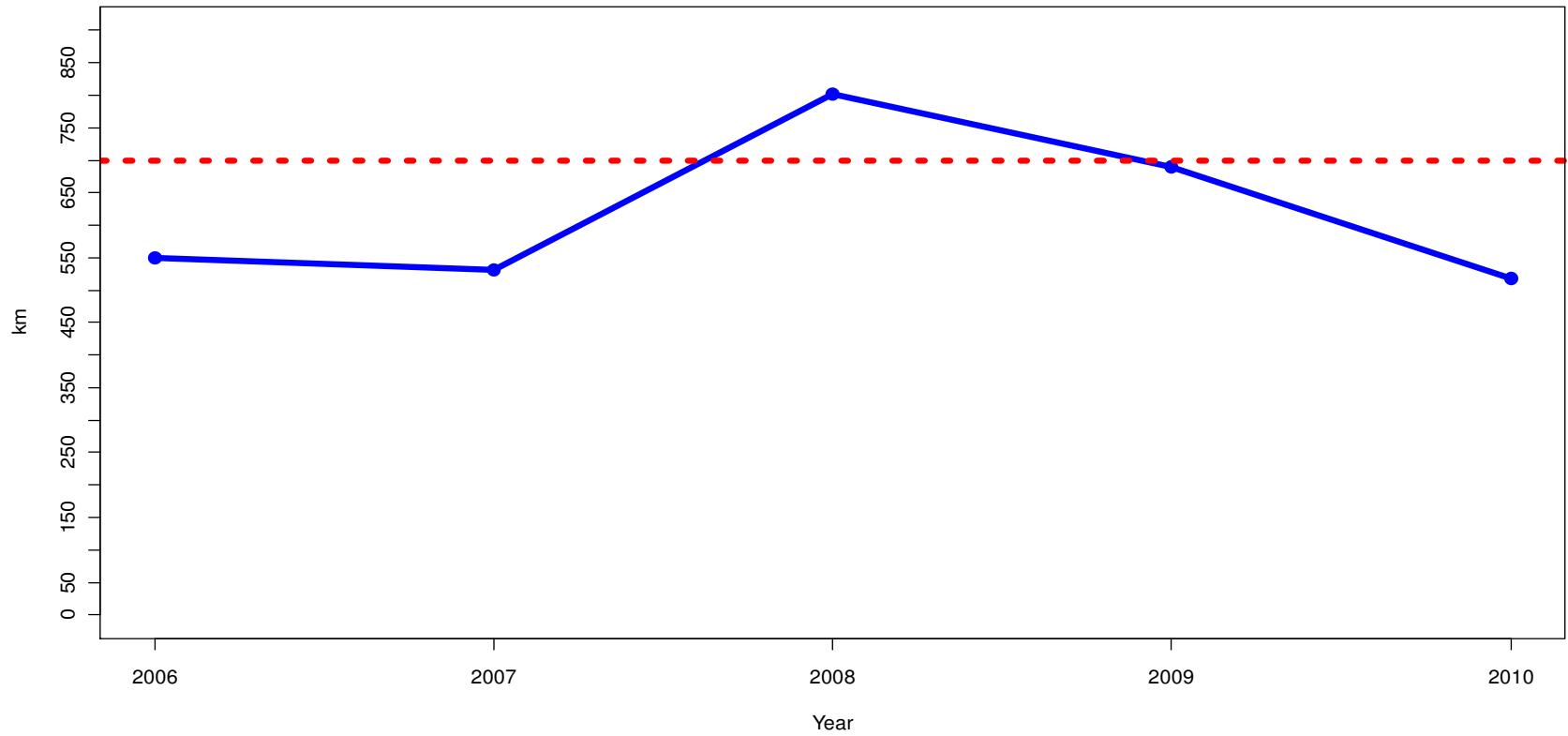
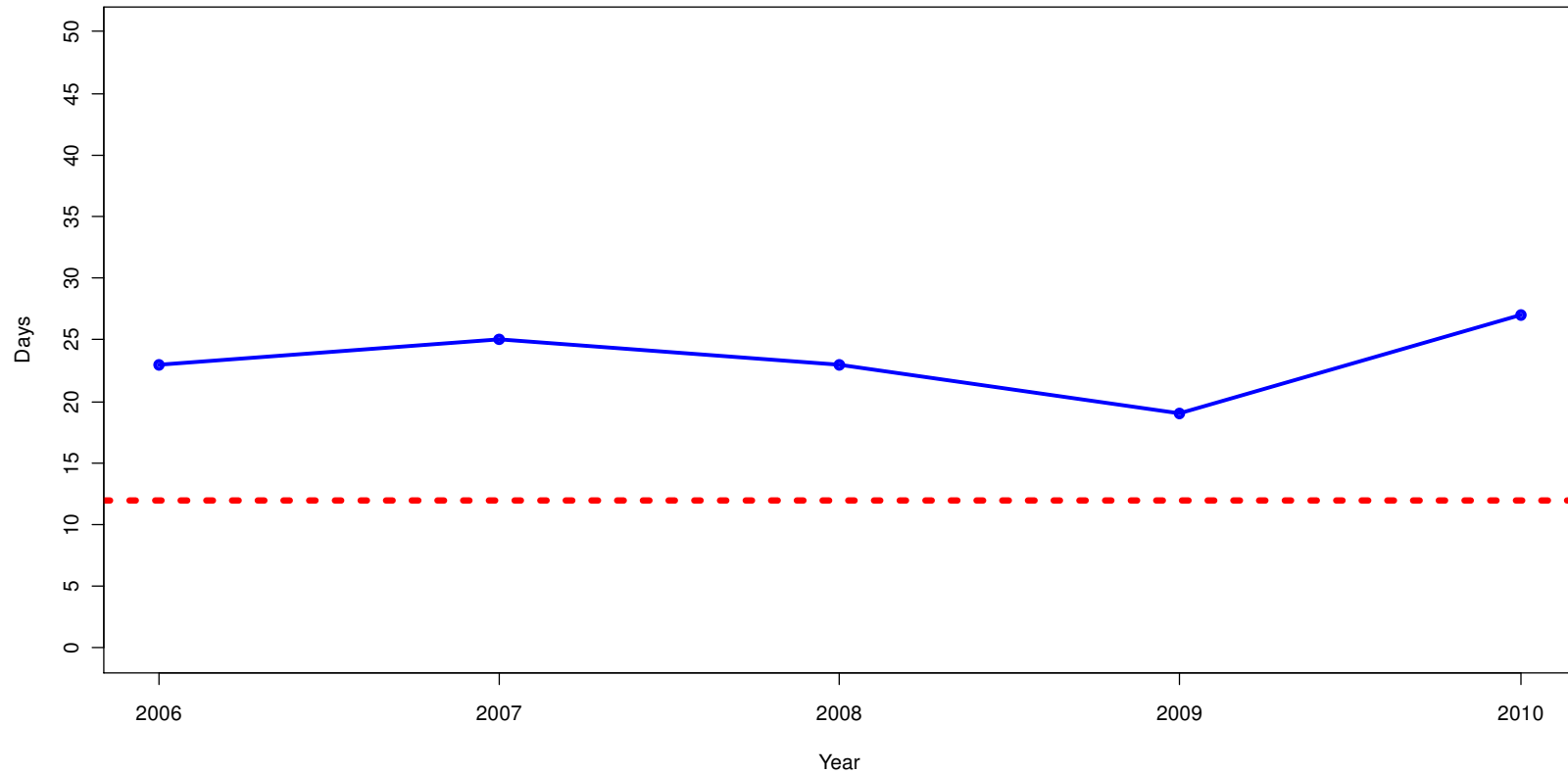
Note:  Agreed Benchmark: 1,100 Km

Figure 7 TRL: Average Lead



Note:  Agreed Benchmark: 700 Km

Figure 8 TRL: Wagon Turn Round Time




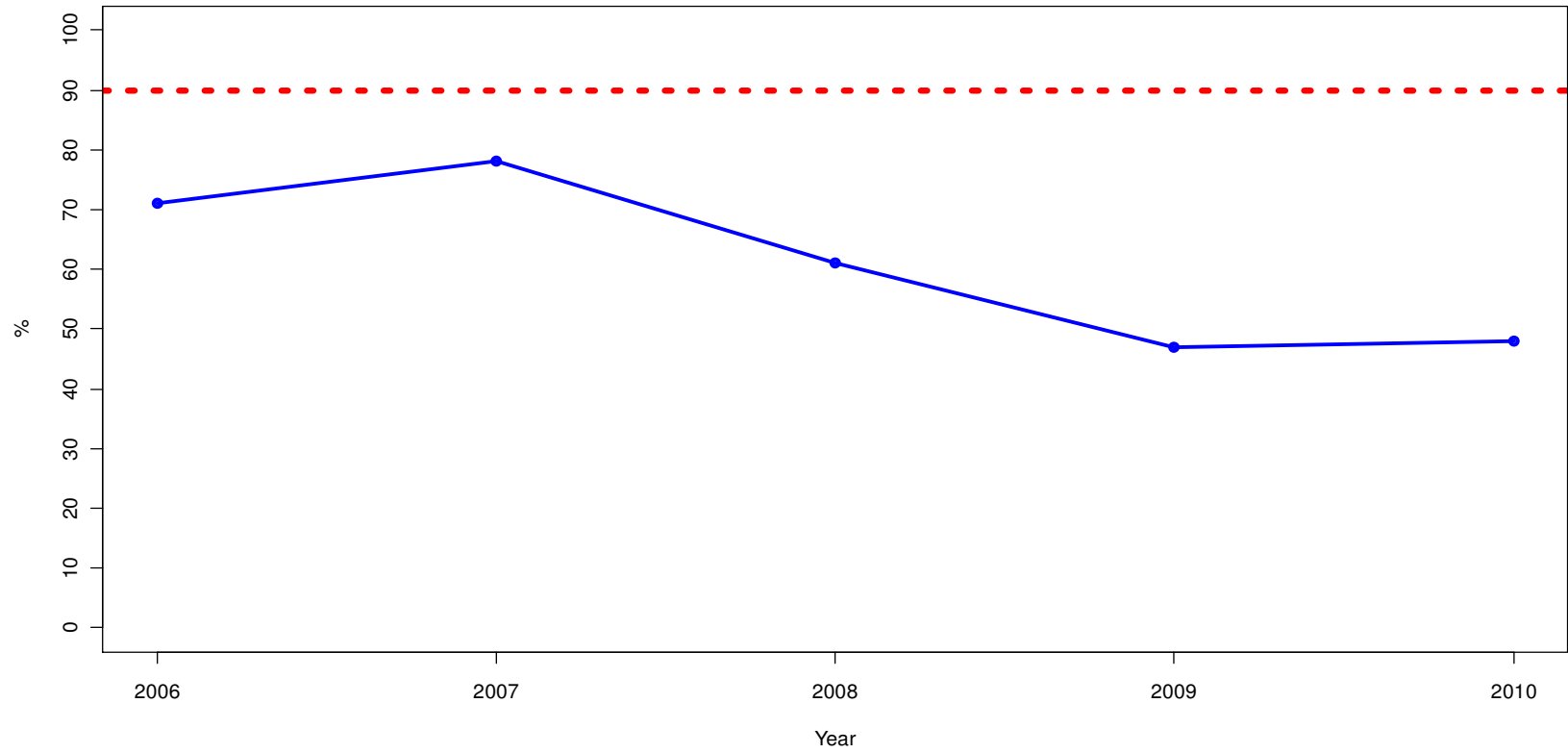
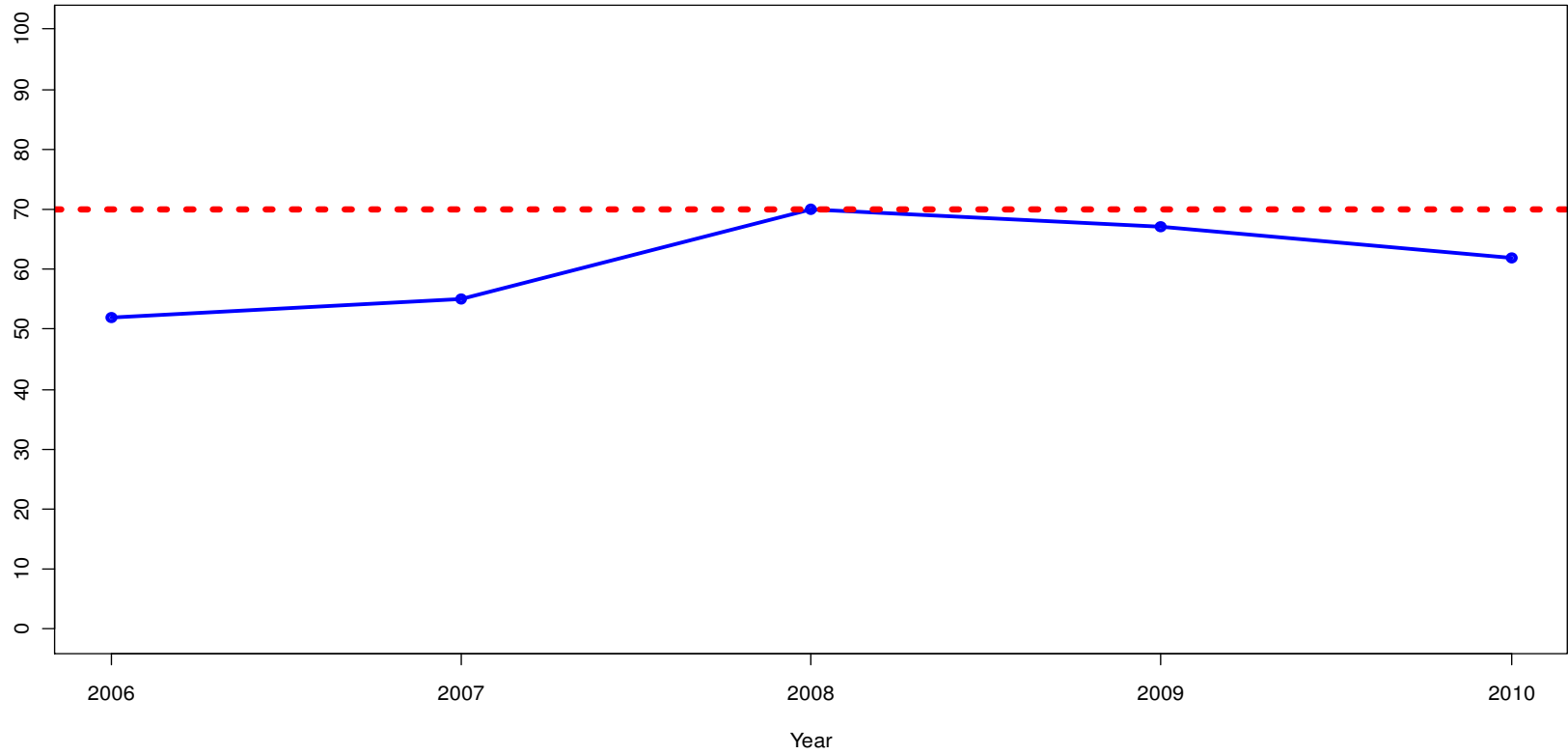
Note:  Agreed Benchmark: 12 days

Figure 9 TRL: Wagon Availability



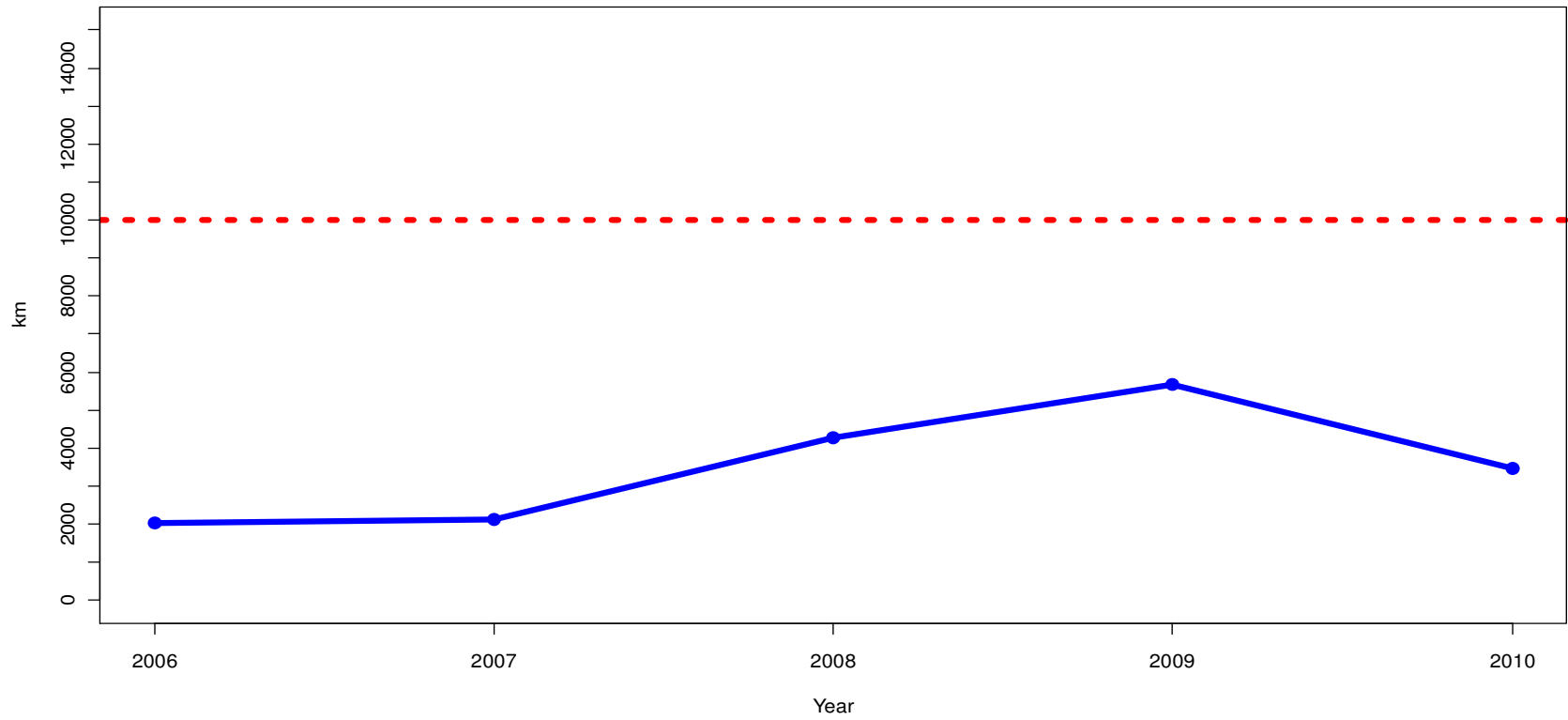
Note:  Agreed Benchmark: 90%

Figure 10 TRL: Loco Availability



Note:  Agreed Benchmark: 70 %

Figure 11 TRL: Loco Reliability




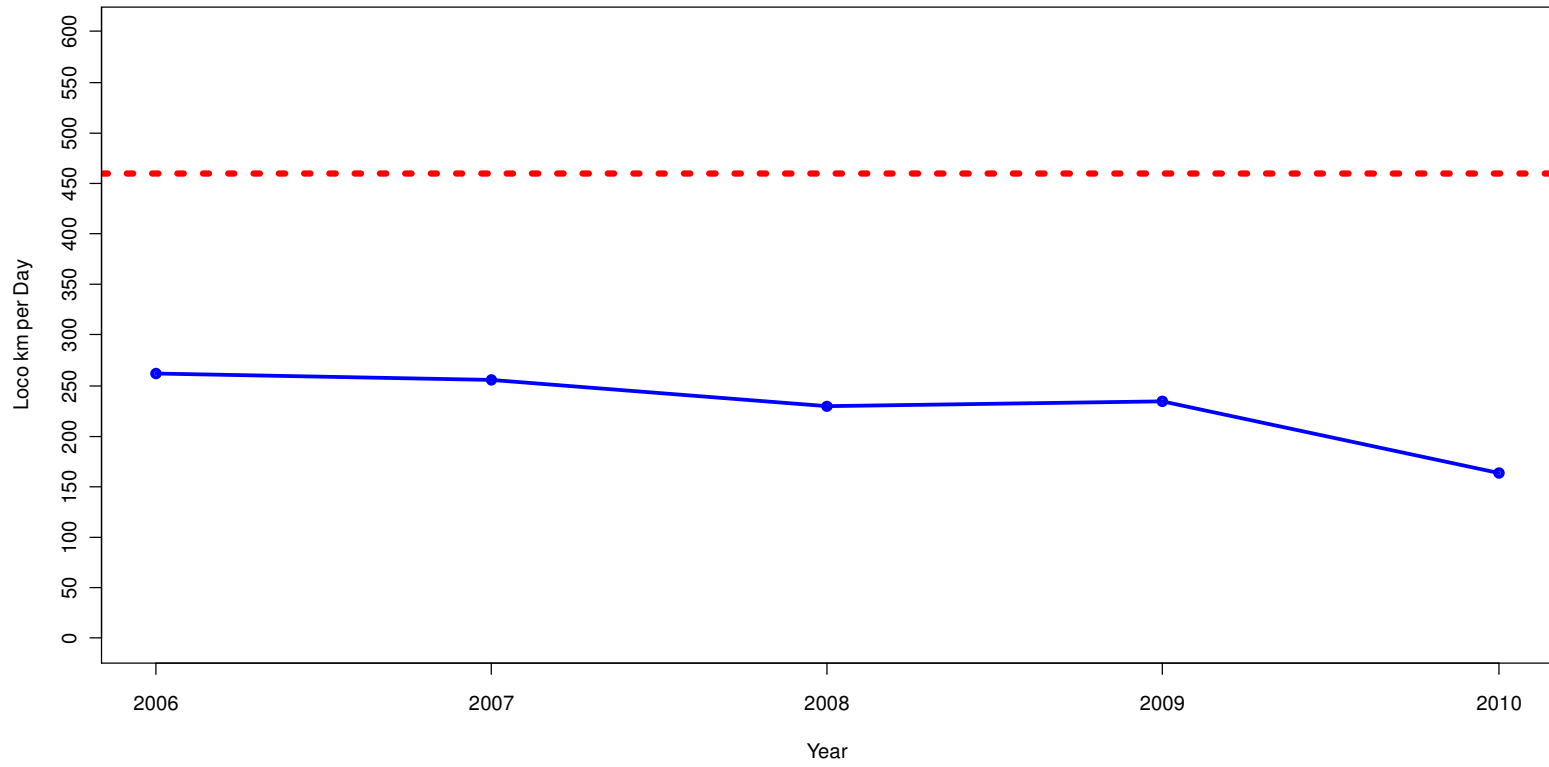
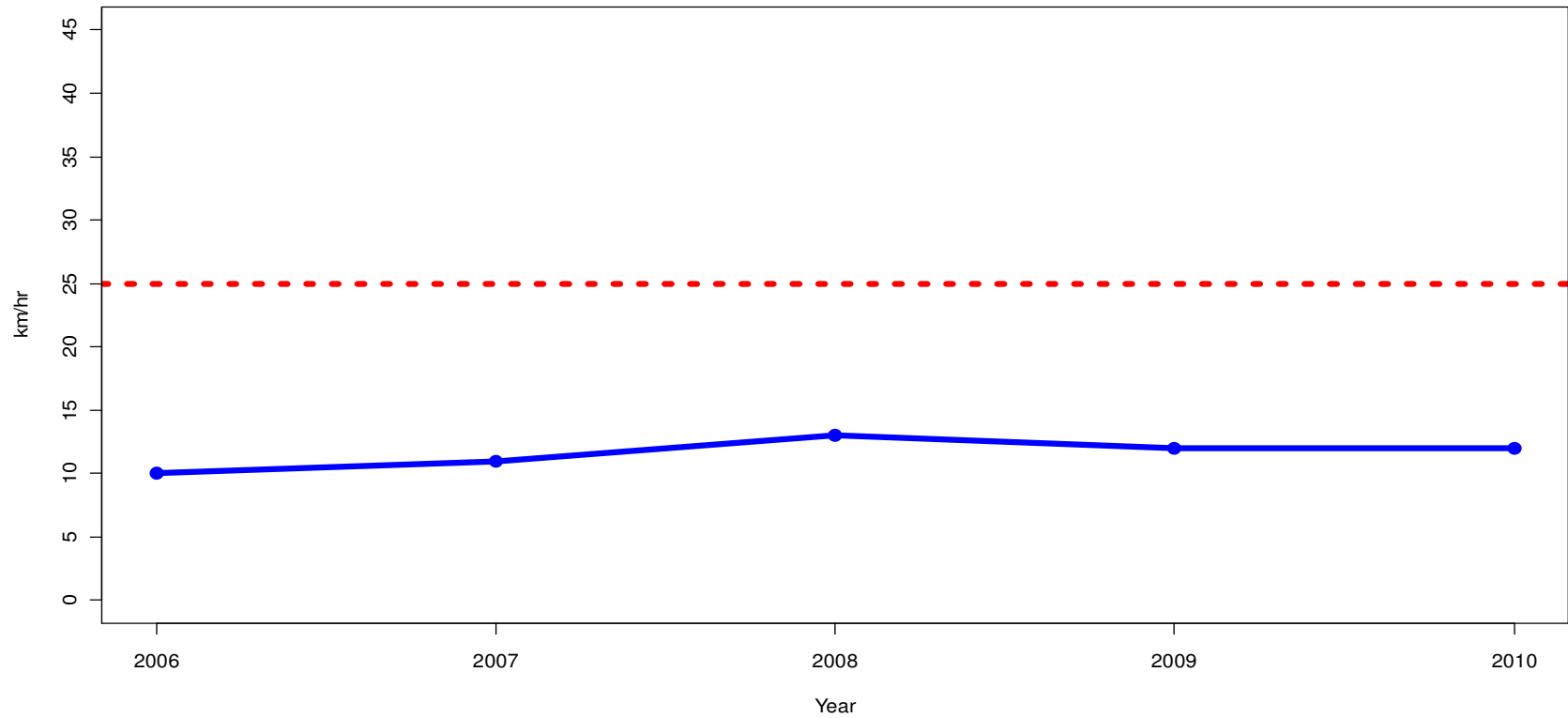
Note:  Agreed Benchmark: 10,000 Km

Figure 12 TRL: Loco Utilization



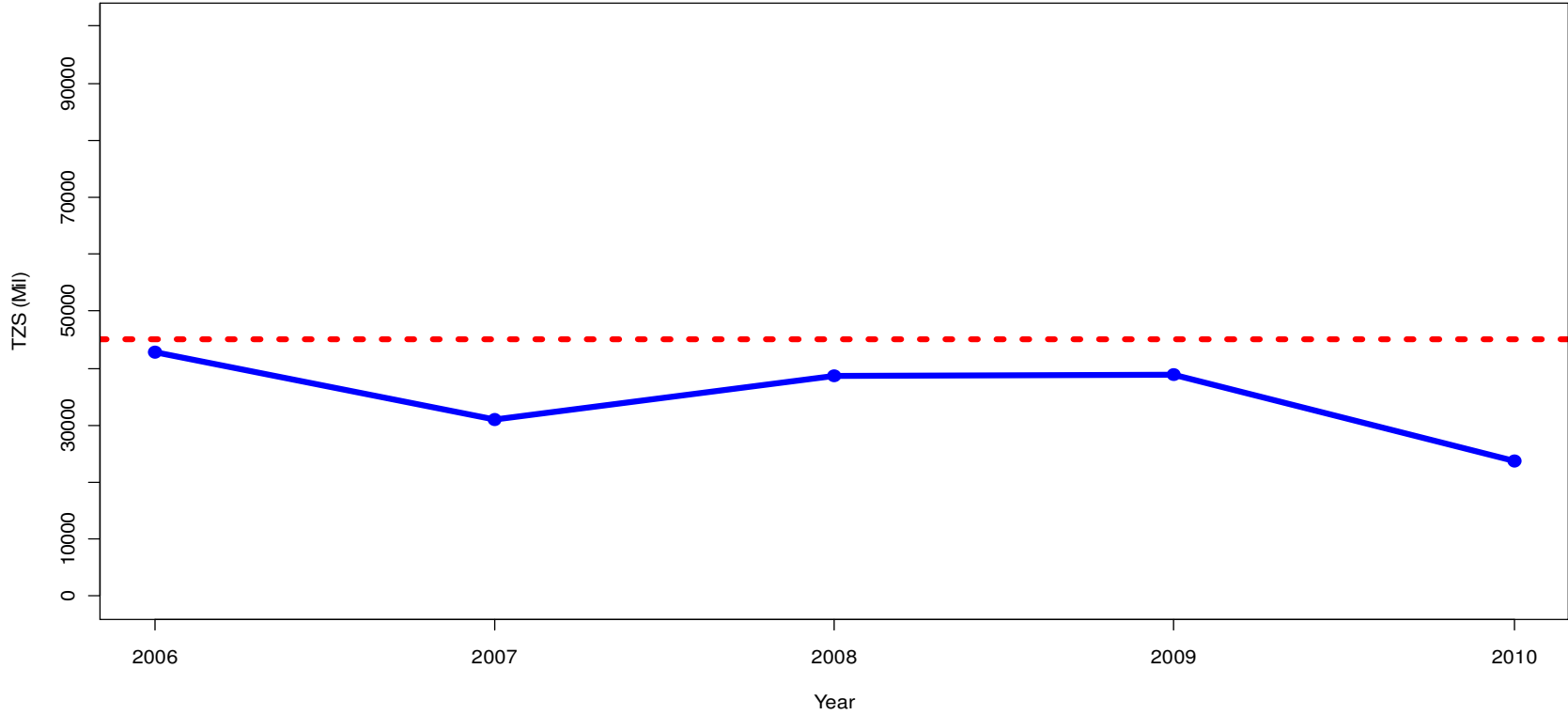
Note:  Agreed Benchmark: 460

Figure 13 TRL: Freight Train Speed



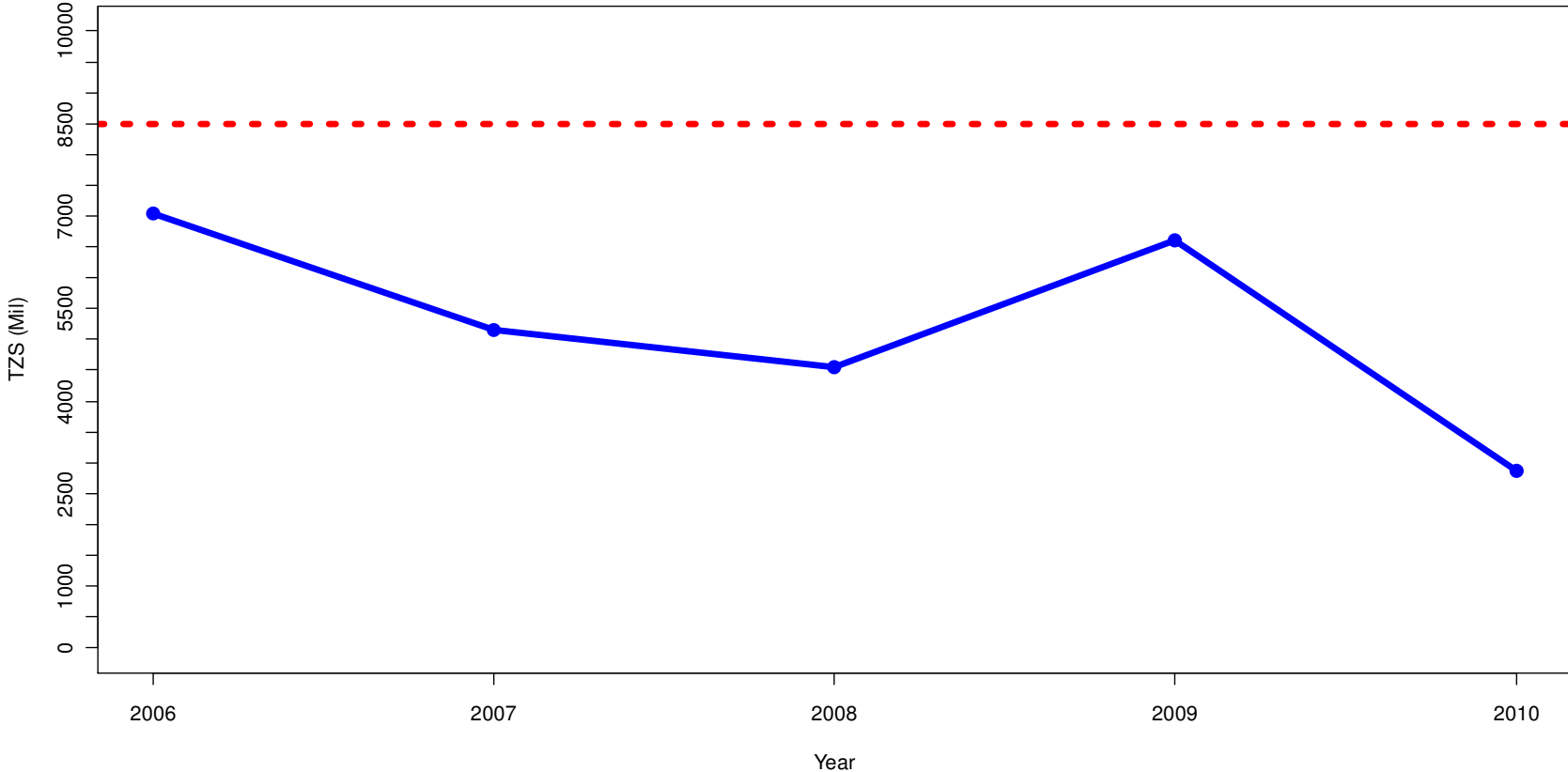
Note:  Agreed Benchmark: 25 Km/hr

Figure 14 TRL: Freight Revenue per Year



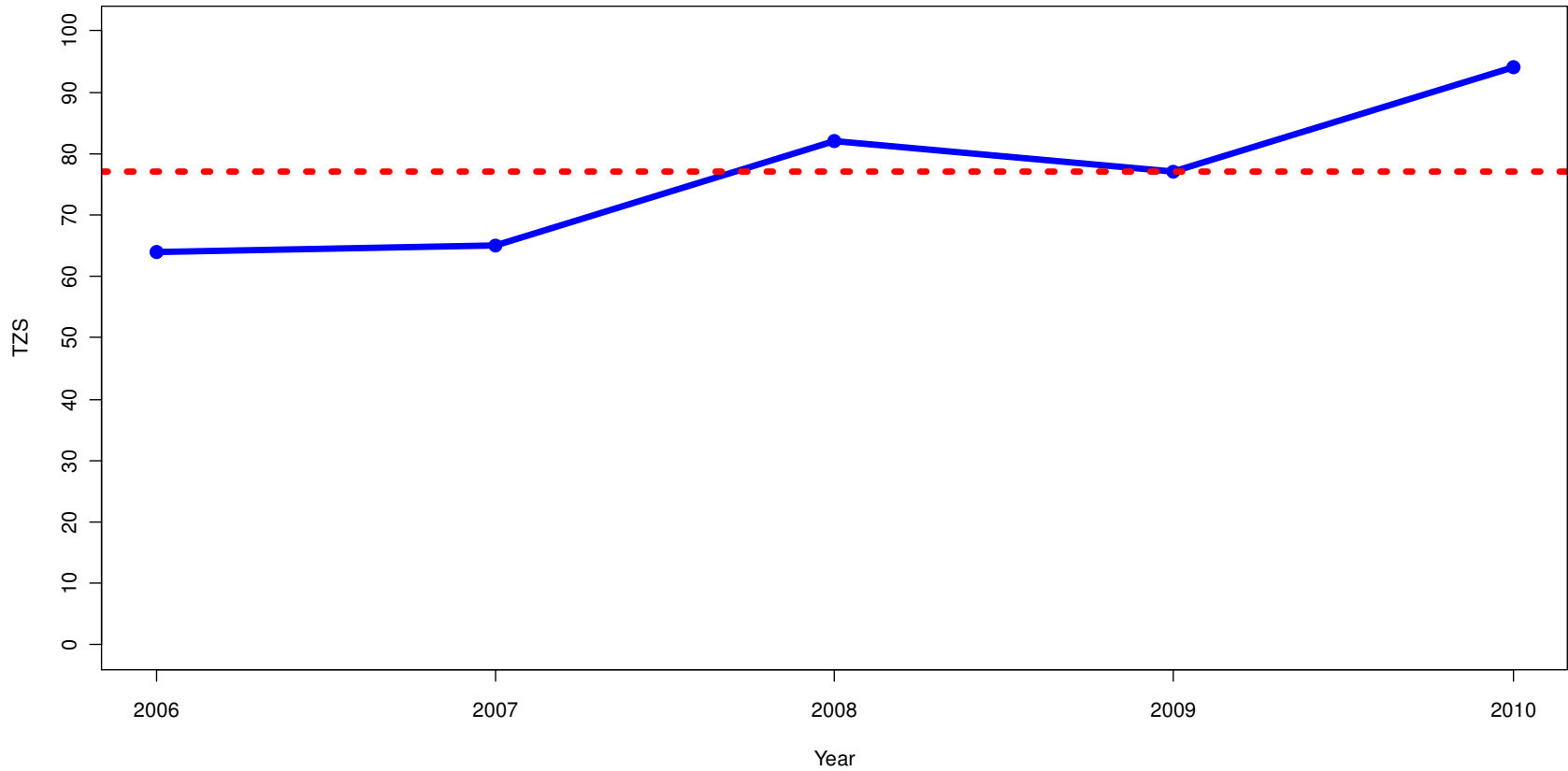
Note:  Agreed Benchmark: 45,000,000,000

Figure 15 TRL: Passenger Revenue per Year



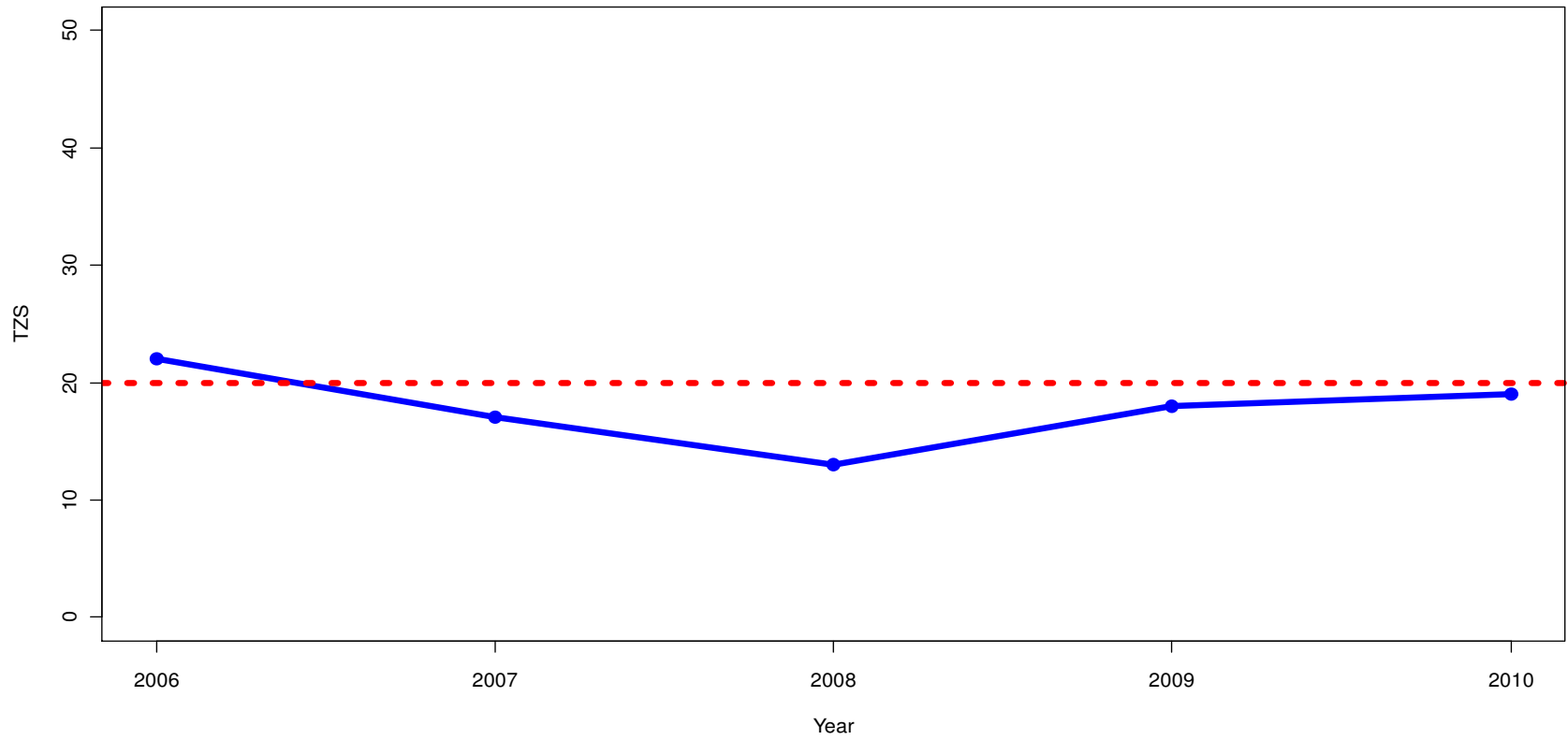
Note:  Agreed Benchmark: 8,500,000,000

Figure 16 TRL: Revenue per Ton-km



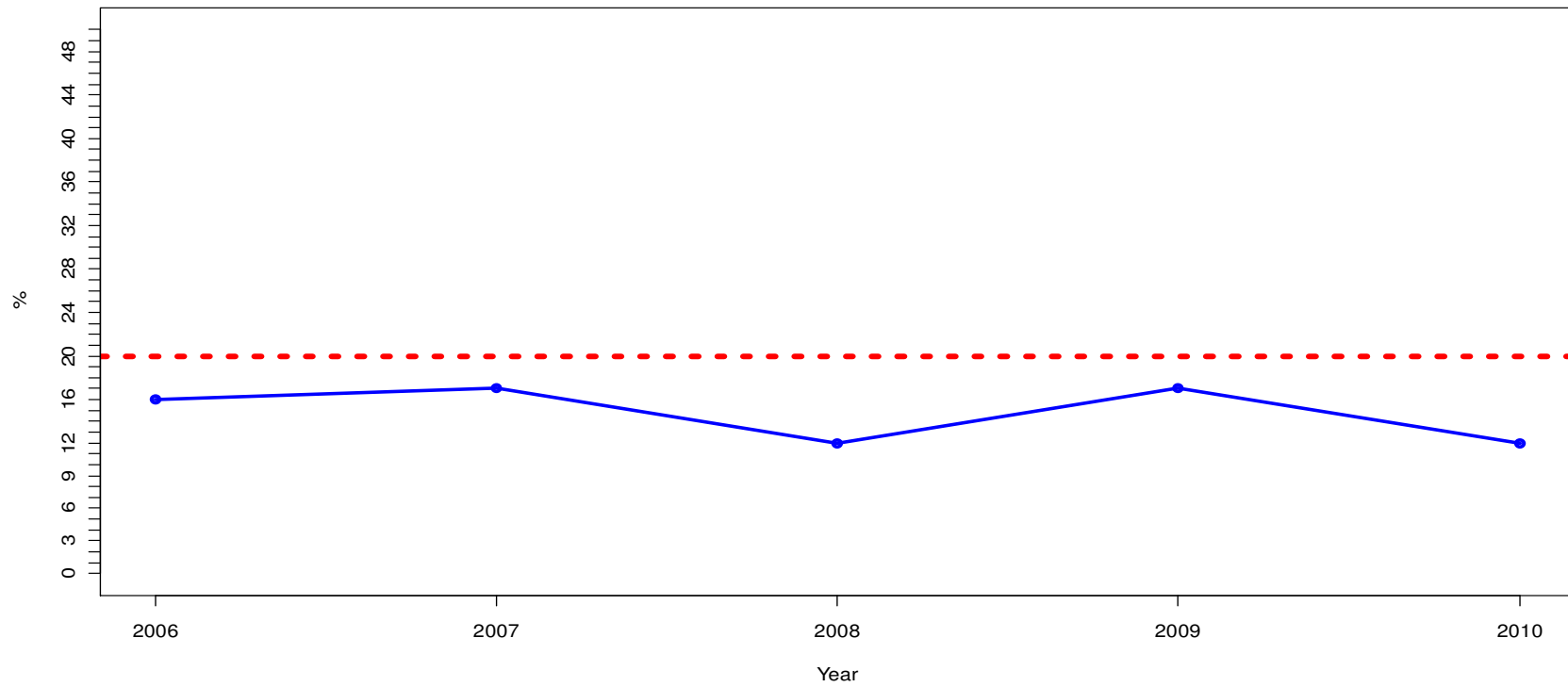
Note:  Agreed Benchmark: TZS 77

Figure 17 TRL: Revenue per Pax-km



Note:  Agreed Benchmark: TZS 20

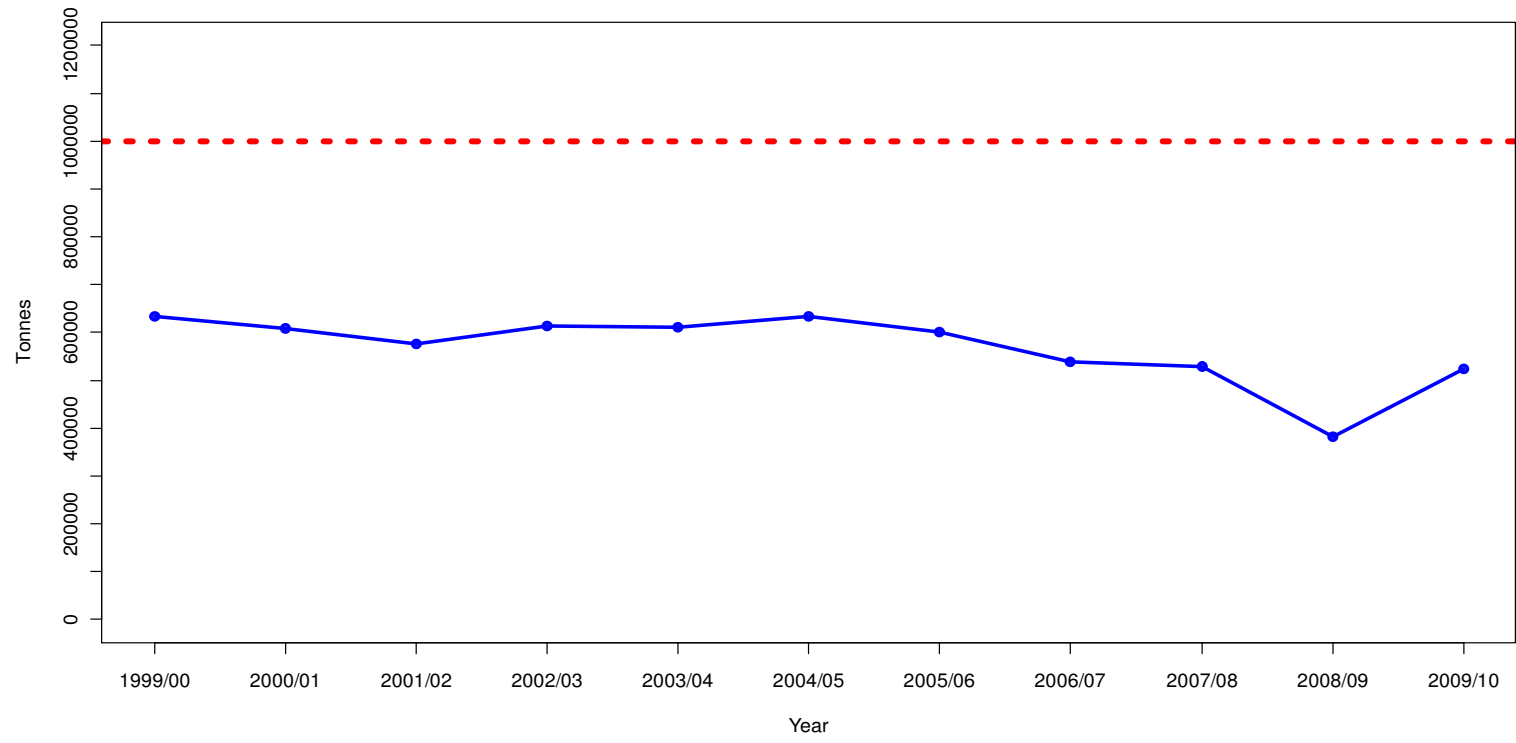
Figure 18 TRL: Passenger to Freight Revenue Ratio



Note:  Agreed Benchmark: 20%

5.3.2: Review of Past Performance - TAZARA

Figure 19 TAZARA: Tonnes Hauled per Year




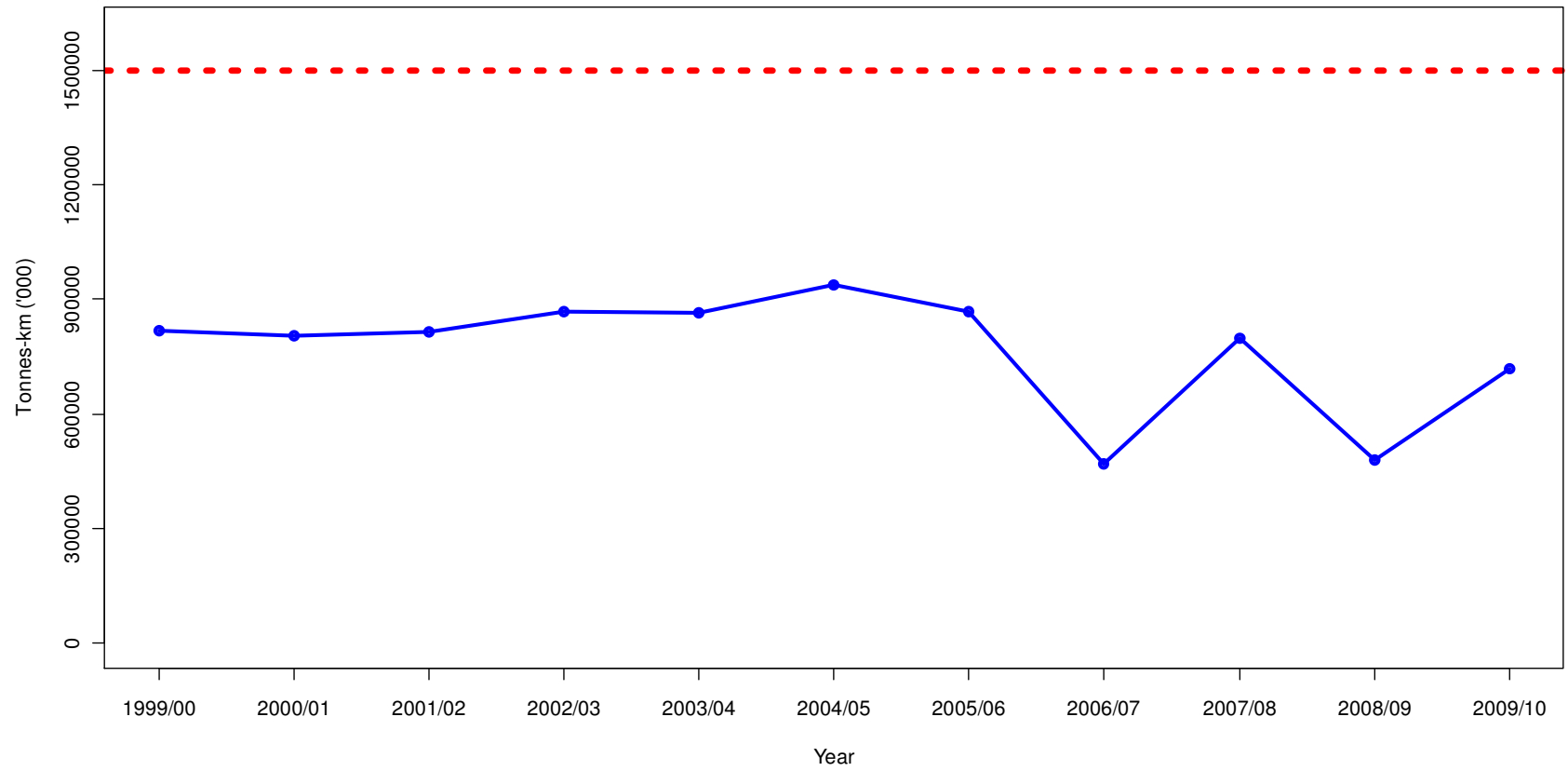
Note:  Agreed Benchmark: 1,000,000

Figure 20 TAZARA: Ton-km per Year




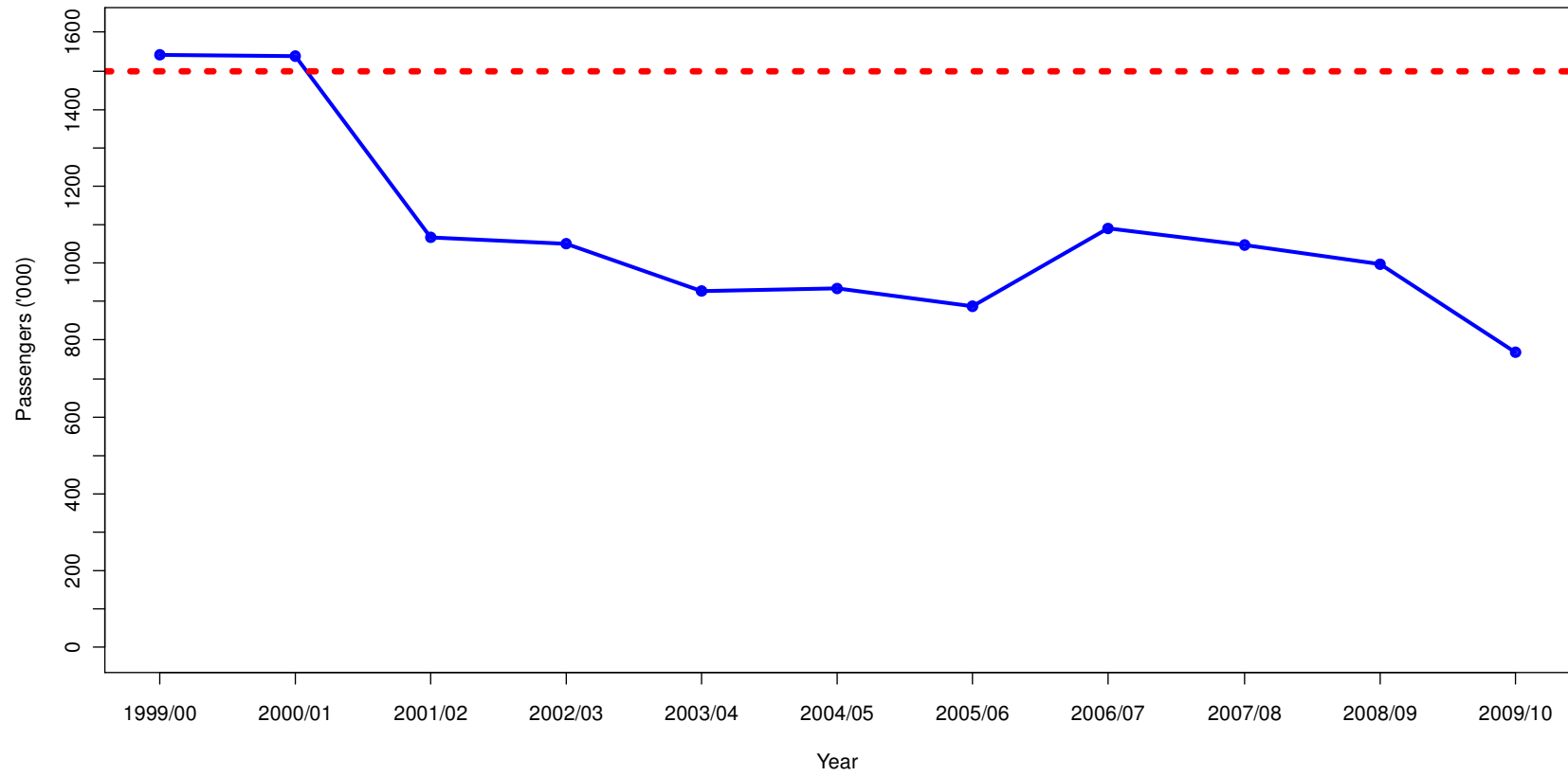
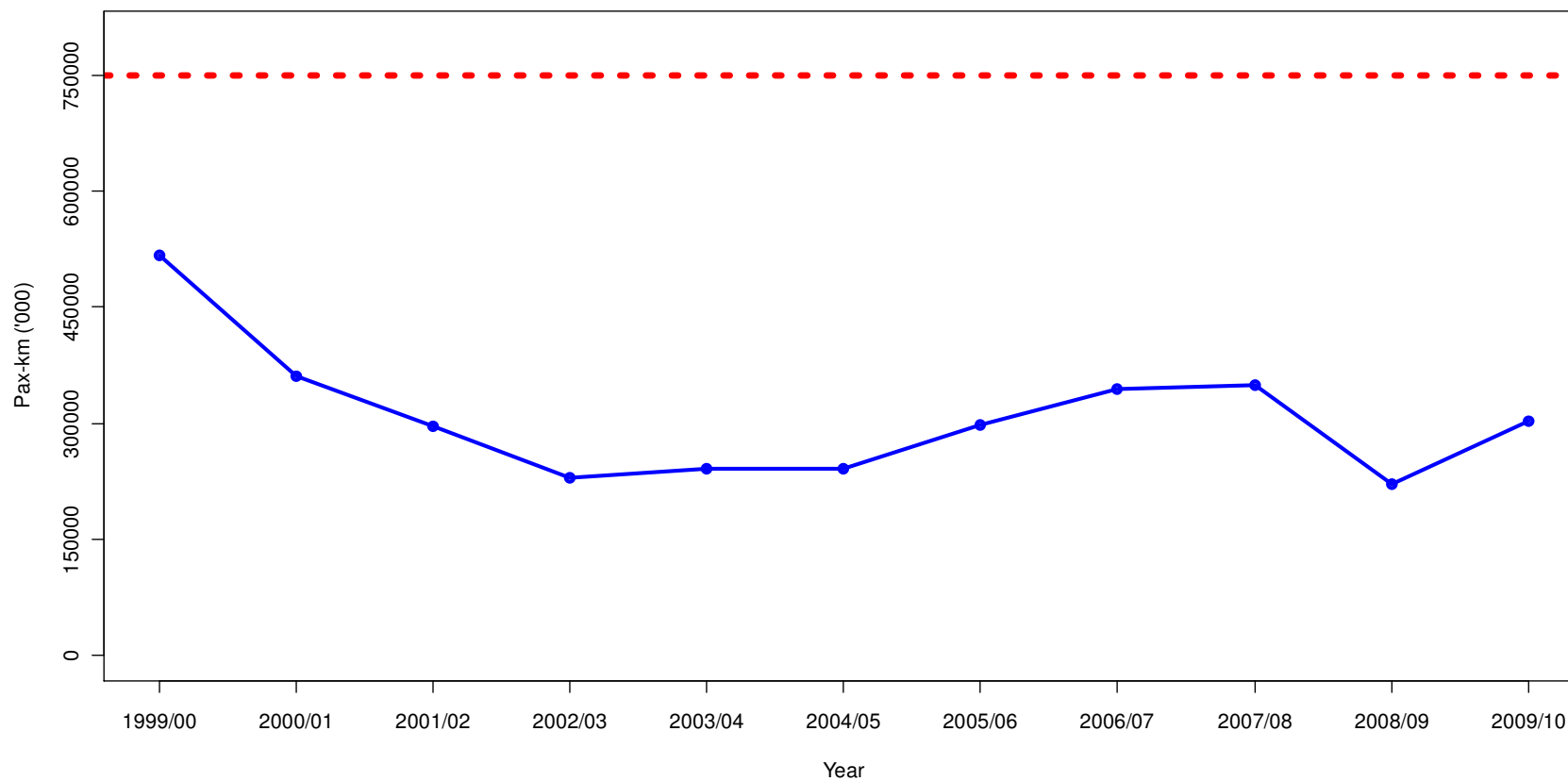
Note:  Agreed Benchmark: 1,500,000,000

Figure 21 TAZARA: Passengers Loaded per Year



Note:  Agreed Benchmark: 1,500,000

Figure 22 TAZARA: Passenger-km per Year




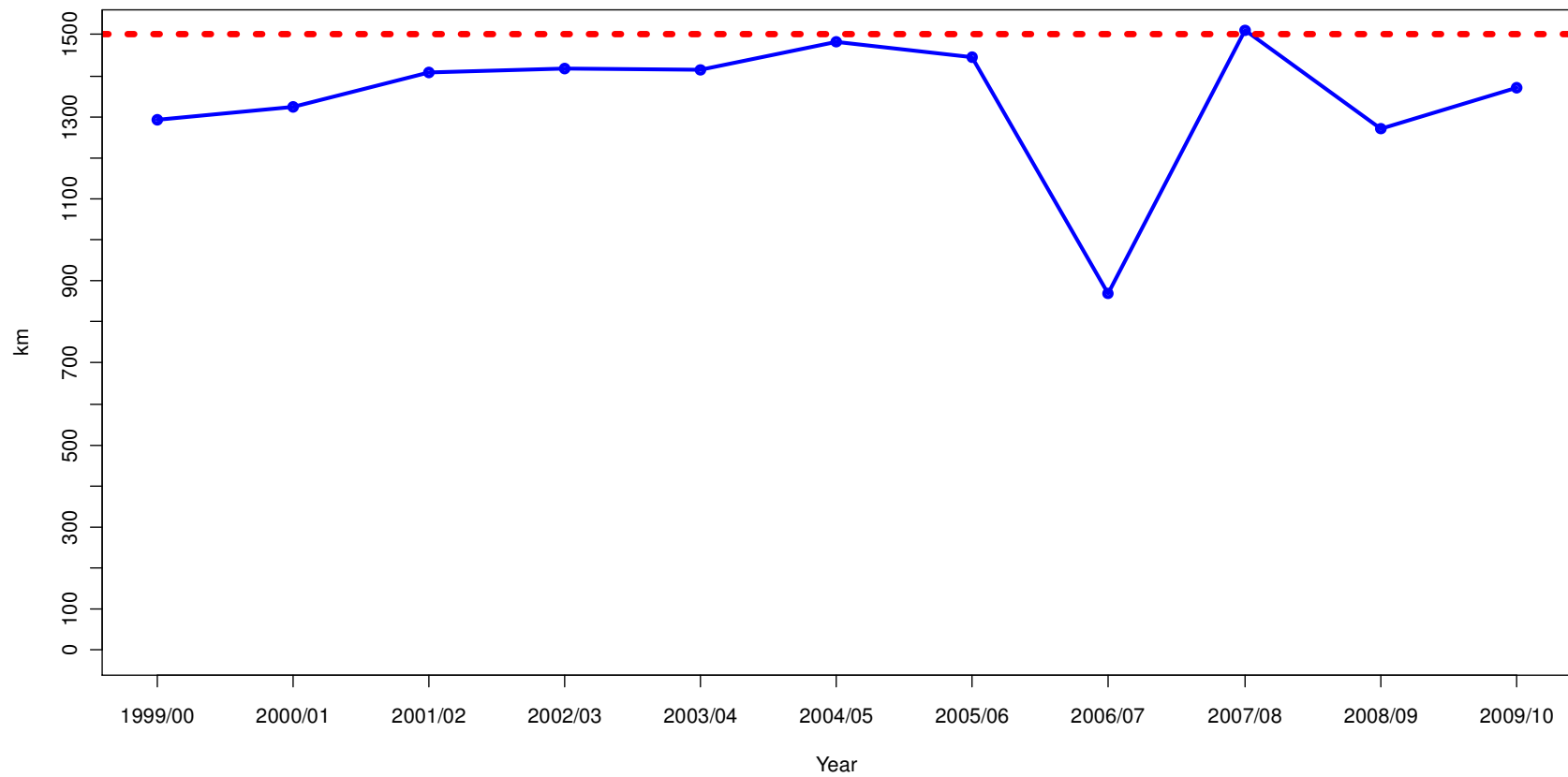
Note:  Agreed Benchmark: 750,000,000

Figure 23 TAZARA: Average Freight Haul




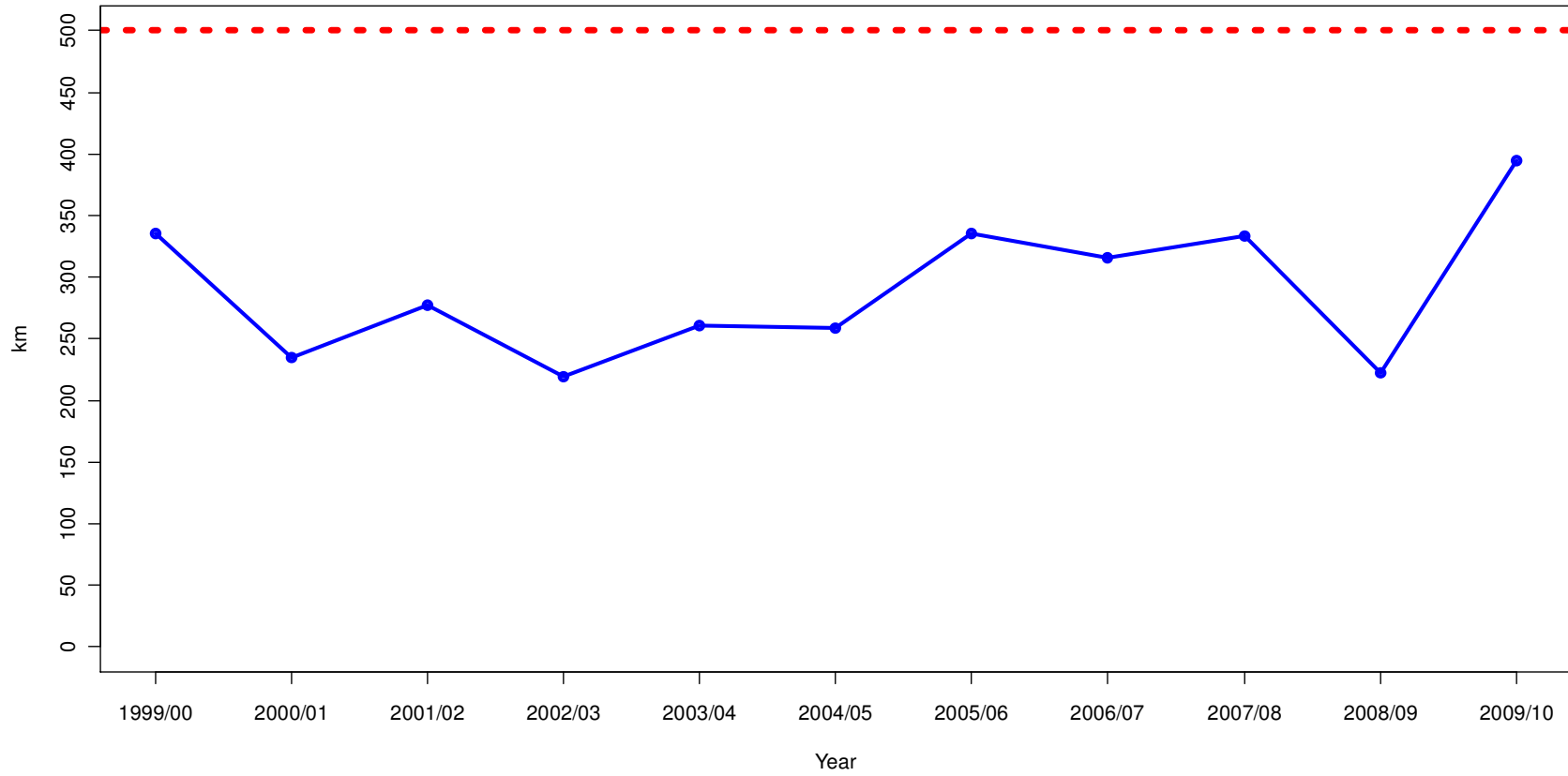
Note:  Agreed Benchmark: 1500 Km

Figure 24 TAZARA: Average Lead




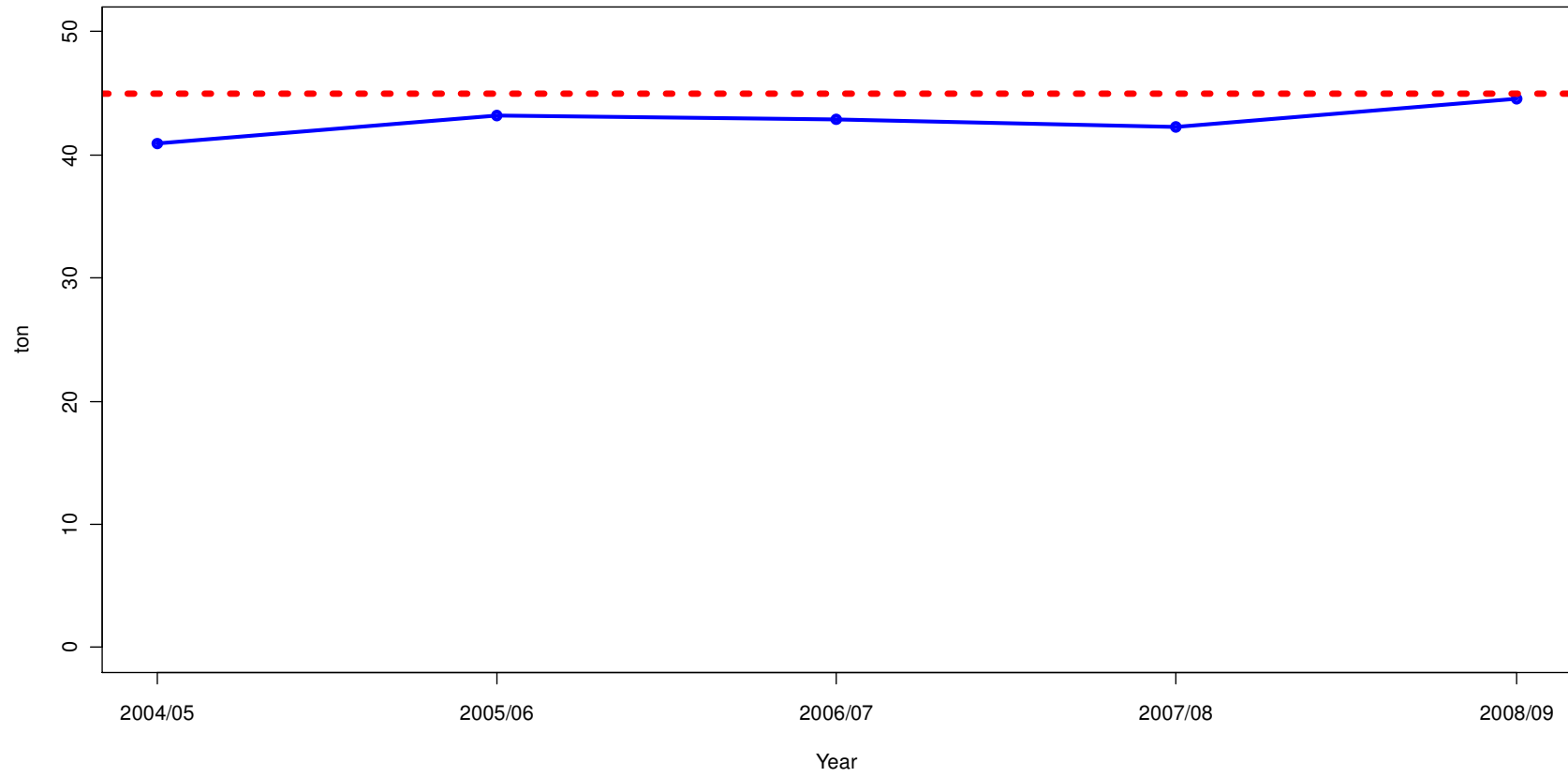
Note:  Agreed Benchmark: 500 Km

Figure 25 TAZARA: Average Load per Wagon




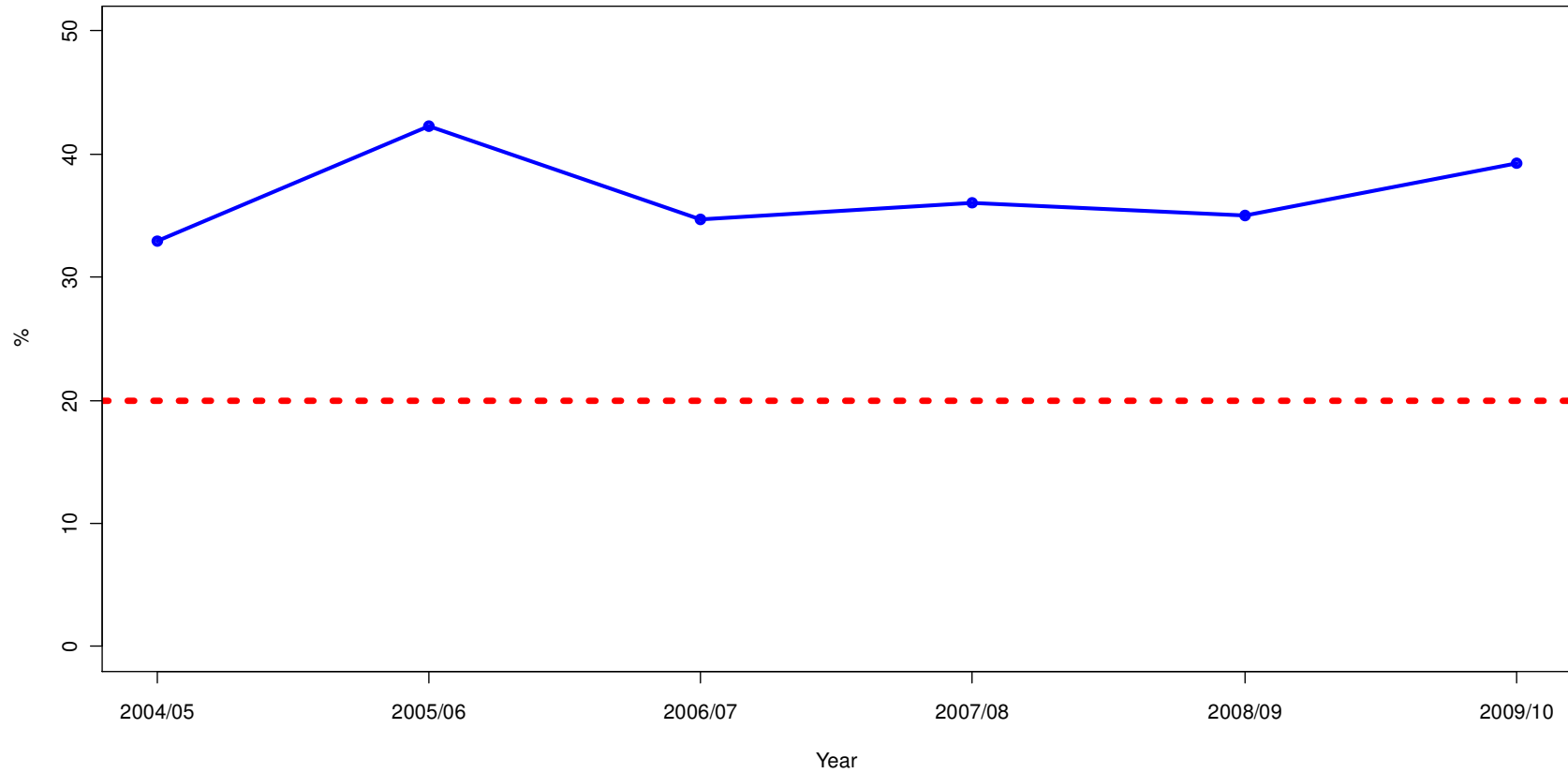
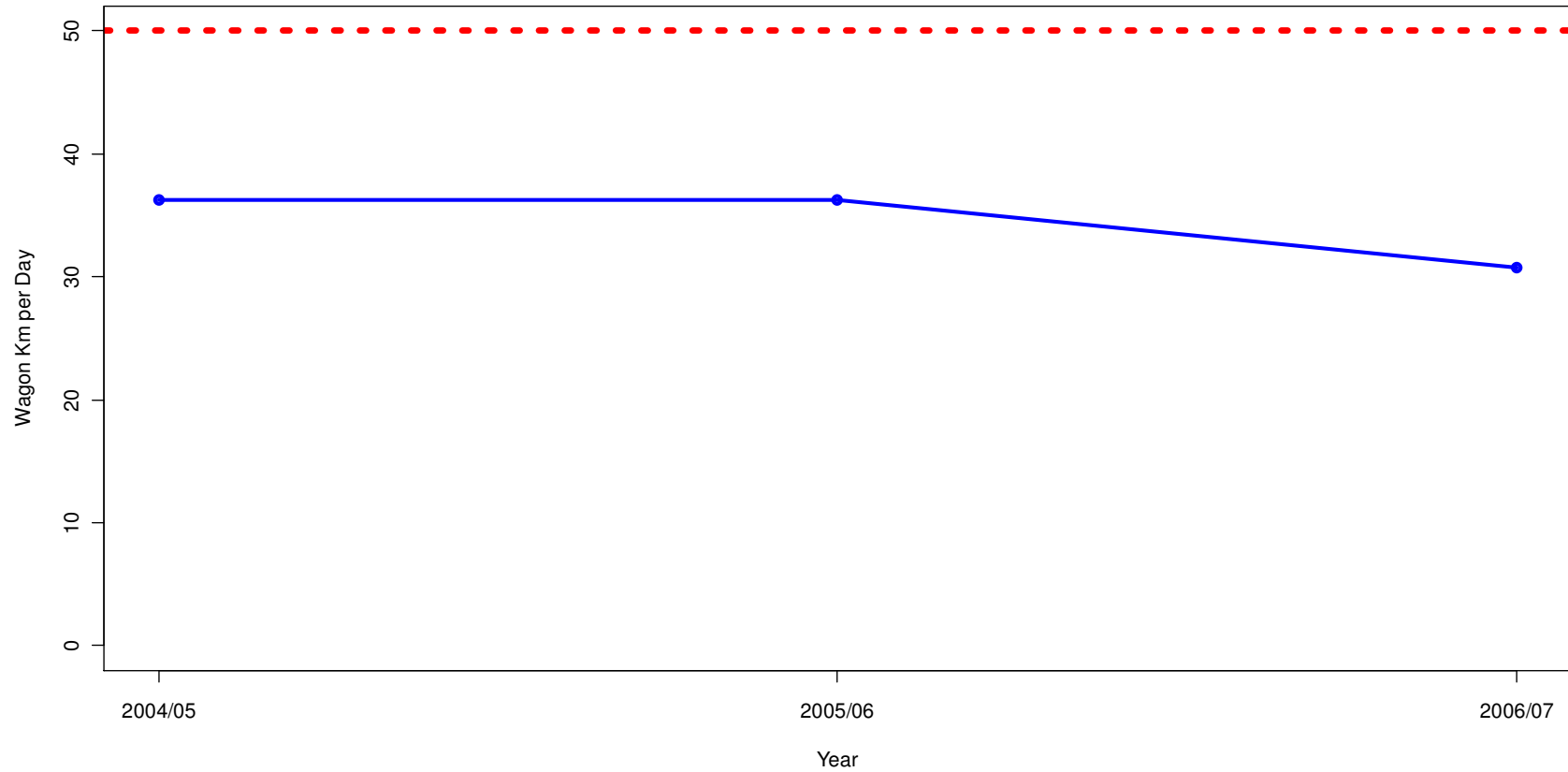
Note:  Agreed Benchmark: 45 Ton

Figure 26 TAZARA: Empty Return Ratio



Note:  Agreed Benchmark: 20 %

Figure 27 TAZARA: Wagon Utilisation




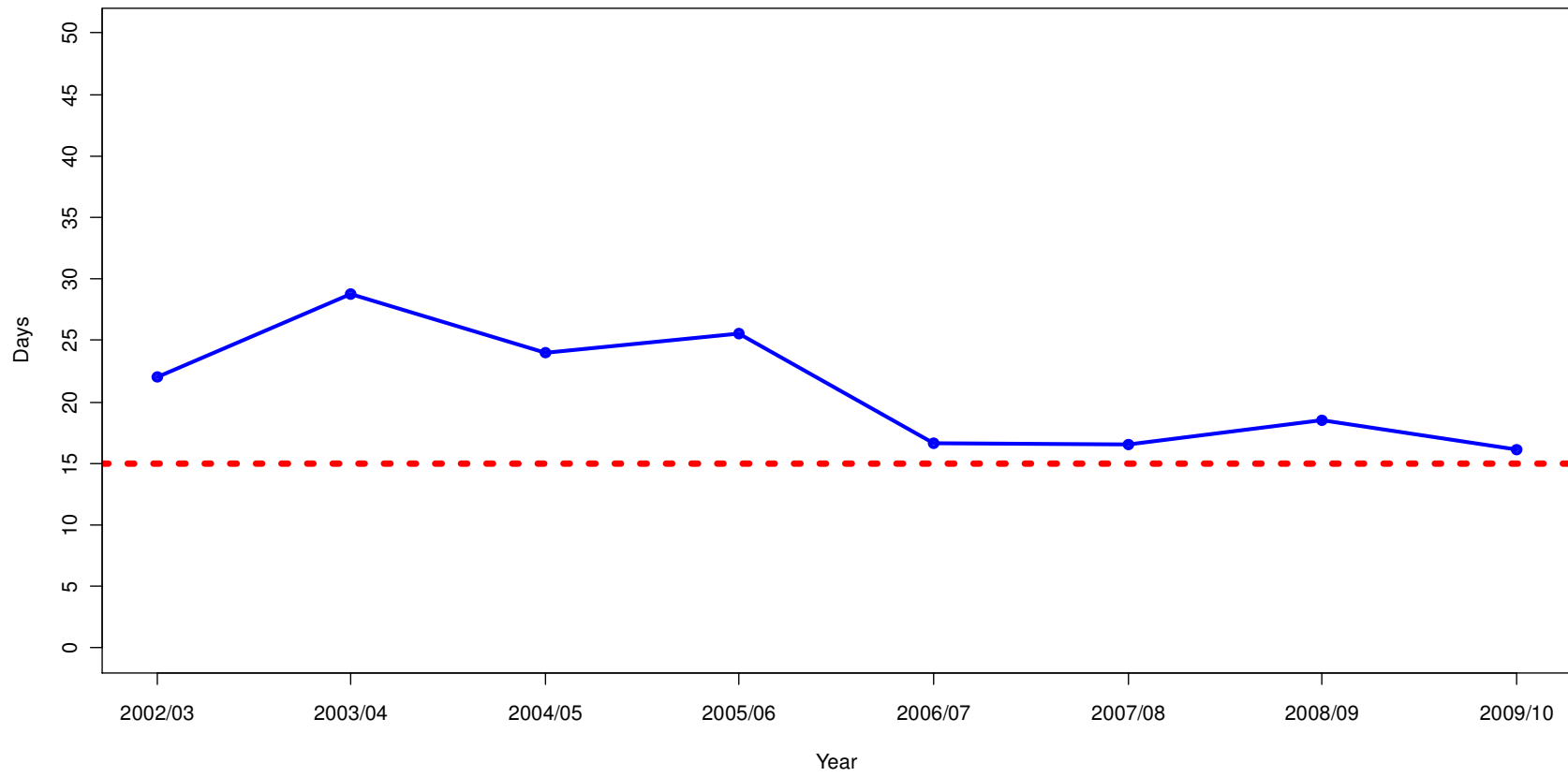
Note:  Agreed Benchmark: 50 Wagon-km/day

Figure 28 TAZARA: Wagon Turn Round Time




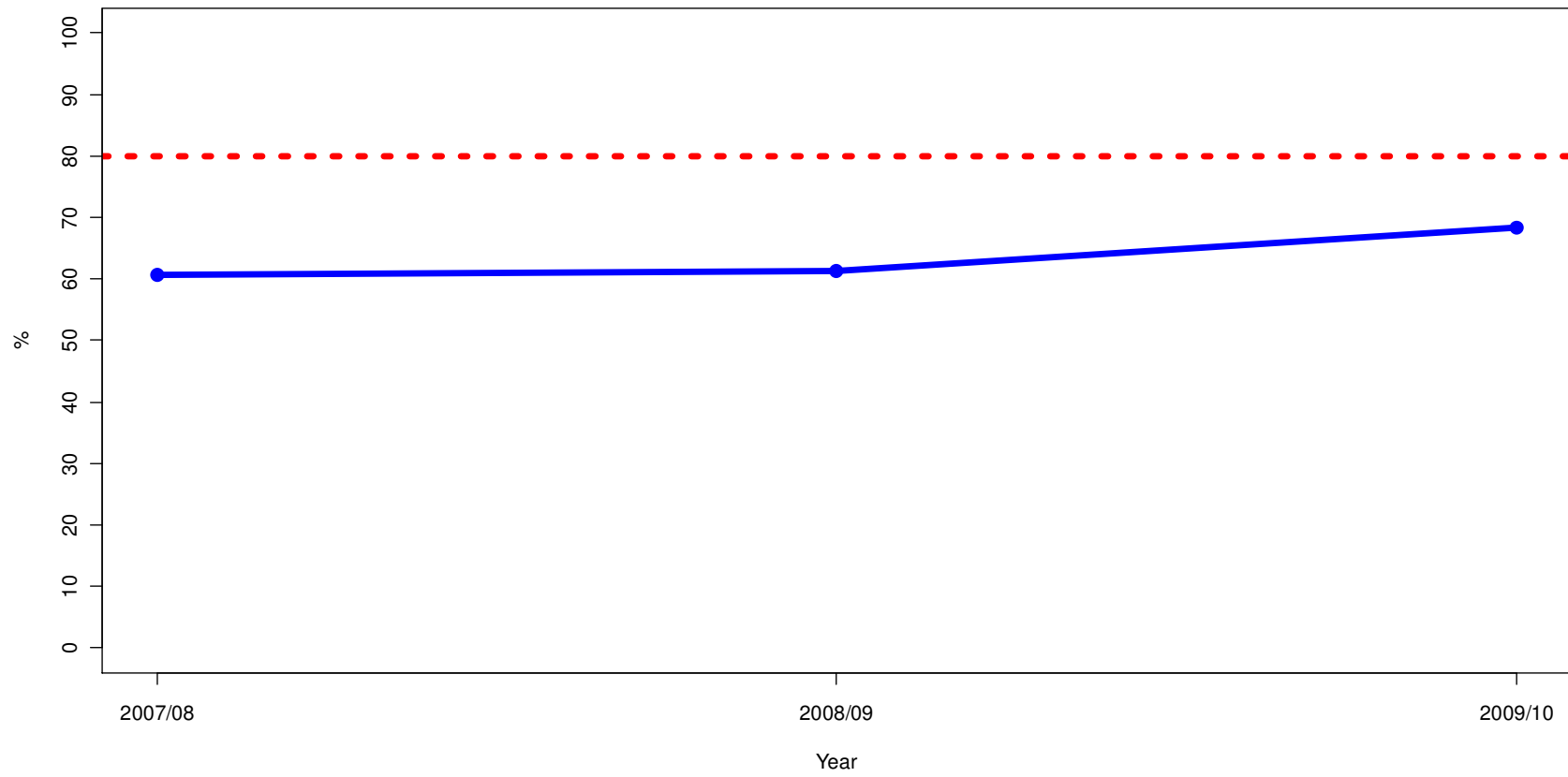
Note:  Agreed Benchmark: 15 days

Figure 29 TAZARA: Wagon Availability




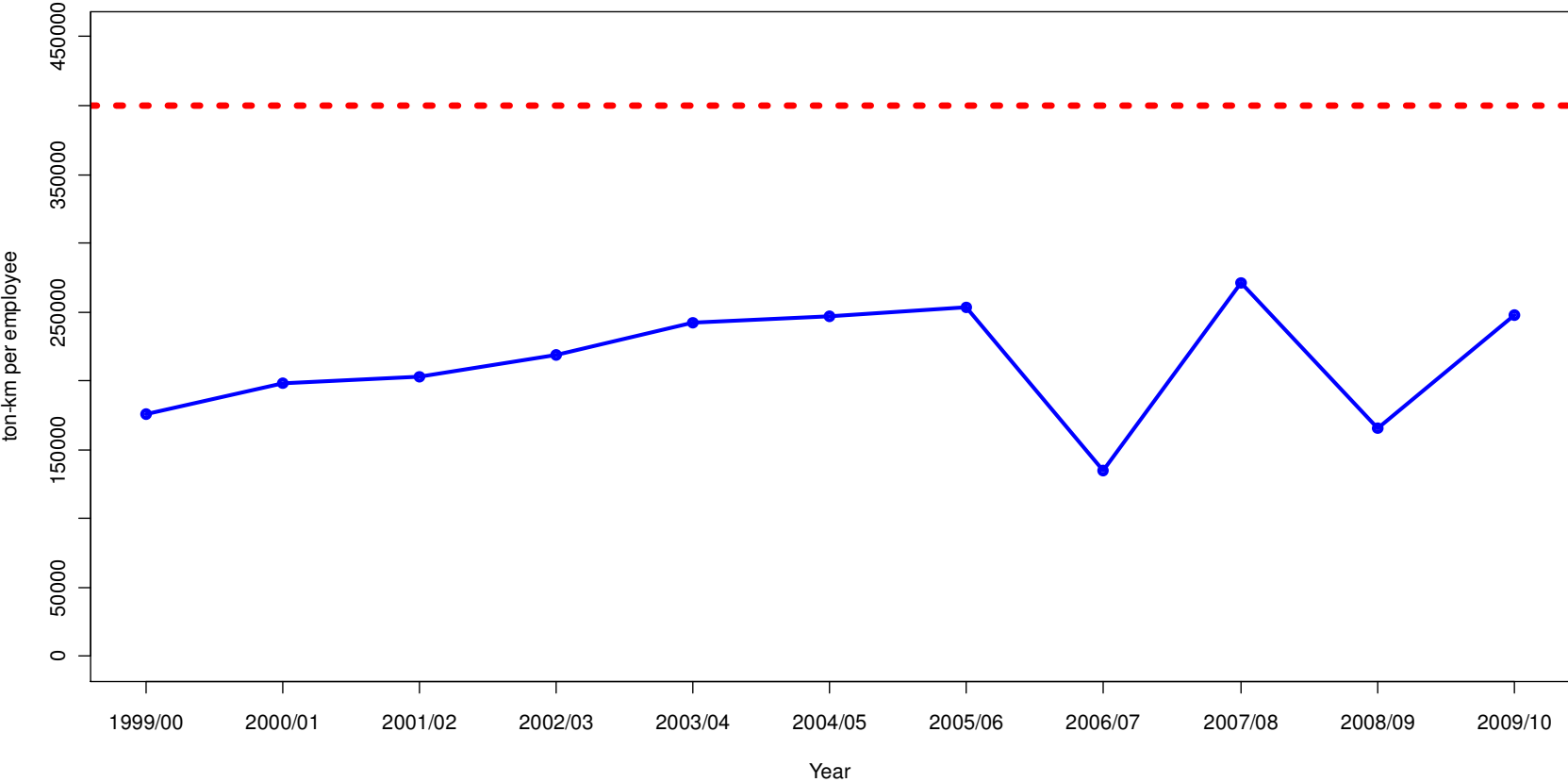
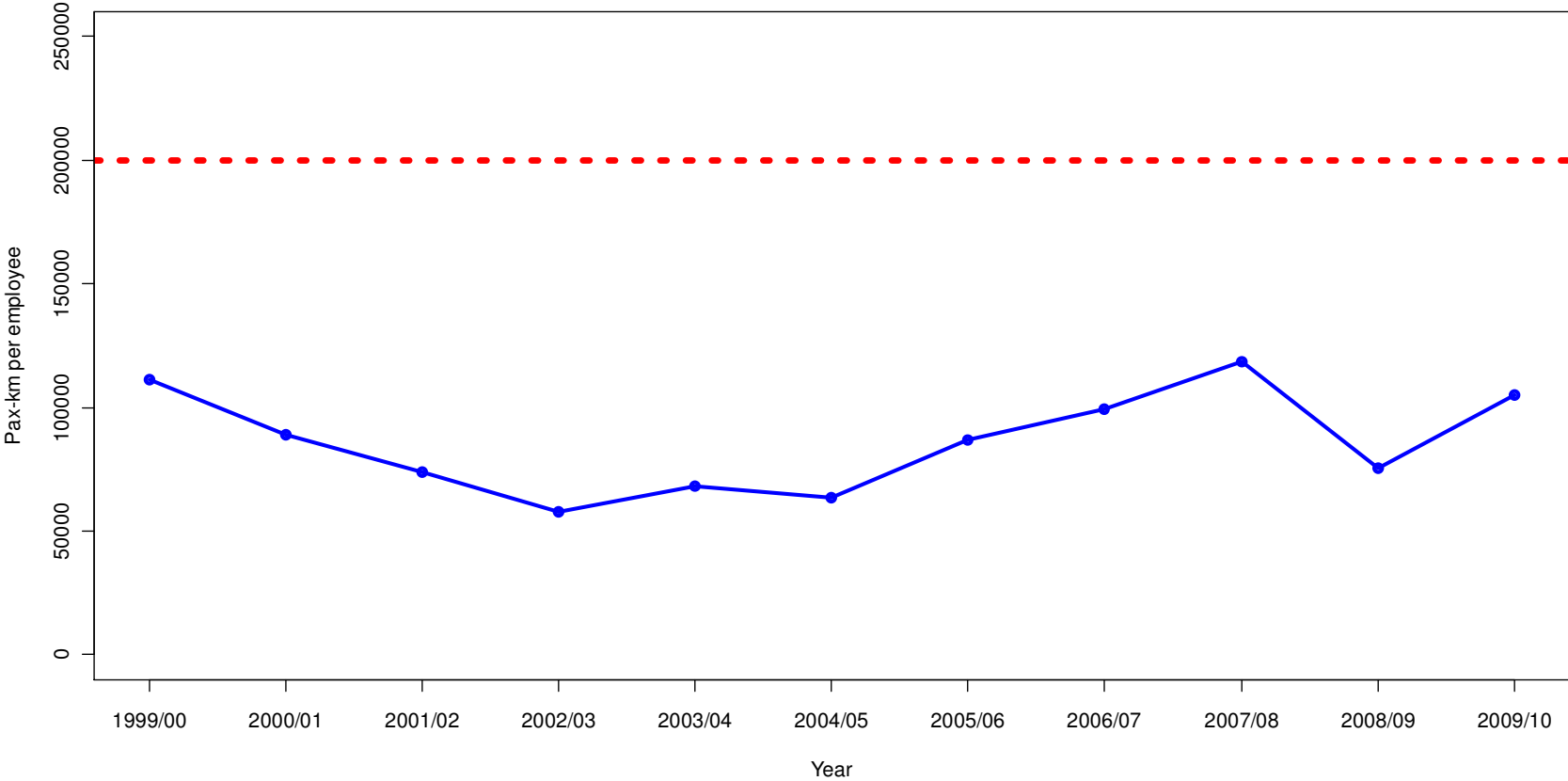
Note:  Agreed Benchmark: 70 %

Figure 30 TAZARA: Ton-Km Per Employee



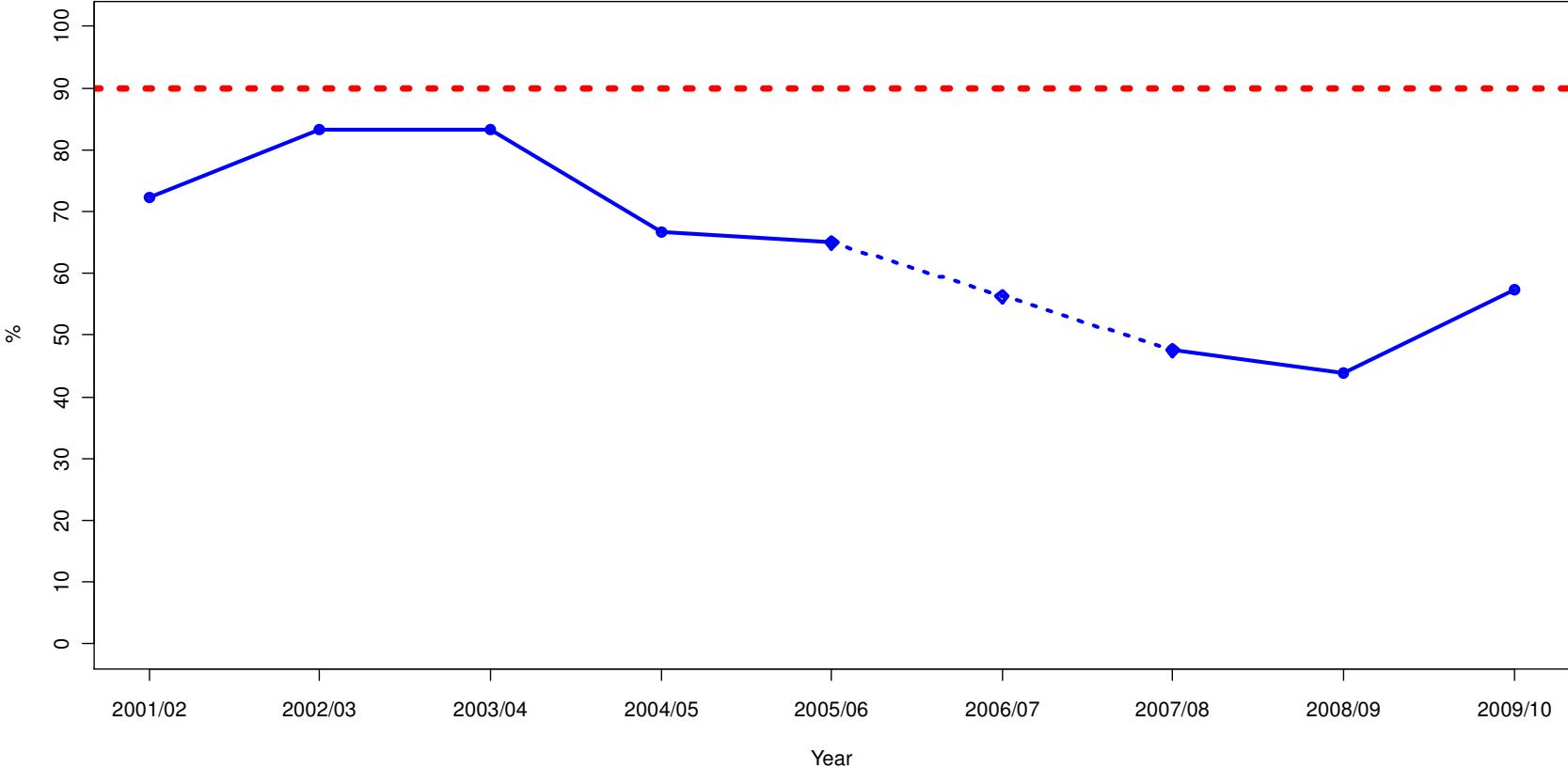
Note:  Agreed Benchmark: 400,000

Figure 31 TAZARA: Pax Km Per Employee



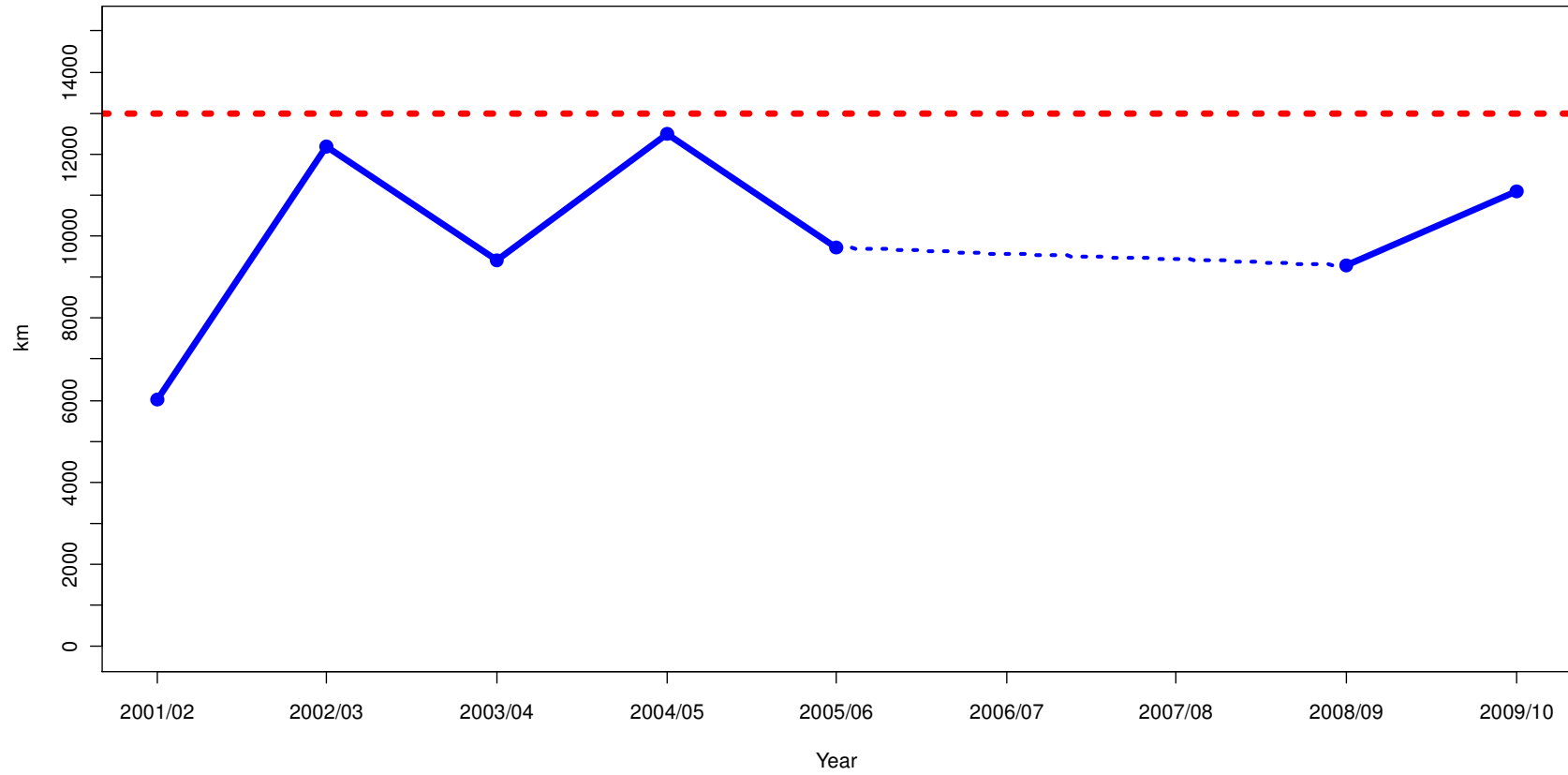
Note: - - - Agreed Benchmark: 200,000

Figure 32 TAZARA: Loco Availability



Note:  Agreed Benchmark: 90 %

Figure 33 TAZARA: Loco Reliability




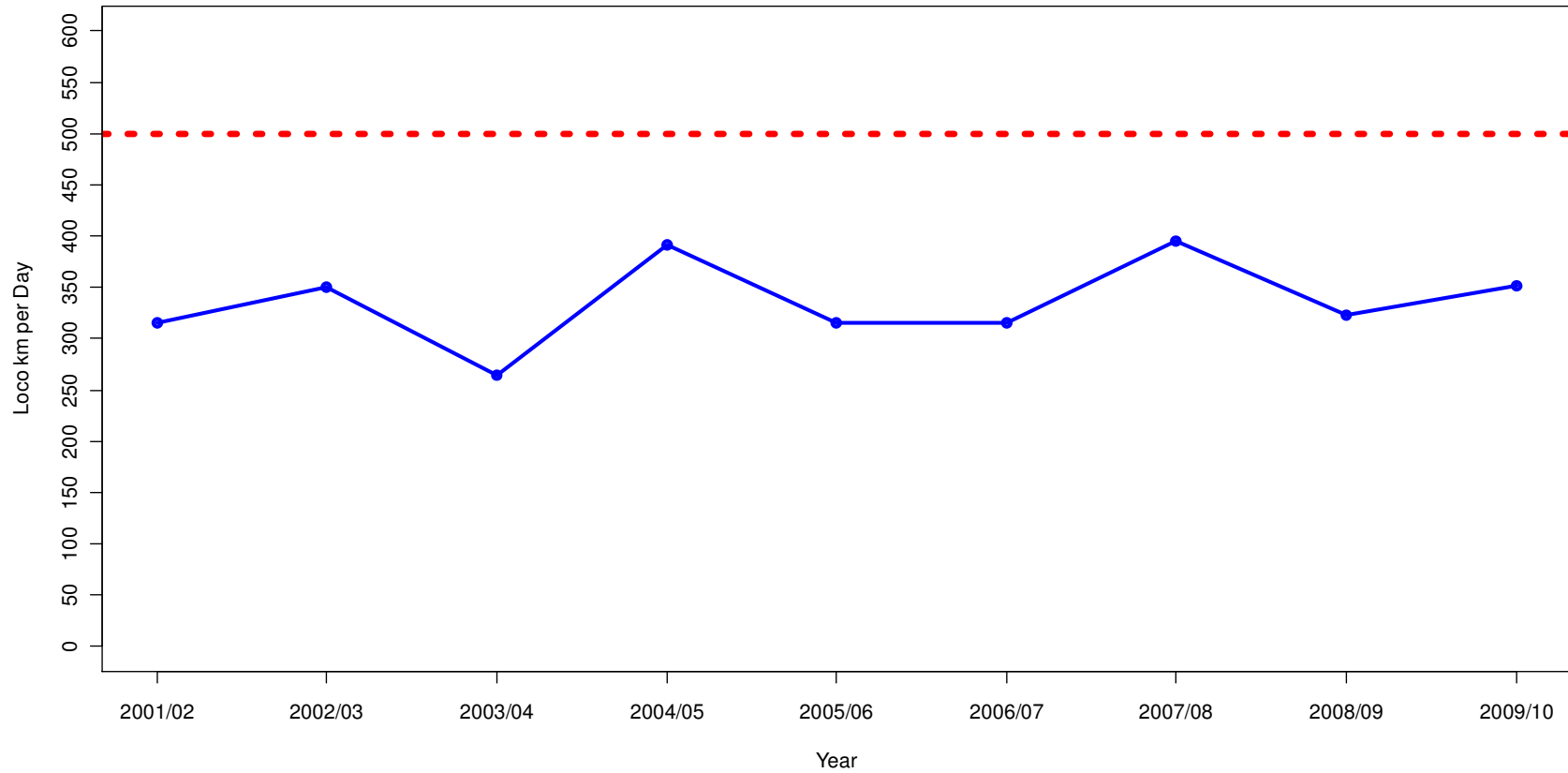
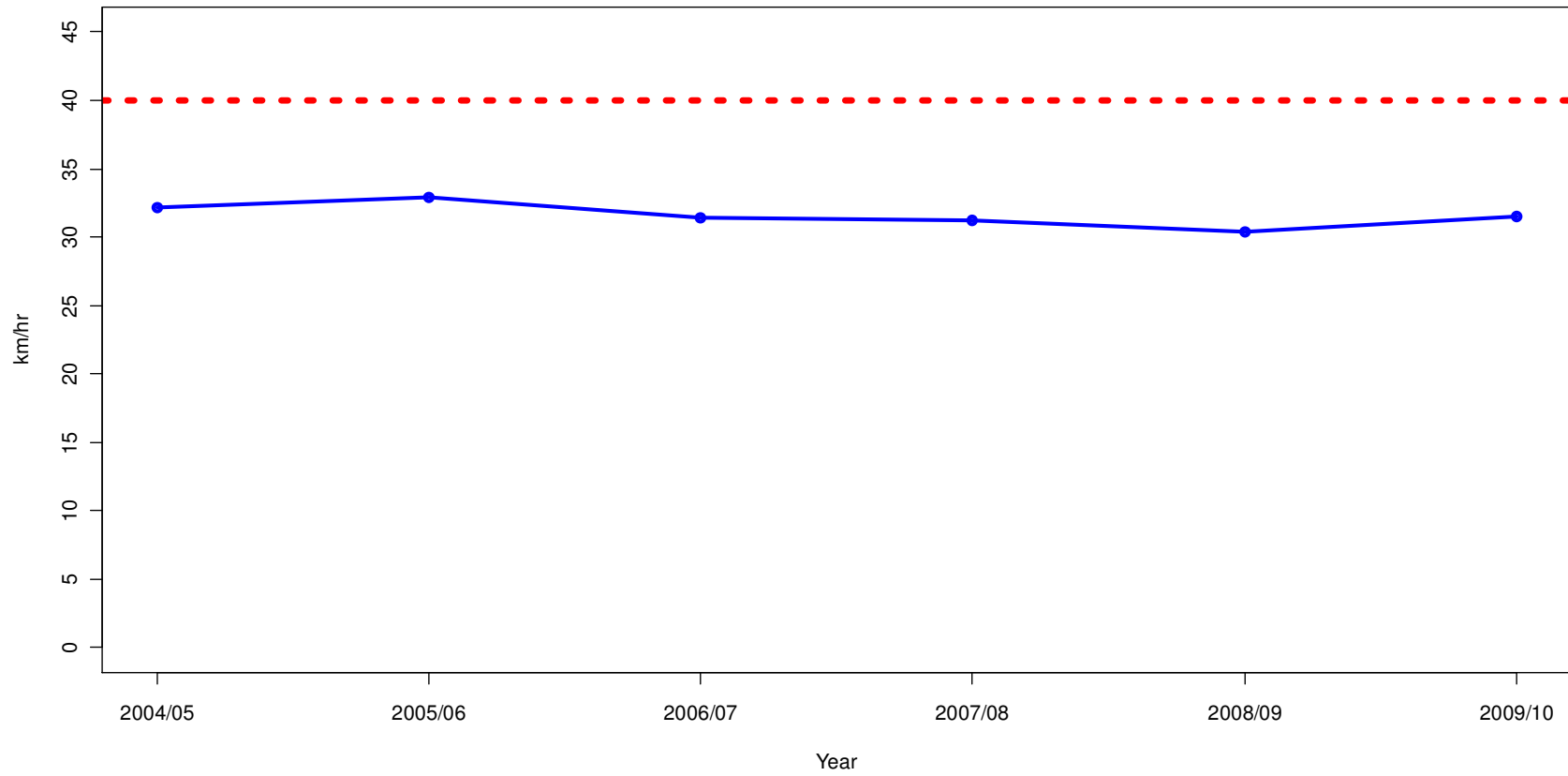
Note:  Agreed Benchmark: 13,000 km

Figure 34 TAZARA: Loco Utilization



Note:  Agreed Benchmark: 500 Loco km/day

Figure 35 TAZARA: Freight Train Speed




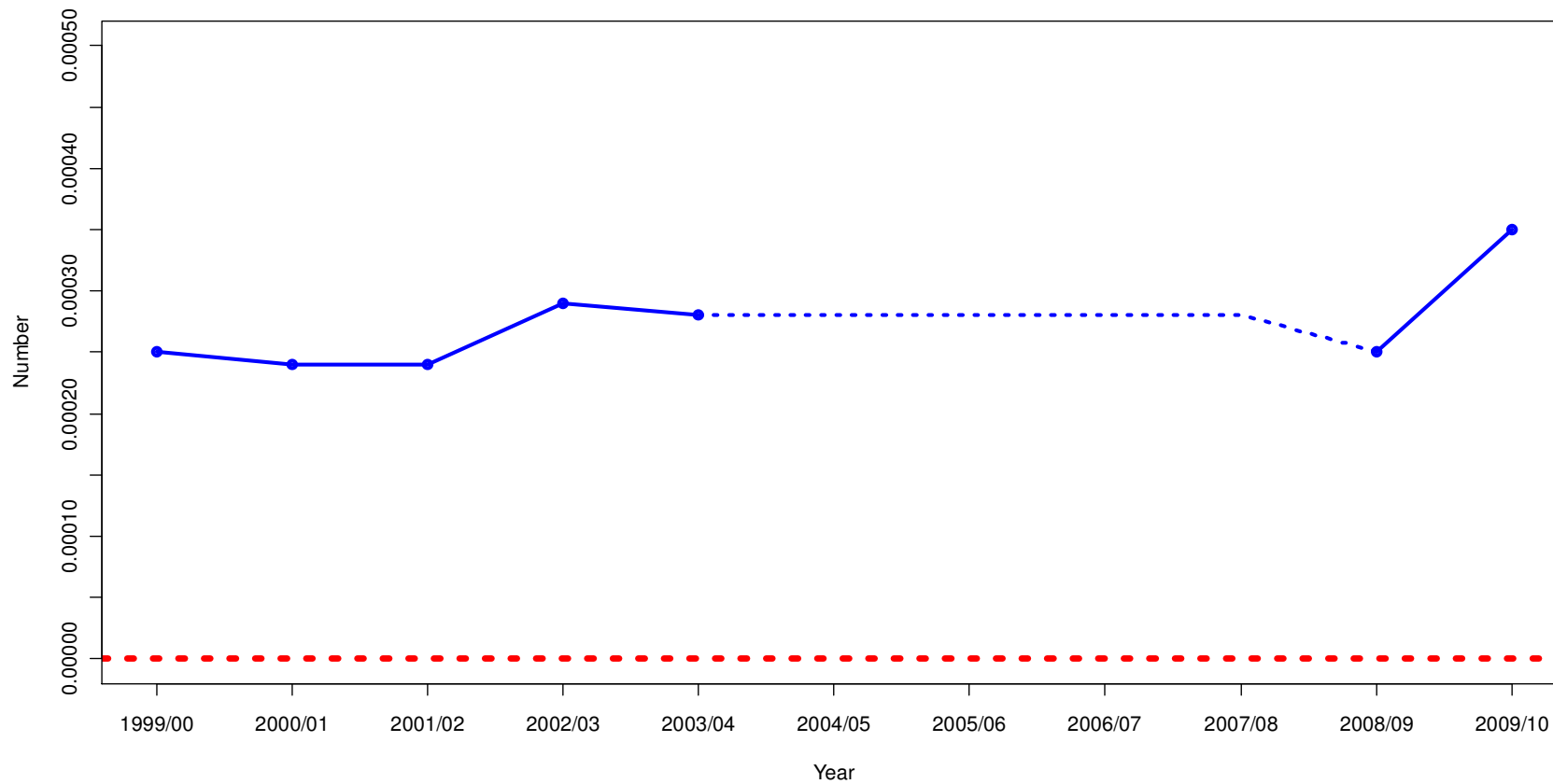
Note:  Agreed Benchmark: 40 km/hr

Figure 36 TAZARA: Train Accidents Per Million ton-km




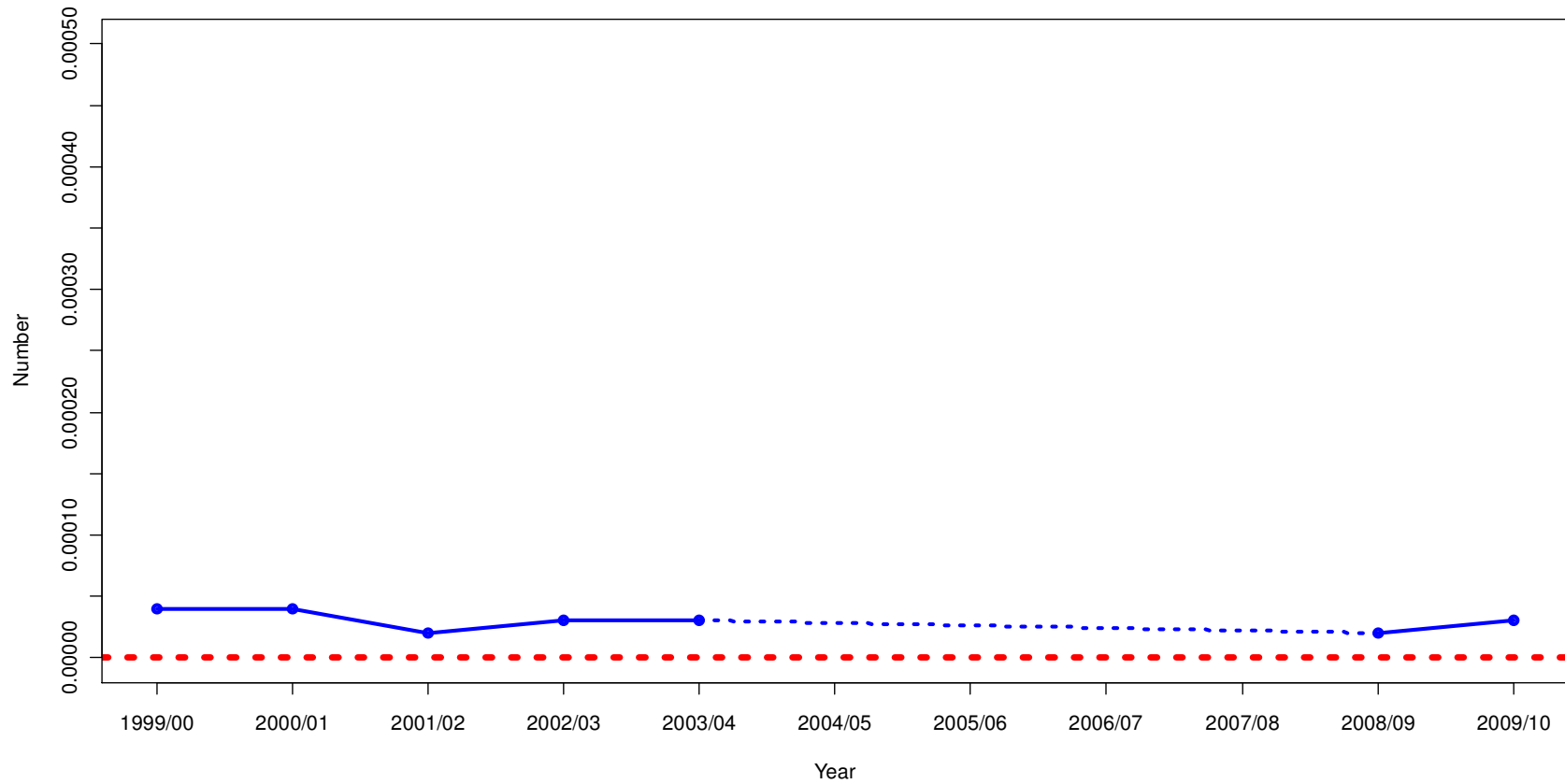
Note:  Agreed Benchmark: 0

Figure 37 TAZARA: Train Death/Injuries Per Million ton-km




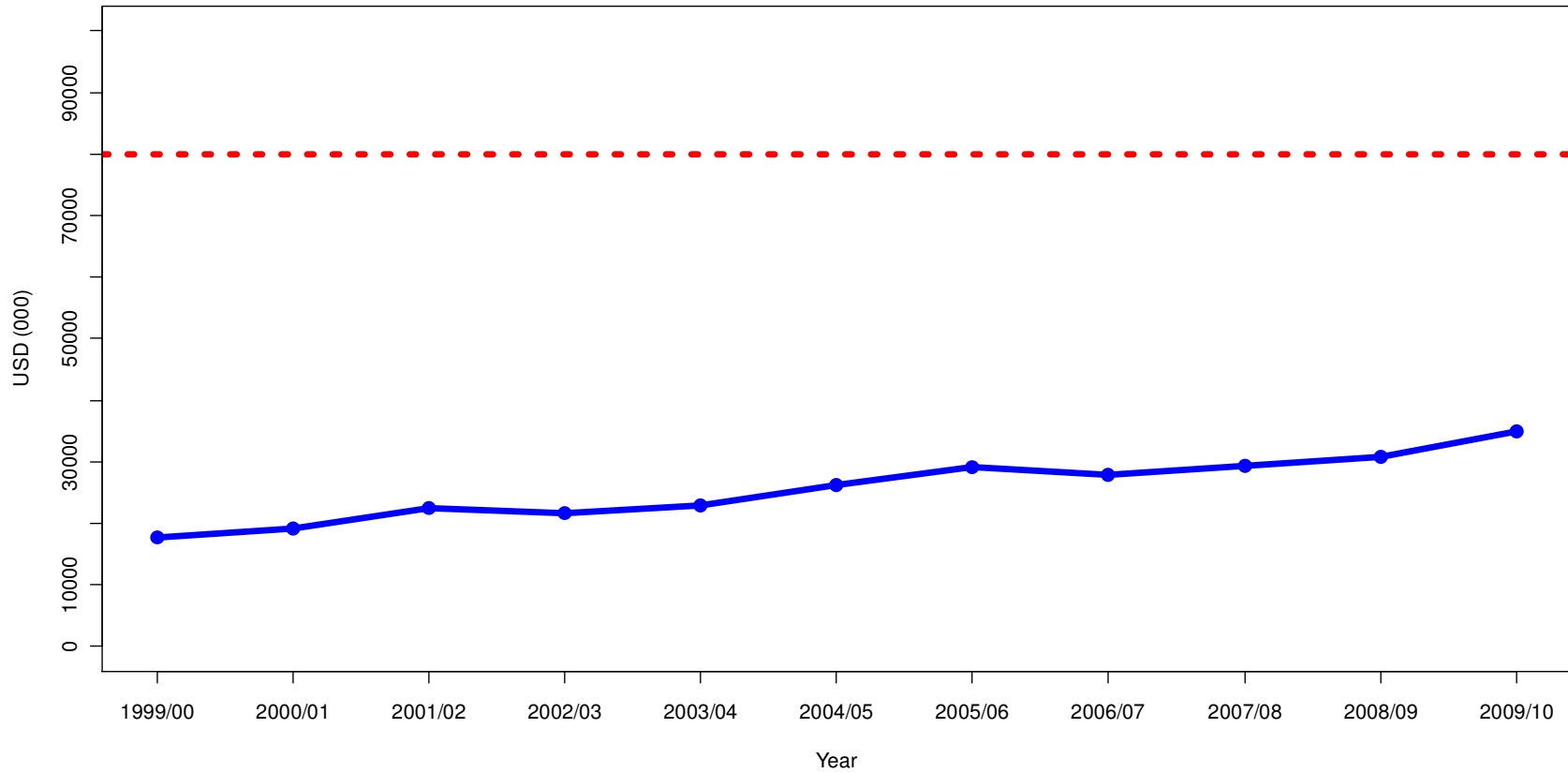
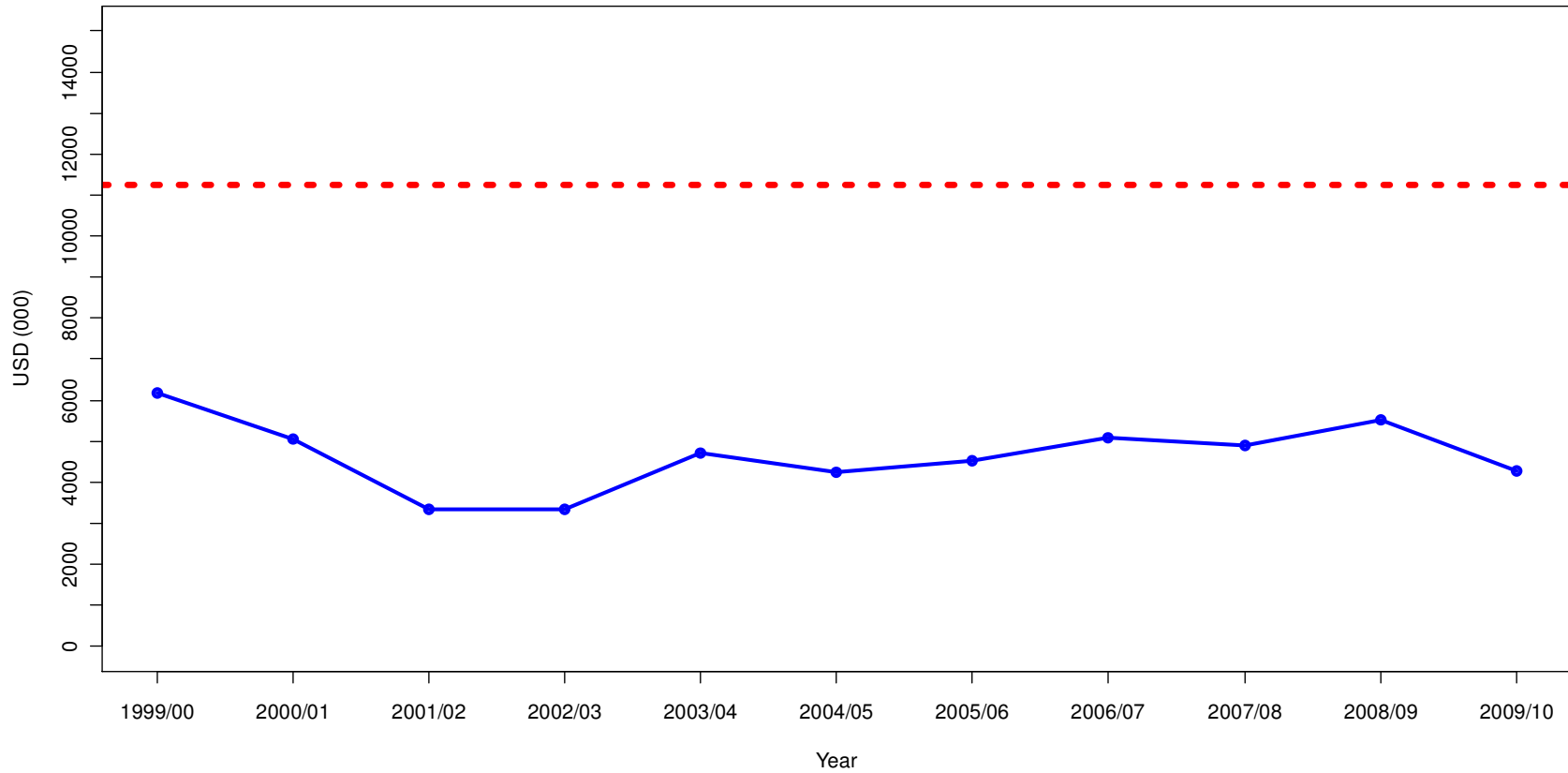
Note:  Agreed Benchmark: 0

Figure 38 TAZARA: Freight Revenue



Note:  Agreed Benchmark: USD 80,000,000

Figure 39 TAZARA: Passenger Revenue




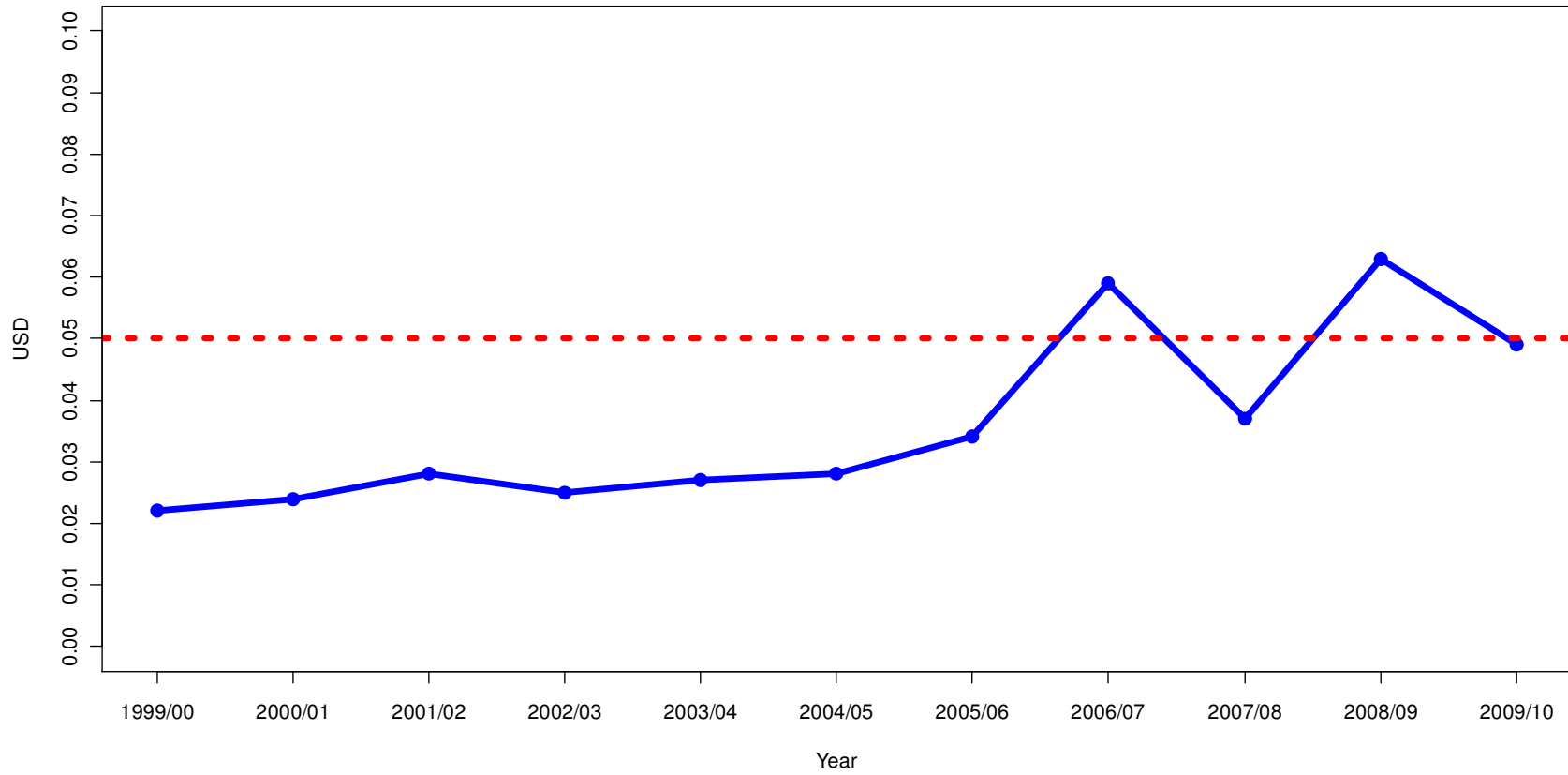
Note:  Agreed Benchmark: USD 11,250,000

Figure 40 TAZARA: Revenue per Ton-km




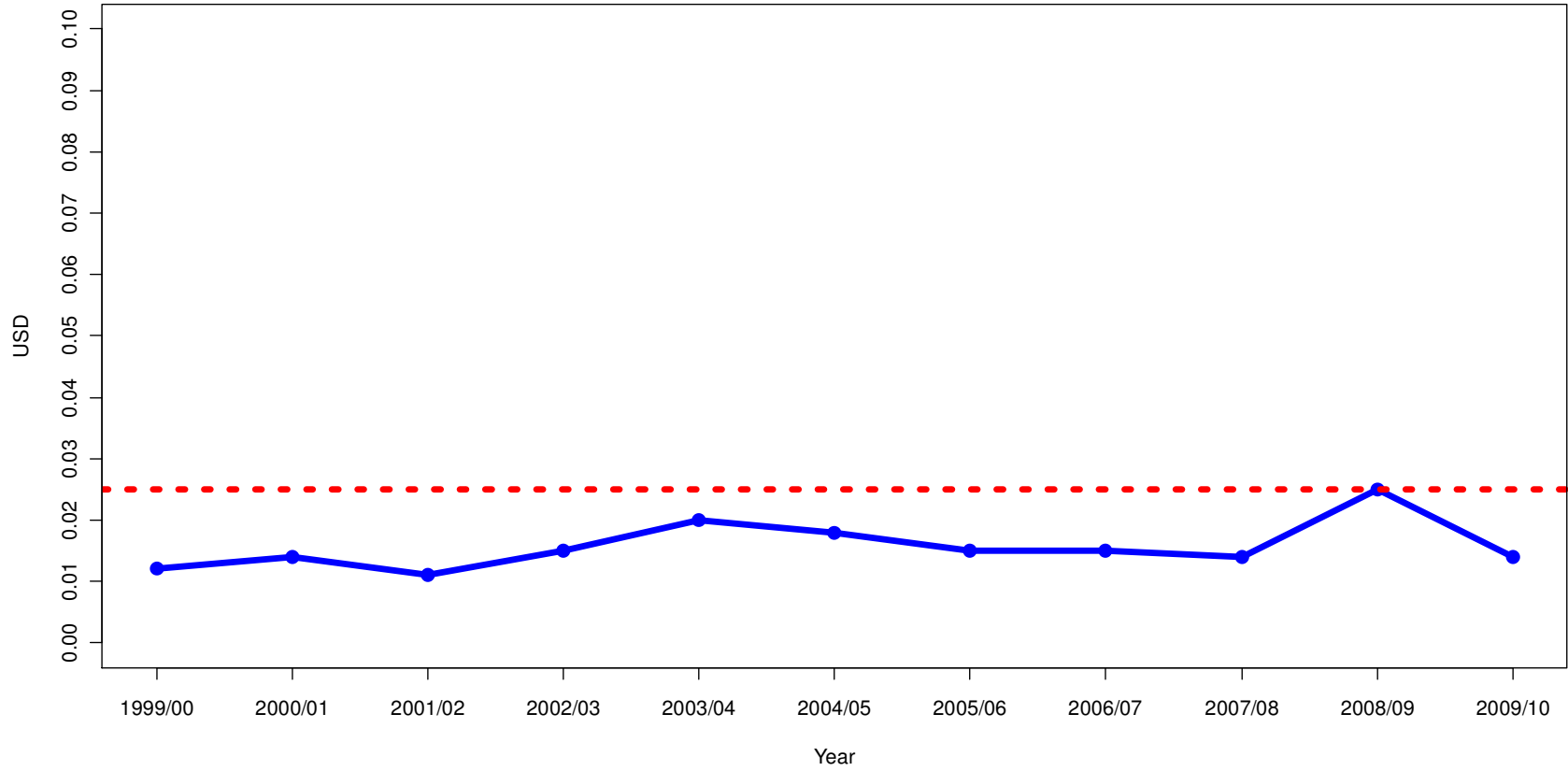
Note:  Agreed Benchmark: USD 0.0525

Figure 41 TAZARA: Revenue per Pax-km




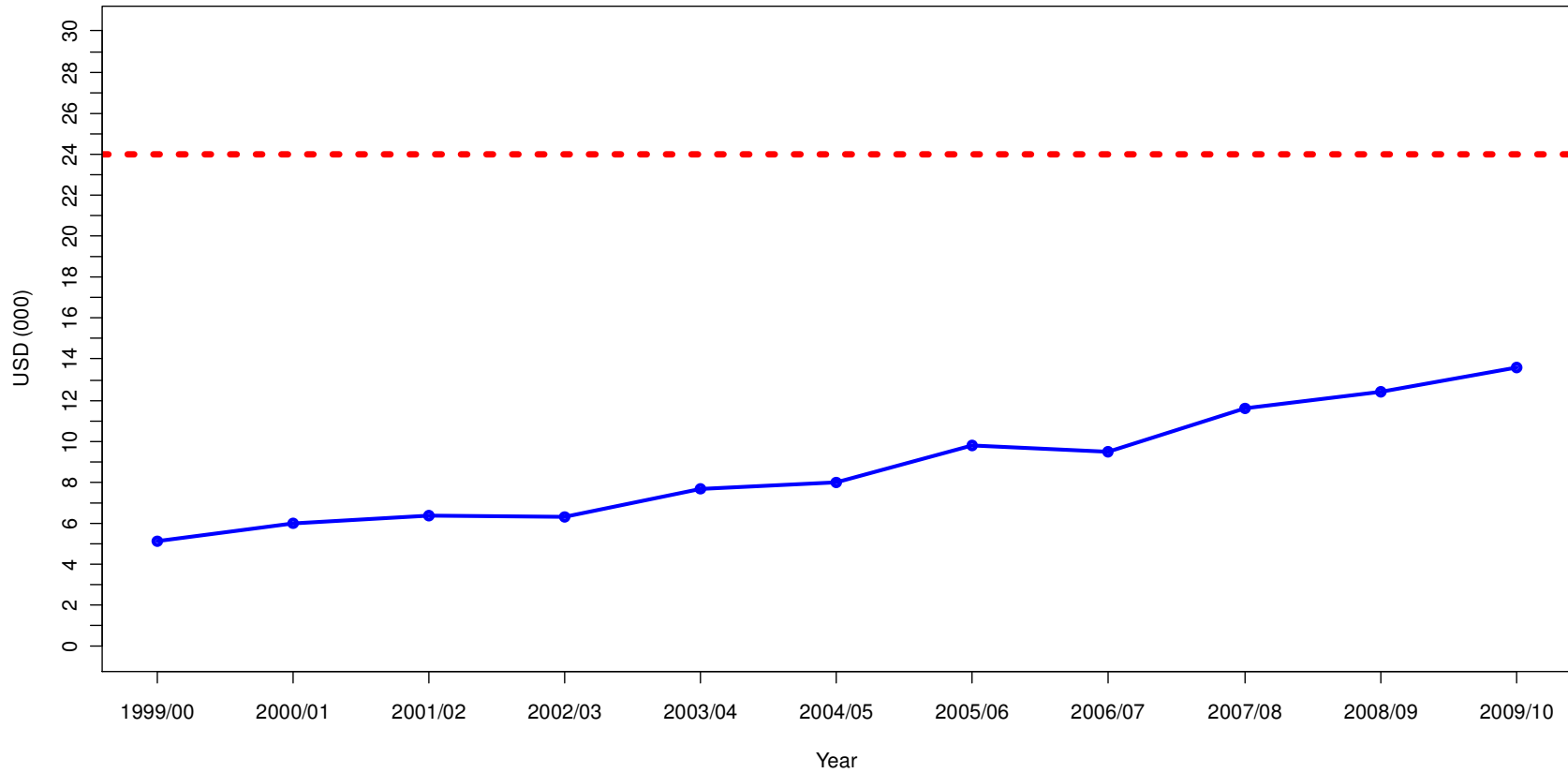
Note:  Agreed Benchmark: USD 0.025

Figure 42 TAZARA: Revenue per Employee




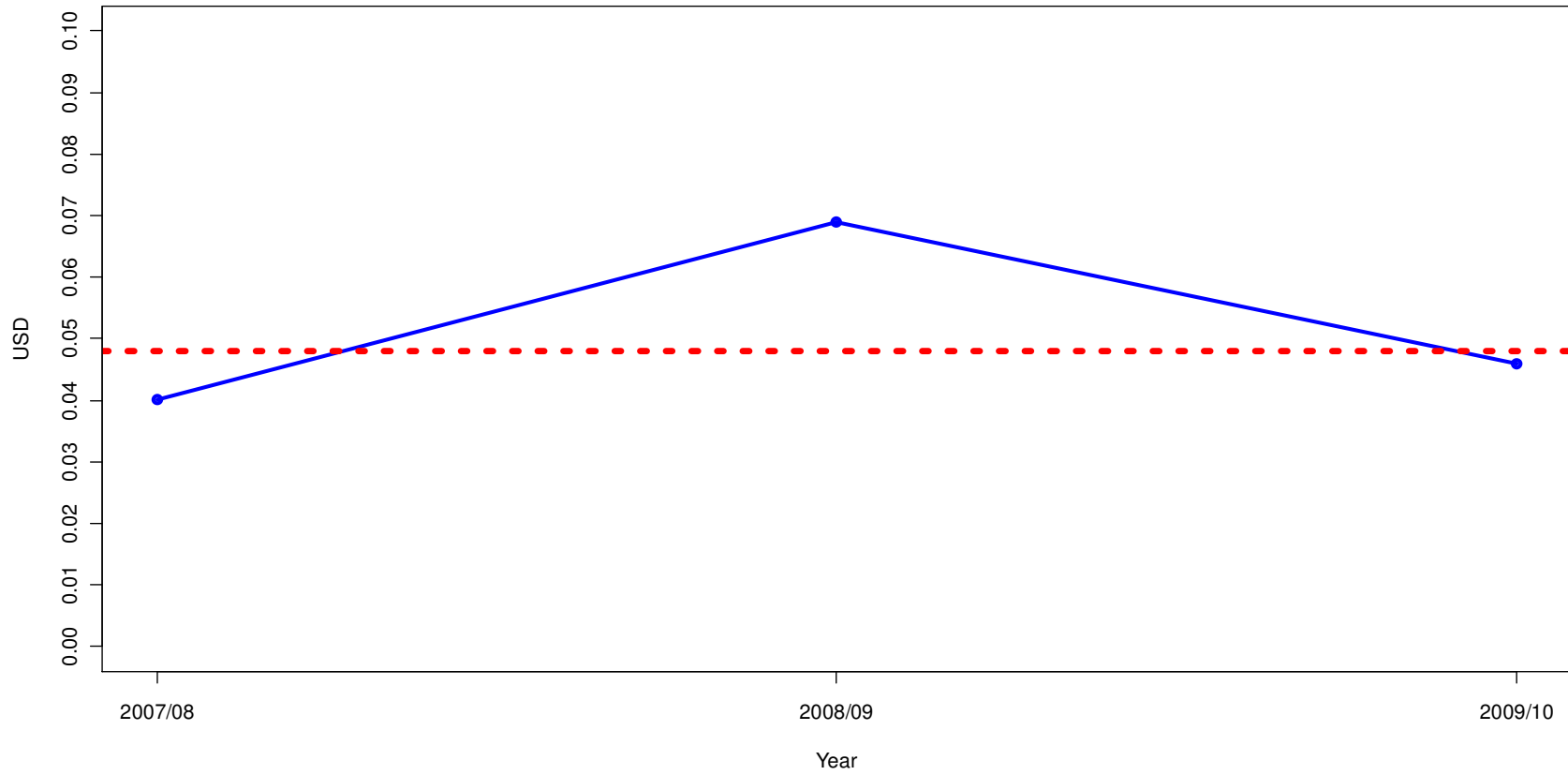
Note:  Agreed Benchmark: USD 24,000

Figure 43 TAZARA: Cost per Ton-km




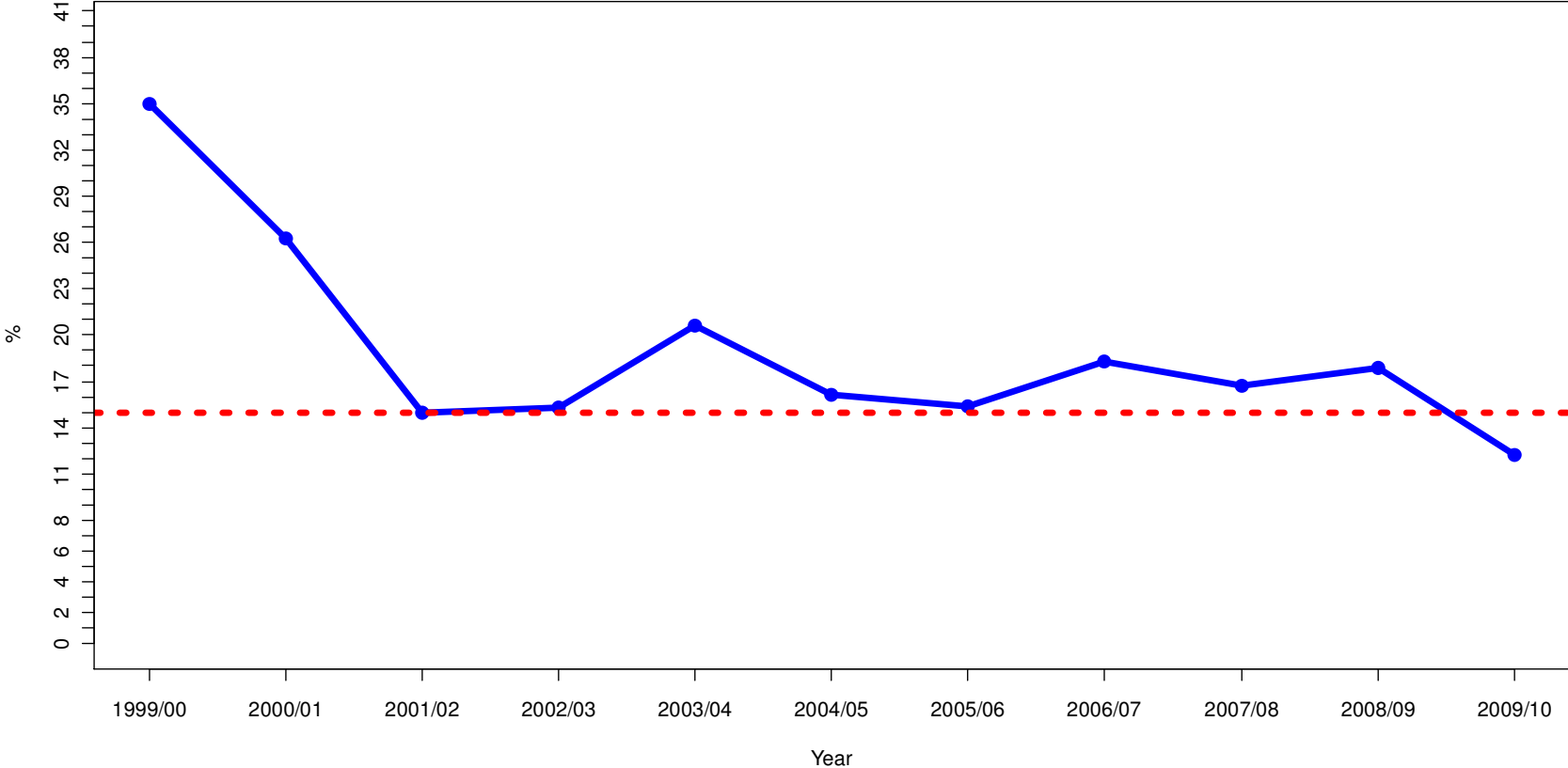
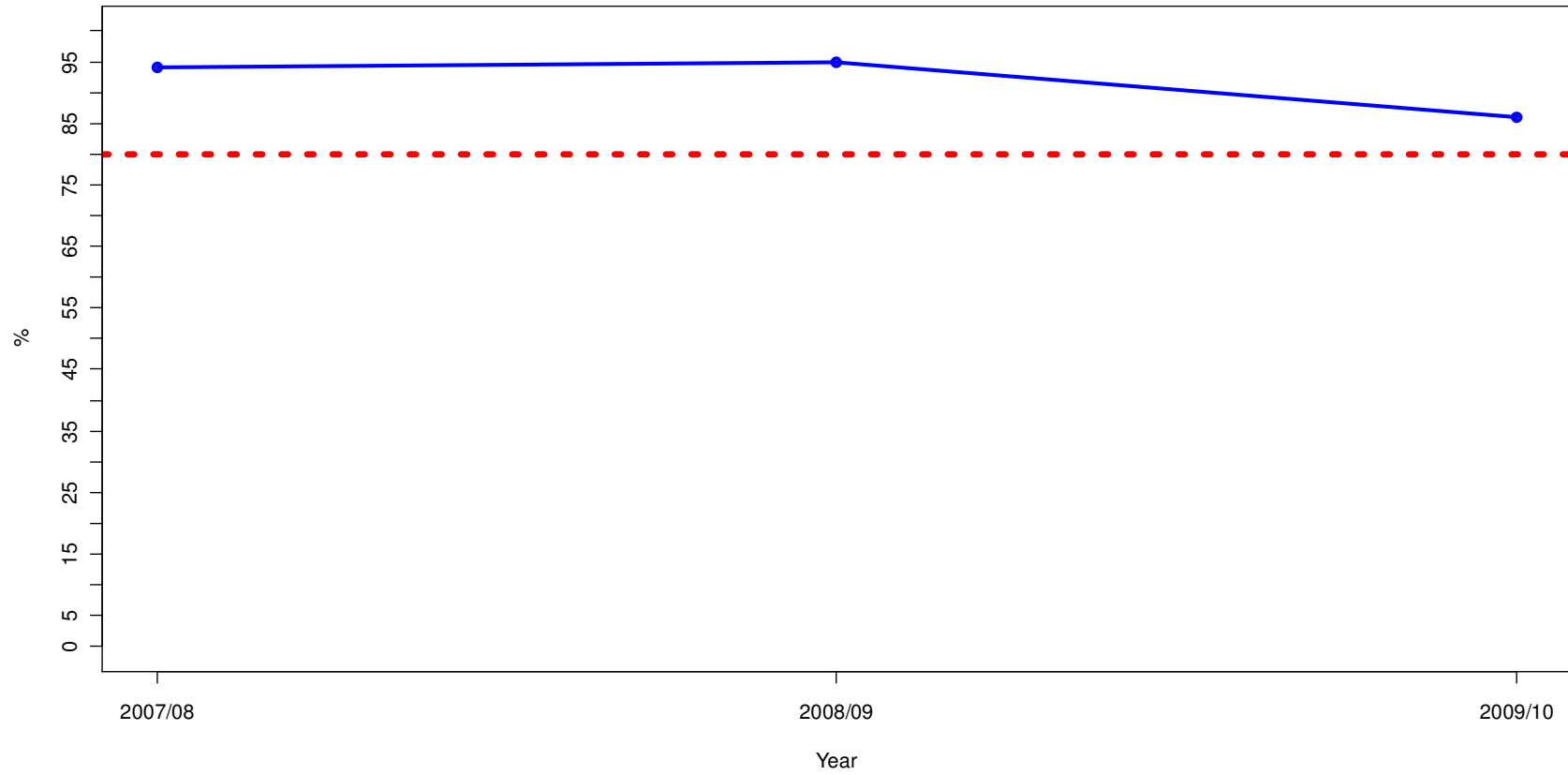
Note:  Agreed Benchmark: USD 0.048

Figure 44 TAZARA: Passenger to Freight Revenue Ratio



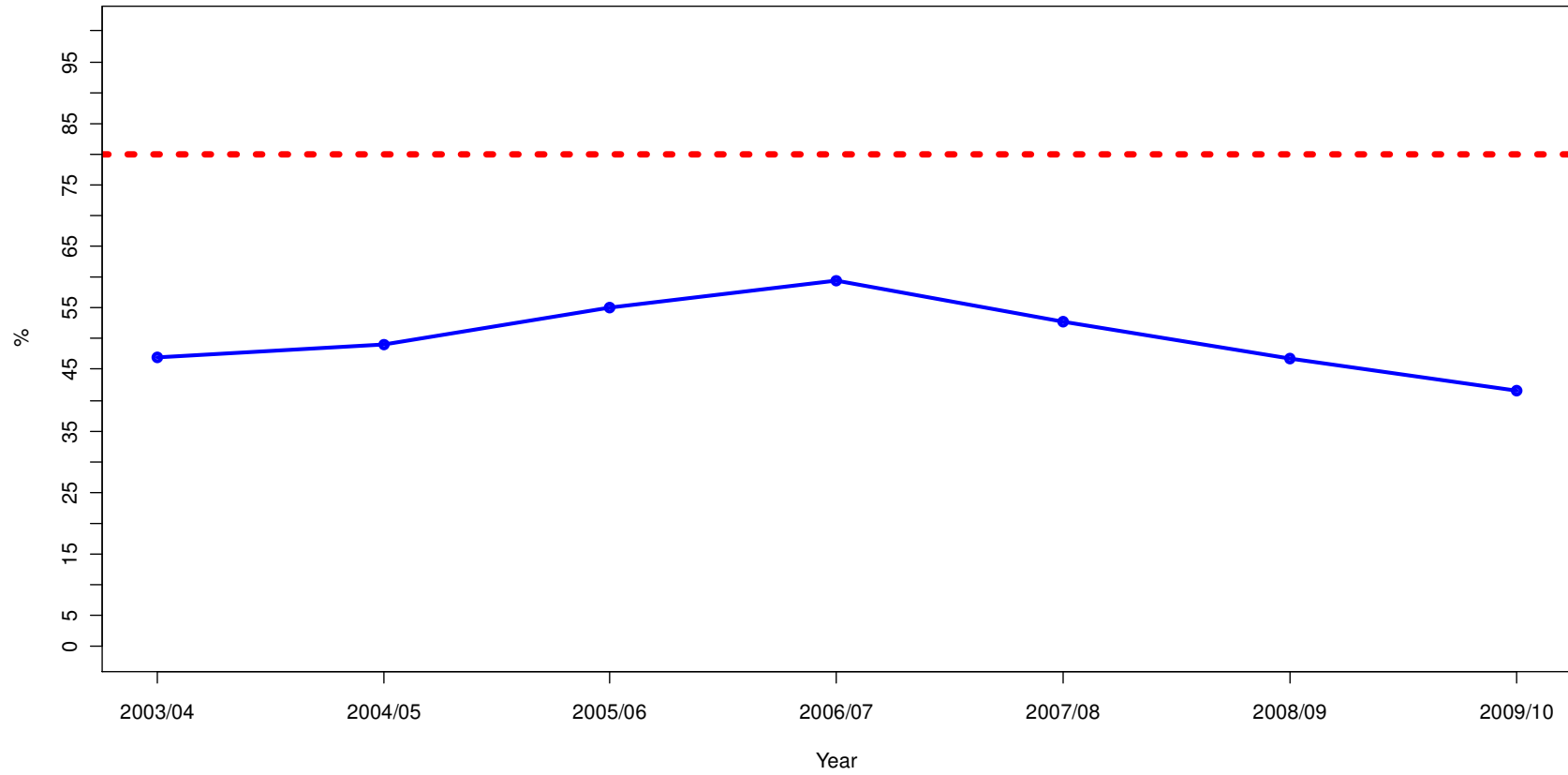
Note: --- Agreed Benchmark: 15 %

Figure 45 TAZARA: Operation Cost to Revenue Ratio



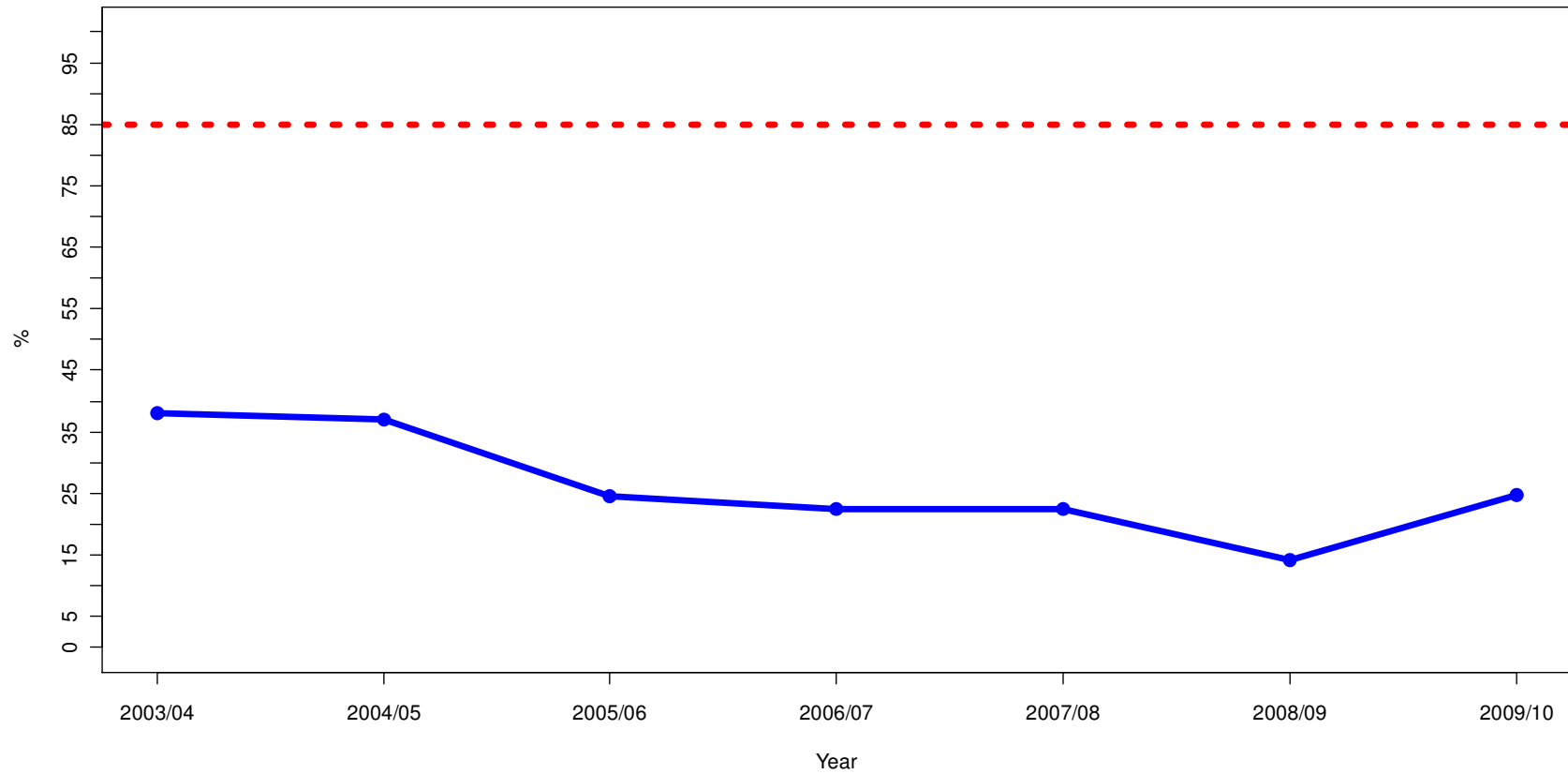
Note:  Agreed Benchmark: 80 %

Figure 46 TAZARA: Punctuality of Freight Trains



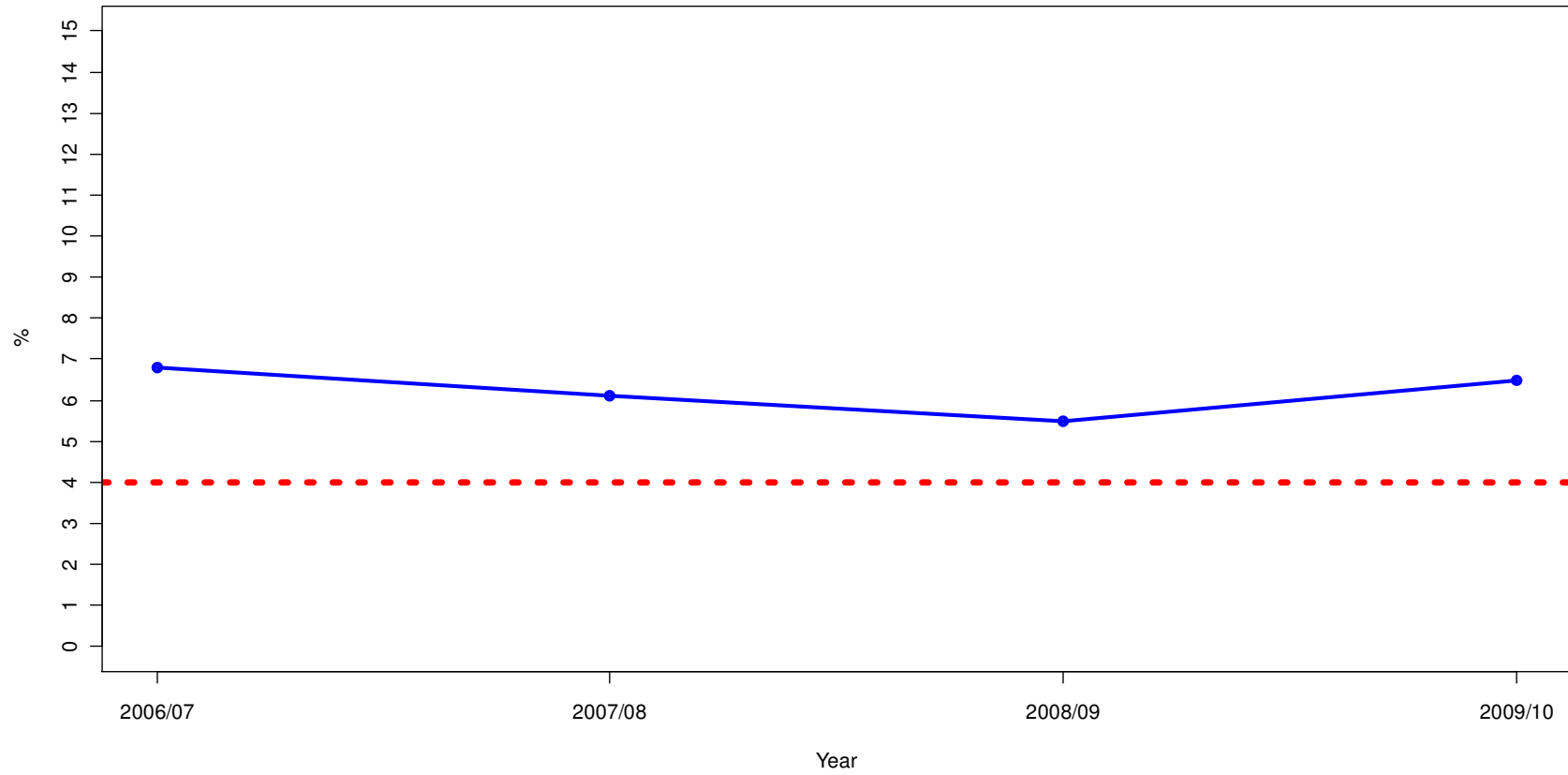
Note:  Agreed Benchmark: 80 %

Figure 47 TAZARA: Punctuality of Passenger Trains



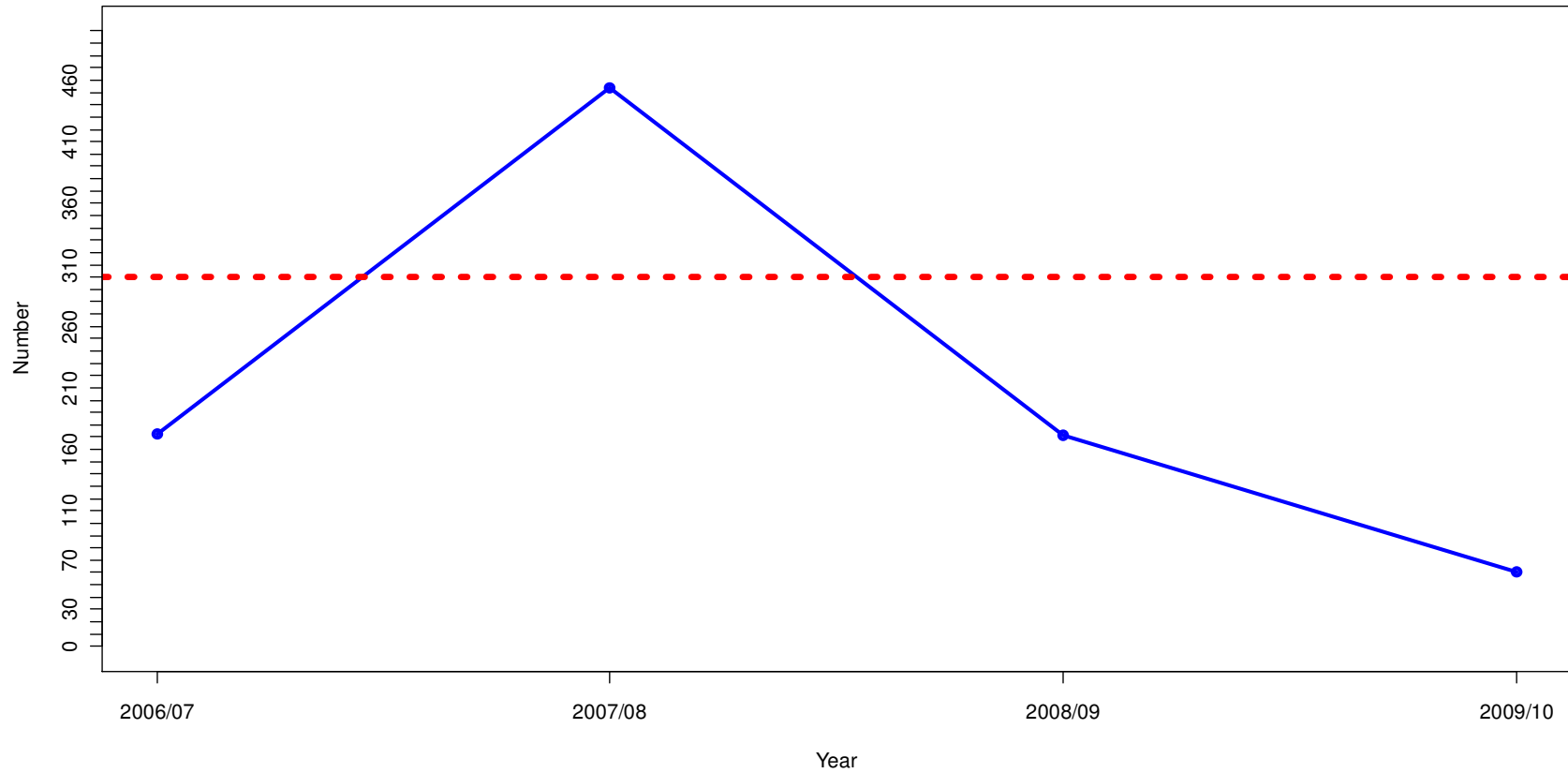
Note:  Agreed Benchmark: 85 %

Figure 48 TAZARA: Transit Time



Note:  Agreed Benchmark: 4 days

Figure 49 TAZARA: Employees Going Through Training/Exposure



Note:  Agreed Benchmark: 300

6.0 MONITORING AND EVALUATION OF RAILWAY PERFORMANCE

6.1 Data Submission Plan

Data on Performance Indicators shall be submitted to the Regulator by railway operators quarterly. The submission shall be presented in such a way to show monthly performance of a rail on every indicator. Indicators to be reported annually shall be reported once per year in the fourth quarter of the calendar year. Appendix IV shows a schedule of performance indicators and their submission plan.

6.2 Monitoring

Monitoring performance of the railway companies will essentially be done at two levels, i.e. at Organizational and Regulation levels. At the organizational level, performance will be monitored by Managements of the companies through reports that will be prepared periodically. Railway Managements shall internalise and integrate Performance Indicators and Benchmarks into organizations' management routines. This will enable Managements to keep track of performance and its compliance with agreed benchmarks. At the second level, performance progress will be monitored by the Regulator through Quarterly Reports which will be compiled and submitted to Regulator by railway companies every quarter.

6.3 Evaluations

Evaluations will be major exercises that will be carried out by the regulator to assess performance of the railway companies and the sector in general. There will be quartely evaluations of performance done upon receipt of quarterly data from railway companies. A report will be prepared and feedback given to railway companies and other relevant stakeholders. One key stakeholder will be a Ministry responsible for transport. Quarterly evaluation will evaluate performance of the rail comparing to the agreed benchmarks. Trends will be constructed to assess progress made with time towards agreed Benchmarks. Assessment shall be carried out on every Performance

Indicator. Moreover, the evaluation will attempt to highlight areas of concern that need to be redressed, as far as railway performance is concerned. At the end of each calendar year, an overall evaluation shall be conducted on the whole year.

6.4 Review Period

For consistency, the list of performance indicators shall only be reviewed when is absolutely necessary. Otherwise, the proposed set will be maintained to facilitate comparison of performances over time. Benchmarks will be subjected to periodic review. The time however between reviews must be kept long enough to allow the industry to realign itself and work towards the benchmarks. It is therefore recommended to carry out a major review of railway benchmarks after every five years. Major reviews will also be recommended in case there is significant change in the industry such as acquisition of additional equipment and infrastructure improvement.

7.0 CONCLUSION

Performance Indicators and benchmarks presented in this report are a result of a series of workshops and consultations among stakeholders. Throughout the process, a careful attempt was made to ensure that establishment of railway performance indicators and benchmarks were systematically studied. Moreover, the most sensitive part of the process, involvement of stakeholders, was thoroughly observed. Several workshops organized in the process were well attended and the composition was balanced in terms of representation. Therefore the established benchmarks to a greater extent capture the needs and expectations of a wider-spectrum of railway stakeholders.

As earlier said, the benchmarking process focused on the outputs. It is therefore important that railway companies realign their internal processes, methods and practices to ensure that they deliver on the expected outputs as expressed by the benchmarks.

It is expected that railway stakeholders will use the developed indicators and Benchmarks to monitor and evaluate developments in the railway sub-sector and objectively suggest the plan for the future development.

8.0 GLOSSARY OF TERMS

SNO	INDICATOR	DEFINITION BY TRL	DEFINITION BY TAZARA
1.	Average haul of freight	Refers to the average distance covered by each tone of goods. It is calculated by dividing Ton-km by tons	Refers to the average distance covered by each tone of goods. It is calculated by dividing Ton-km by tons
2.	Average lead	Average distance traveled by passengers. It is obtained by dividing passenger kilometers to number of passengers carried	
3.	Average load per wagon	Average load carried by a wagon. It is obtained by dividing the total load carried by wagons by the number of wagons deployed	
4.	Average train speed	Total distance moved by trains divided by the total time taken by the trains	
5.	Claim	Demand for monetary compensation in connection with dissatisfied quality of service, loss or damage of property	
6.	Coefficient of empty return ratio	Empty wagons-kilometers divided by loaded wagons loaded wagon kilometers	percentage of empty wagons running kilometer over loaded wagons running kilometer
7.	Complaint	Statement of dissatisfaction with quality of service provided by railway operator	
8.	Freight Revenue	Total revenue earned by transporting cargo	Amount of money collected as railage charges for freight services.
9.	Freight trains	Trains which clear cargo from one point to another	
10.	Labor productivity	The quotient of the sum of tonne-kilometres and passenger kilometers divided by the number of employees	
11.	Line availability	Total time the railway line remained fit for passage of train trains	
12.	Locomotive availability	Ratio of the number of locomotive-hours of available locomotives during the period to the product of the number of locomotives in the fleet multiplied by the number of hours in the period	This refers to the ratio of the number of available locomotive days to the number of disposable locomotive days.

SNO	INDICATOR	DEFINITION BY TRL	DEFINITION BY TAZARA
13.	Locomotive reliability	Average distance covered by serviceable locomotives before failure	
14.	Locomotive utilization	Average kilometrage covered per day by the serviceable fleet (available locomotives)	
15.	Mean occupancy ratio (passengers)	Number of passengers in a coach divided by the coach capacity. Calculated as a ratio of passengers boarded a coach to Coach capacity	
16.	Number of death/injuries per mil ton-km	Total number of deaths/injuries due to trains movement divided by mil ton-km	
17.	Passengers carried over time	Total number of passengers carried over a period of time	Refers to the number of passengers who buy tickets at TAZARA stations booking offices designated by TAZARA as well as those passengers who use free passes or who buy their tickets on trains by which they are traveling
18.	Passenger Revenue	Total revenue earned by transporting passengers.	Amount of money collected from selling of traveling tickets to passengers and other proceeds from passenger services.
19.	Passenger trains	Trains which move passengers from one point to another	
20.	Passenger-km	Measure of performance obtained by multiplying the number of passengers carried by average distance traveled by passengers	
21.	Passenger-km per employee	The total number of passenger kilometers divided by the total number of employees	Ratio of passenger kilometer to the total number of employees. It is a measure of employee's productivity in passenger services.

SNO	INDICATOR	DEFINITION BY TRL	DEFINITION BY TAZARA
22.	Proportion of passenger train fares to road passenger fares		Ratio of fare of traveling per kilometer by train to that of traveling per kilometer by road.
23.	Proportion of rail freight rates to road freight rates		Ratio of rate chargeable for transporting one tone of goods on rail to that of transporting one tone of goods on road. It is an important ratio in transport economics which defines the relation between rail and road transportation.
24.	Revenue per employee		Ratio of total revenue collected from sale of both freight and passenger services to total number of employees.
25.	Specific Fuel Consumption Index (SFC)	It is the average fuel consumed by a class of locomotive per 1,000 gross ton-kilometers. It is obtained by dividing the total fuel consumed (by locomotive of a given class) by gross ton-km times 1,000.	
26.	Speed restriction	Imposing of speed lower than the section speed over a stretch due to unfavorable conditions in that area	Speed limits imposed on a line section for safe passing of trains in that particular area. An area can be imposed with speed restriction for various reasons including track defects, nature of cargo hauled, and equipment defects, etc.
27.	Time taken to meet wagon request		Period of time (in days) taken to process and supply wagons requested by clients for loading of goods. It is normally calculated from time order is placed to time when it is actually fulfilled.
28.	Ton-km	Measure of performance calculated by multiplying payload of the train distance (in kilometers) moved	
29.	Tonnage loaded	Cumulative sum of the tonnage loaded over a period of time	Weight of all goods loaded and conveyed by serviceable wagons in compliance with commercial formalities gone through at all operational stations under the jurisdiction of TAZARA and those conveyed by customer owned

SNO	INDICATOR	DEFINITION BY TRL	DEFINITION BY TAZARA
			wagons. It is calculated according to the weight determined by TAZARA and shown on 'Goods Invoice'. If weight confirmed by railway is not available, the statistics shall be based on the weight declared by the consignor.
30.	Tonnage-km per employee	The total number of tonne-Kilometres divided by the number of employees. It is a measure of employee's productivity in terms of freight services.	Total number of tonne-Kilometres divided by the number of employees. It is a measure of employee's productivity in terms of freight services.
31.	Train accidents per mil. Ton-km	Total number of train accident divided by million ton-km. Measures safety status of rail operation	
32.	Train punctuality		Percentage of passenger train with arrivals/departures less/more than 15 minutes from the scheduled time.
33.	Wagon availability	Ratio of wagon-hours available during a period to the product of the number of wagons multiplied by the number of hours during the period	Ratio of the number of available wagons days to the number of disposable wagons days. It is expressed in percentage.
34.	Wagon turn-round time	Time (in days) taken between one loading operation to the next loading operation of a particular wagon	Total time (in days) consumed from the time of completion for the first loading operation to that of the second loading operation of the same wagon.
35.	Wagon utilization	Average kilometrage covered per day by the serviceable fleet (available wagons)	

Appendix I : Members of Working Group

Sno	Name	Organization	Designation
1.	Ally Iddi	TAZARA	Head Commercial Services
2.	Justine Kabelo	TAZARA	Senior Planning Officer (Strategic)
3.	Sadiki Anthony	TAZARA	Head Operations
4.	Hanya Mbawala	TAZARA	Head Railway Safety
5.	Mathias Massae	TRL	Chief Civil Engineer (Int. Management)
6.	Hassan A. Shaban	TRL	Principal Commercial Manager
7.	Ng'hwani K. Rashid	TRL	Divisional Traffic Manager
8.	Eng. Richard Lawuo	TRL	Chief of Rail Safety
9.	Juma M.Lugendo	RAHCO	Senior Commercial Manager
10.	Michael Paul	SUMATRA	Statistics Officer
11.	Sifamen Sekei	SUMATRA	Compliance Monitoring Officer
12.	Nahson Sigalla	SUMATRA	Statistics Manager
13.	Chalton Mwakasungula	SUMATRA	Planning Manager
14.	Eliona Simbo	SUMATRA	Director of Railway Regulation
15.	Ahmad S.K. Kilima	SUMATRA	Director of Economic Regulation
16.	Benjamin Mbimbi	MOT	Surface Transport Officer

Appendix II : Common Set of Indicators for the Railways Developed by the WG

1 Customers Perspective

- (i) Number of Customer complaints;
- (ii) Time taken to process claims;
- (iii) Time taken to advice passenger of train delays;
- (iv) Punctuality ;
 - a. Passenger trains;
 - b. Freight trains;
- (v) Time taken to meet wagon request;
- (vi) Time taken to deliver the cargo (Transit time);
- (vii) Number of wagons supplied against request ;
- (viii) Proportion of rail freight rates to road freight rates; and
- (ix) Proportion of passenger train fares to road passenger fares;

2 Internal Business Perspective

- (i) Wagon turn-round time;
- (ii) Loco availability;
- (iii) Wagon availability;
- (iv) Loco reliability;
- (v) Loco utilization;
- (vi) Wagon utilization (wagon km per day);
- (vii) Speed restrictions ;
- (viii) Average load per wagon;
- (ix) Coefficient of Empty Return Ratio;
- (x) Mean occupancy ratio (passenger);
- (xi) Average lead (average distance travelled by passengers);
- (xii) Average haul of freight;
- (xiii) Average density of Freight conveyed in a district/section (traffic density);
- (xiv) Labor productivity;
- (xv) Tonnage-km per employee;
- (xvi) Passenger-km per employee;
- (xvii) Specific Fuel Consumption Index;
- (xviii) Safety status of rail operations (train accidents per mil ton-km);
- (xix) Number of death/injuries per mil ton-km;
- (xx) Line availability (in hours);

- (xxi) Average train speed;
 - a. Passenger trains;
 - b. Freight trains;
- (xxii) Tonnage loaded;
- (xxiii) Ton-km;
- (xxiv) Passengers carried over time;
- (xxv) Passenger-km;
- (xxvi) Freight Revenue; and
- (xxvii) Passenger Revenue

3 Financial Perspective

- (i) Total operating cost to revenue ratio;
- (ii) Operating cost per ton-km;
- (iii) Revenue per ton-km;
- (iv) Revenue per passenger-km;
- (v) Passenger to Freight revenue ratio;
- (vi) Average debt collection period;
- (vii) Revenue per employee;
- (viii) Wage bill to revenue ratio;
- (ix) Capital expenditure to net surplus ratio;

4 Innovation & Learning Perspective

- (i) Number of employees going through training/exposure sessions;
- (ii) Number of employees seconded /attached to other organizations;

Appendix III: REPORT OF THE STAKEHOLDERS MEETING HELD ON 14th APRIL 2011 AT DSM INTERNATIONAL CONFERENCE CENTRE TO DISCUSS DEVELOPMENT OF PERFORMANCE INDICATORS AND BENCHMARKS FOR RAILWAY SECTOR

1.0 Participants

The list of participants is attached.

2.0 Welcoming Remarks by the Ag. DG

The Acting Director General, Mr A.S.K Kilima, welcomed participants to a stakeholders meeting to discuss a draft list of Railway Performance Indicators and Benchmarks. In his welcoming remarks he underscored the importance of the meeting as would lead to a refined list of Indicators and benchmarks for railway sector in Tanzania. He emphasized that railway performance indicators and Benchmarks would serve to:

- (a) identify areas of operations which need intervention;
- (b) explain situations to stakeholders such as regulators, government and financiers;
- (c) justify an appropriate level of financing to the government and other interested parties;
- (d) justify an appropriate level of charges and thus tariff setting;
- (e) provide better understanding of operating costs and revenues; and
- (f) monitor contractual performance and accordingly trigger remedial measures;

He appealed to participants to critically review the proposed performance indicators and benchmarks to be presented and come up with acceptable, understandable and meaningful set of railway performance Indicators and benchmarks.

Finally, he thanked Mr. Linford Mboma, a retired railway expert, for his acceptance to chair the meeting.

3.0 Remarks by the Chairman of the Meeting

The Chairman, Mr. Linford Mboma, once again welcomed the participants to the meeting. He formally recognized the presence of Mr. Mwanyika, the Assistant Director of Surface Transport from Ministry of Transport and Dr. Kailembo, the Deputy Managing Director - Interim Management of TRL, representative from

TAZARA, representative from RAHCO and other representatives from private companies.

In his remarks, the Chairman said that benchmarks for several performance indicators could be achieved if customers were satisfied and appealed to all responsible stakeholders to invest in the railway sector to improve the state of infrastructure and equipment. Equally, he urged the two railway companies to see to it that customers were served to their expectations and convince them to continue transporting cargo by railway. He observed that, railway sector had larger market share than the capacity to handle.

Moreover, as part of his remarks, he underscored the importance of hard working human resource in enhancing railway productivity despite several challenges encountered in the railway sector. In his view, the challenges were to be revealed by indicators and benchmarks to be developed. He cited apparent challenges as:

- (i) poor state of railway equipment and infrastructure. However, he stressed that the few available facilities could be utilized effectively for maximum productivity.
- (ii) stiff competition with road transport services and railway in the northern corridor running from the port of Mombasa. Therefore remarked that should TRL fail to satisfy customers, they would find an alternative way of transporting cargo.

In view of the above, he asked participants to come up with indicators which are measurable and benchmarks that were stretched to the limit in order to address many of the eminent challenges and move the sector forward. He repeatedly urged participants to be realistic and avoid being conservative while discussing required performance indicators and benchmarks for the sector. He then invited presenters to the floor.

4.0 Presentations

4.1 Overview of Performance Indicators

The overview of Performance Indicators was presented by Eng. Eliona Simbo who is a Director of Railway Regulation at SUMATRA.

In his presentation, he informed the meeting that performance indicators were measures through which one could objectively monitor and evaluate developments in the railway sector and eventually suggest a plan for the future development. He underscored the point by emphasizing the fact that what can't be measured can't be managed.

He informed stakeholders that a concept of Balanced Score Card (BSC) was employed in the process of developing the proposed list of indicators and benchmarks. He said with the BSC concept, four distinct but related and interdependent perspectives were considered. He mentioned the perspectives to be:

- (i) Customer perspective;
- (ii) Internal perspective;
- (iii) Innovation and learning; and
- (iv) Financial perspective.

The list of proposed performance indicators categorized into the above perspectives was then presented.

4.2 Overview of Proposed Benchmarks

An overview of the benchmarking process was presented by Mr. Nahson Sigalla who is a Statistics Manager at SUMATRA.

In his presentation he told the meeting that benchmarks were levels of performance that were superior to the existing performance levels but achievable.

During the presentation, it was emphasized that the process of proposing benchmarks focused solely on outputs and results while methods and processes to deliver the intended outputs were left for the operators to ponder.

Participants were then told that the process of benchmarking was guided by the following four steps:

- (i) Individual railway companies proposing initial benchmarks basing on their situation analysis;
- (ii) Comparing and contrasting initial proposals with best practices and performance in other competing railway systems in the region;
- (iii) Reviewing past performance trend of the railway companies on the targeted process; and
- (iv) Working group proposing benchmark values taking into considerations outcomes of the previous steps

The proposed benchmarks on various indicators for TRL and TAZARA were then presented for discussion by participants.

5.0 Discussion

Participants discussed the two presentations. In general, the discussion revolved around the following:

- (i) The meaning of customer complaints and whether embodied claims. It was said that customer complaints essentially reflected dissatisfactions whereas claims were dissatisfactions resulting particularly from losses of property due to thefts or accidents. It was then proposed that number of complaints and number of claims should be treated as two different indicators.
- (ii) The meaning of locomotive reliability and failures. Participants had consensus that locomotive reliability meant average distance covered by serviceable locos between failures. However, it was recommended to specify failures to be included in calculating the indicator as locomotive could fail due to variety of reasons ranging from mechanical to fuel shortage.
- (iii) The meaning of locomotive utilization and whether included utilization of locos running lightly. In the course of discussion it was clarified that locomotive utilization meant average kilometers covered per day for the available locomotives. The available locomotive referred to the number of locomotives made ready for utilization out of the serviceable fleet. It was further said that only mainline locos were considered in determining locomotive utilization.
- (iv) The need to relook at the indicators on revenue per kilometer and cost per kilometer as the two appeared to be very close meaning that the target was for the railways to only break even. It was observed that setting benchmarks for the two at the same level was not proper. A call was made to ensure that revenue per kilometer should be set higher than cost per kilometer for surplus to be realized.
- (v) The need to state duration which the proposed benchmarks will be valid before they are reviewed. One of the presenters responded that the lifespan of the proposed benchmarks were envisaged to be at least three years, though they could be revised at any time incase of major investment/changes in the railway sector;
- (vi) The need for conducting situational analysis in setting benchmarks to justify whether the benchmarks proposed were realistic. It was however clarified that in arriving at the proposed benchmarks, experts from TRL and TAZARA carried out a thorough analysis of situation and moreover

reviewed past performances of the railway. In all cases the situation and the environment in general had to be scanned.

- (vii) The need for the Government to place the railway sector on level field with road transport sector. It was mentioned that the railway sector has been placed on a disadvantaged position, for instance, fuel purchased by railway companies included percentage of road toll used to maintain roads rather than railway. It was said in the previous TRL performed well due to heavy investment in infrastructure and equipment. It was said that in the 2002 TRL was capable of loading about 1.4 million tons. However, in the year 2010 only quarter of a million tons were moved due to deferred maintenance of infrastructure and lack of investment. A call was therefore made to set modest benchmarks assuming that the Government would not invest in the sector. In responding to the call, the representative from the Ministry of Transport informed the meeting that, there were various proposals that the Government were preparing to promote investment in railways, thus major improvement was expected.
- (viii) The need to include an indicator on the age of railway personnel. It was argued that human productivity was age dependent. To emphasize the point, it was cited that an aged personnel could not be expected to perform well on hard works such as track maintenance.
- (ix) The need to consider introducing indicators to measure expenditure on maintenance of assets preferably adjusted to number of locomotives, wagons and kilometer of a permanent way.

6.0 Recommendations

The meeting commended the good work done in coming up with a list of proposed performance indicators and benchmarks. However recommended the following:

- (i) To provide clear and concise definition of all performance indicators in order to facilitate usage and interpretations and accordingly review values set for fuel consumption index especially those of TAZARA;
- (ii) To state clearly the review period of the benchmarks;
- (iii) To reflect properly the vision of the transport sector in setting benchmarks;
- (iv) To add in the list indicators on (1) age of railway personnel, (2) expenditures on maintenance of the assets adjusted to such parameters as number of locomotives, wagons and kilometer of a track;
- (v) To revise an indicator on number of complaints so that an indicator reflecting the number of claims is introduced;

- (vi) To revise benchmarks for revenue per kilometer and cost per kilometer so that revenue per kilometer is higher than cost per kilometer to ensure surplus in the sector;
- (vii) To plead with the government to place the railway sector on level field with road transport sector and consider increasing its level of investment in the sector

7.0 Closing Remarks

In his closing remarks, the Chairman noted that on the whole, proposed benchmarks for railways were on the low side but for them to be achieved it is inevitable that requisite investment on the railway is made. Particularly, he appealed to the Government to increase investment in the railway sector to revive the sector. He remarked that for a county as big as Tanzania needed railway transport for long hauls while roads were to remain as feeders to the railway system. He therefore strongly urged the Authority (SUMATRA) to take into considerations contributions and recommendations of participants while finalizing the process of developing indicators and benchmarks for the sector.

The Acting Director General of SUMATRA, on his part, thanked all participants for their constructive ideas and pledged to improve the indicators and benchmarks taking into account participants contributions. He specifically recognized the effort put in by members of the working group from TRL, TAZARA, RAHCO and the Ministry for their cooperation in coming up with the draft list of performance indicators and benchmarks. He then declared the meeting closed at 1336 hours.

Appendix IV

Appendix IV : Detailed Data Submission Plan

Perspective	SNO	Performance Indicators	Data Submission Plan			
			Weekly	Monthly	Quarterly	Annually
Customers Perspective	1	Number of Customers' complaints				
	2	Number of customers' claims				
	3	Average time taken to process claims				
	4	Average time to advice passengers of train delays				
	5	Punctuality				
	a.	Passenger trains				
	b.	Freight trains				
	6	Average time taken to meet wagon request				
	7	Average time taken to deliver the cargo				
	8	Number of wagons supplied against request				
Internal Business Perspective	9	Proportion of rail to road freight rates				
	10	Proportion of train to road passenger fares				
	11	Wagon turn-round time				
	12	Loco availability				
	13	Wagon availability				
	14	Loco reliability				
	15	Loco utilization				
	16	Wagon utilization				
	17	Speed restrictions				
	18	Average load per wagon				
	19	Coefficient of Empty Return Ratio				
	20	Mean occupancy ratio (passenger)				
	21	Average lead				
	22	Average haul of freight				
	23	Labor productivity				

Perspective	SNO	Performance Indicators	Data Submission Plan			
			Weekly	Monthly	Quarterly	Annually
	a.	Tonnage-Km per employee				
	b.	Passenger-Km per employee				
	24	Specific Fuel Consumption Index				
	25	Train accidents per mil ton-km				
	26	Number of death/injuries per mil ton-km				
	27	Line availability				
	28	Average train speed				
	a.	Passenger Trains				
	b.	Freight Trains				
	29	Tonnage loaded				
	30	Ton-km				
	31	Passengers carried over time				
	32	Passenger-km				
	33	Freight Revenue				
	34	Passenger Revenue				
	35	Average age of railway personnel				
Financial Perspective	36	Total operating cost to revenue ratio				
	37	Operating cost per ton-km				
	38	Revenue per ton-km				
	39	Revenue per passenger-km				
	40	Passenger to Freight revenue ratio				
	41	Average debt collection period				
	42	Revenue per employee				
	43	Wage bill to revenue ratio				
	44	Capital expenditure to net surplus ratio				
	45	Expenditure on maintenance				
		a.	Per Locomotive			
	b.	Per Wagon				
	c.	Kilometer of Track				

Perspective	SNO	Performance Indicators	Data Submission Plan			
			Weekly	Monthly	Quarterly	Annually
Innovation & Learning Perspective	46	Number of trained/exposed employees				
	47	Number of seconded /attached employees				