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METHODOLOGICAL APPROACH TO DETERMINATION OF CERTAIN SUBURBAN PASSENGER TRAIN EFFECTIVENESS

Objective. To develop the method of certain suburban passenger train effectiveness determination. **Methodology.** To solve such problems there is proposed new method, developed on the base of the marginal revenue concept with application of diagram method. This method will give the possibility to define reasonable areas of suburban trains running for considerable reduction of suburban transportations unprofitableness. **Results.** On the base of the carried out analysis one may state that in this paper there is developed the method of definition of effectiveness of functioning of certain suburban train that will give the possibility to reduce unprofitableness of the suburban communication at the territory of Ukraine. **Scientific novelty.** There is improved the methodological approach to determination of optimal areas of suburban trains running at the account of establishment of rational length of route, depending on average passenger travels distance and their average number within the accounting year, that will give the possibility to considerably reduce operational expenditures and to increase transportations effectiveness. **Practical relevance.** Introduction of mentioned methodology for determination of optimal suburban trains running areas will give the JSC Ukrainian Railway Lines the possibility to considerable reduce the unprofitableness of suburban transportations, and local power authorities at the level of city executive board and oblast – to reduce payments for services of the suburban companies or RPCH.

Key words: suburban running, suburban trains, payment for transportation, transportation effectiveness, income, expenditures, unprofitableness.

Introduction.

For a long time, in Ukraine there are running suburban trains within the measures of suburban areas of large and medium cities, and sometimes their running length reaches 250-300km, that considerably exceeds oblast measures. Studies that have been carried out by the Dnipropetrovsk National University of Railway Transport, named after V. Lazaryan show that average length of their running is about 70km, and their unprofitableness sometimes reaches 88-90%. At present, under the conditions of the railway transport reorganization and its

converting into joint-stock companies the unprofitableness reduction becomes urgent.

This problem may be solved with the help of several measures, however, in this article, we consider the task, associated with reduction of suburb train running length, definition of rational areas of their running and reduction of the passenger transportations unprofitableness. Solution of this task is complicated by the absence of statistical data in certain RPCH and suburban railway services.

Objective

To develop the method of certain suburban passenger train functioning effectiveness determination

and definition of rational areas of their running at certain directions.

Methodology

Sequence of solution of the task as to definition of rational areas for the suburb trains running provides:

1. Carrying out of economic analysis of the suburb transportations functioning at given direction;
2. Definition of economic criterion and restrictions for the mentioned task;

3. Definition of options for determination of rational area for the suburb trains running;
4. Evaluation of various alternative options according to the mentioned criterion;
5. Final selection of option for definition of rational area for the suburb trains running.

For further studying we will use the data from the scientific paper of the Dnipropetrovsk National University of Railway Transport, named after V. Lazaryan for operating domain Dnipropetrovsk – Piatykhatky (fig.1) [4]:

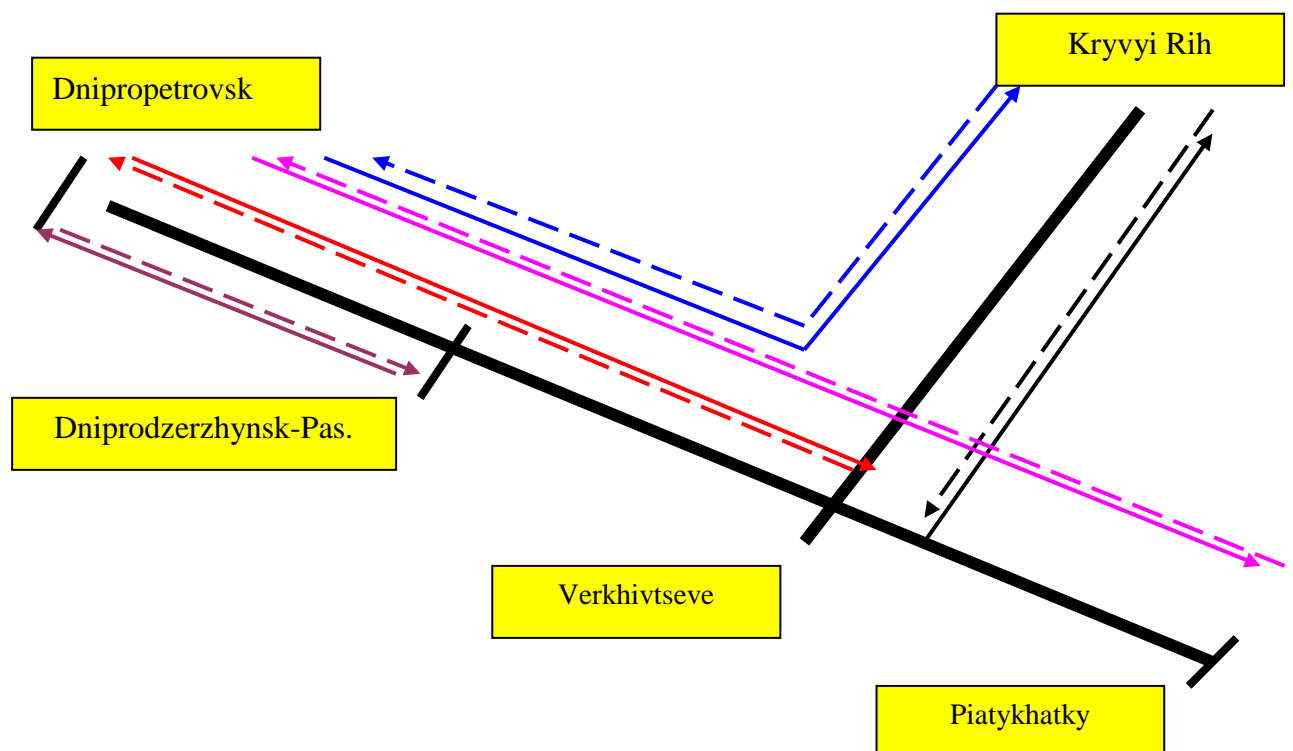


Figure 1 – Scheme of suburban passenger trains running at the operating domain Dnipropetrovsk – Piatykhatky

Cities and villages population:

Dnipropetrovsk – 1029.0 thousand persons;
 Dniprodzerzhynsk – 246.0 thousand persons;
 Verkhivtseve – 10.1 thousand persons;
 Piatykhatky – 20.4 thousand persons;
 Kryvyi Rih – 681.0 thousand persons.

Distances between the mentioned population centers are assumed as follows:

- Dnipropetrovsk – Dniprodzerzhynsk – 35 km;
- Dniprodzerzhynsk – Verkhivtseve – 36 km;
- Verkhivtseve – Piatykhatky – 49 km;
- Verkhivtseve – Kryvyi Rih – 81.0 km.

For certain areas, the distance to population centers and other areas are taken between centers of such areas, and population – according to the data from Internet.

Number of suburb trains at operating domain Dnipropetrovsk–Piatykhatky:

- Dnipropetrovsk – Sukhachivka – 1;
- Sinelnikove – Sukhachivka – 1;
- Dnipropetrovsk – Dniprodzerzhynsk-Pas. – 5;
- Dnipropetrovsk – Dniprodzerzhynsk-Left bank – 1;
- Dnipropetrovsk – Verkhivtseve – 4;
- Dnipropetrovsk – Kryvyi Rih – 3;

- Verkhivtseve – Kryvyi Rih – 1;
- Dnipropetrovsk – Piatykhatty – 8.

Number of transported persons

- LVOK Dnipropetrovsk – 13921.7 thousand passengers;
- Station Dnipropetrovsk – Dniprodzerzhynsk-Pas. – 313.0 thousand passengers;
- LVOK Dniprodzerzhynsk-Pas. – 2297.8 thousand passengers;
- Station Dniprodzerzhynsk-Pas. – Verkhivtseve – 104.9 thousand passengers;
- LVOK Verkhivtseve – 721.7 thousand passengers;
- Station Verkhivtseve – Piatykhatty – 95.8 thousand passengers;
- LVOK Piatykhatty – 106.2 thousand passengers.

Average number of suburb trains at specified direction per year is 14 235 units (without consideration of trains cancellation for gauge repair), train structure 3-5 units of electrical sections – (1 motor + 1 passenger car).

– Average occupancy of the suburb communication train – 41.85 persons.

– Average length of the suburb train running at Prydniprovska railway line – 44 km.

Table 1 shows that at the station of the operating domain Dnipropetrovsk – Piatykhatty, the number of transported passengers within the year will be equal to 19 121.2 thousand passengers. Such complicated calculations are stipulated by the absence of the methodology for definition of real number of the transported passengers between certain station at the railway lines of Ukraine.

Table 1

Number of transported passengers between certain population centers at the operating domain Dnipropetrovsk–Piatykhatty

Population center	Dnipro.	Dnipro.-Dniprodz.	Dniprodz.	Dniprodz.-Verkhivts.	Verkhivts.	Verkhivts.-Piatykhatty.	Piatykhatty.	Verkhivts.-Kryvyi Rih	Total
Dnipro.	0,00	1 479,00	8 957,60	600,00	1 300,00	215,50	369,00	1 000,60	13 921,70
Dnipro.-Dniprodz.	300,00	0,00	9,00	0,00	1,00	0,00	2,00	1,00	313,00
Dniprodz.	2 000,00	9,00	0,00	0,00	96,00	1,00	37,80	154,00	2 297,80
Dniprodz.-Verkhivts.	88,00	0,00	10,90	0,00	1,00	0,00	0,00	5,00	104,90
Verkhivts.	340,80	5,00	100,00	5,00	0,00	4,00	17,00	250,00	721,80
Verkhivts.-Piatykhatty.	65,00	0,00	16,80	3,00	4,00	0,00	4,00	3,00	95,80
Piatykhatty.	60,00	2,20	22,00	3,00	13,00	1,00	0,00	5,00	106,20
Verkhivts.-Kryvyi Rih	1 050,00	15,00	200,00	15,00	250,00	10,00	20,00	0,00	1 560,00
Total	3 903,80	1 510,20	9 316,30	626,00	1 665,00	231,50	449,80	1 418,60	19 121,20

Table 2

Calculation of income from passengers transportation between Kryvyi Rih and other population centers at the operating domain Dnipropetrovsk – Piatykhatky, thousand UAH

Passenger flow description	To	Tariff	Income	From	Tarrif	Income	Total
Dnipropetrovsk–Kryvyi Rih	1 000,60	20,3	20312,2	1 050,00	20,3	21315	41 627,18
Dnipropetrovsk–Dniprodzerzhynsk–Kryvyi Rih	1,00	18,54	18,54	15,00	18,54	278,1	296,64
Dniprodzerzhynsk–Kryvyi Rih	154,00	16,78	2584,12	200,00	16,78	3356	5 940,12
Dniprodzerzhynsk–Verkhivtseve –Kryvyi Rih	5,00	15,46	77,3	15,00	15,46	231,9	309,20
Verkhivtseve–Kryvyi Rih	250,00	14,14	3535	250,00	14,14	3535	7 070,00
Verkhivtseve–Piatykhatky – Kryvyi Rih	3,00	15,91	47,73	10,00	15,91	159,1	206,83
Piatykhatky–Kryvyi Rih	5,00	17,67	88,35	20,00	17,67	353,4	441,75
Total	1 418,60		26663,2	1 560,00		#####	55 891,72

Table 3

Calculation of income from passengers transportation between Dnipropetrovsk and other population centers at the operating domain Dnipropetrovsk – Piatykhatky, thousand UAH

Passenger flow description	To	Tariff	Income	From	Tarrif	Income	Total
Dnipropetrovsk – Dnipropetrovsk – Dniprodzerzhynsk	1 479,00	8,44	12 482,76	300,00	8,44	2 532,00	15 014,76
Dnipropetrovsk–Dniprodzerzhynsk	8 957,60	9,75	87 336,60	2 000,00	9,75	19 500,00	106 836,60
Dnipropetrovsk–Dniprodzerzhynsk–Verkhivtseve	600,00	11,51	6 906,00	88,00	11,51	1 012,88	7 918,88
Dnipropetrovsk–Verkhivtseve	1 300,00	13,26	17 238,00	340,80	13,26	4 519,01	21 757,01
Dnipropetrovsk – Verkhivtseve –Piatykhatky	215,50	15,02	3 236,81	65,00	15,02	976,30	4 213,11
Dnipropetrovsk–Piatykhatky	369,00	16,78	6 191,82	60,00	16,78	1 006,80	7 198,62
Total	12 921,10		133 391,99	2 853,80		29 546,99	162 938,98

Considerable difference in number of the transported passengers “to” and “from” may be explained by the fact that the passengers buy tickets to

and from at the LVOK Dnipropetrovsk and other stations of the operating domain.

Table 4

Calculation of income from passengers transportation between Dniprodzerzhynsk and other population centers at the operating domain Dnipropetrovsk – Piatykhatky, thousand UAH

Passenger flow description	To	Tariff	Income	From	Tarrif	Income	Total
Dniprodzerzhynsk – Dnipropetrovsk – Dniprodzerzhynsk	9,00	8,44	75,92	9,00	8,44	75,92	151,83
Dniprodzerzhynsk – Dniprodzerzhynsk–Verkhivtseve	0,00	8,44	0,00	10,90	8,44	91,94	91,94
Dniprodzerzhynsk–Verkhivtseve	96,00	9,75	936,00	100,00	9,75	975,00	1 911,00
Dniprodzerzhynsk – Verkhivtseve–Piatykhatky	1,00	11,95	11,95	16,80	11,95	200,68	212,62
Dniprodzerzhynsk–Piatykhatky	37,80	14,14	534,49	22,00	14,14	311,08	845,57
Total	143,80		1 558,35	158,70		1 654,61	3 212,96

Table 5

Calculation of income from passengers transportation between Verkhivtseve and other population centers at the operating domain Dnipropetrovsk – Piatykhatky, thousand UAH

Passenger flow description	To	Tariff	Income	From	Tarrif	Income	Total
Verkhivtseve–Dnipropetrovsk –Dniprodzerzhynsk	5,00	11,51	57,55	1,00	11,51	11,51	69,06
Verkhivtseve – Dniprodzerzhynsk–Verkhivtseve	5,00	8,44	42,2	1,00	8,44	8,44	50,64
Dniprodzerzhynsk– Verkhivtseve– Verkhivtseve–Piatykhatky	0,00	8,65	0	3,00	8,65	25,95	25,95
Verkhivtseve – Verkhivtseve –Piatykhatky	4,00	8,87	35,48	4,00	8,87	35,48	70,96
Verkhivtseve–Piatykhatky	17,00	10,62	180,54	13,00	10,62	138,06	318,60
Total	31,00		315,77	22,00		219,44	535,21

Table 6

Calculation of income from passengers transportation between Piatykhatky and other population centers at the operating domain Dnipropetrovsk – Piatykhatky, thousand UAH

Passenger flow description	To	Tariff	Income	From	Tarrif	Income	Total
Piatykhatky – Dnipropetrovsk –Dniprodzerzhynsk	2,20	15,46	34,012	2,00	15,46	30,92	64,93
Piatykhatky – Dniprodzerzhynsk –Verkhivtseve	3,00	12,38	37,14	0,00	12,38	0	37,14
Piatykhatky–Verkhivtseve–Piatykhatky	1,00	8,89	8,89	4,00	8,89	35,56	44,45
Total	6,20		80,04	6,00		66,48	146,52

The previous tables show calculations of the income from passengers transportation between certain population centers at operating domain Dnipropetrovsk – Piatykhatky, that are made according to the following formula (1)

$$D_j^i = KIII \cdot Tap(l), \quad (1)$$

where D_j^i – income from the passengers transportation at the direction – j , station – i , distance l , UAH.;

$K_{i/j}$ – number of transported passengers in two direction at certain station – i - direction – j , distance l , persons.

Tap – tariff for passengers transportation at certain station of route, distance l , UAH;

l – length of estimated station of route for definition of tariff value, km.

Then, we prepare summary table 7, where we calculate the aggregate values of income from the passengers transportation at each station of this direction.

Table 7

Distribution of income from the passengers transportation between certain population centers at the operating domain Dnipropetrovsk–Piatykhatty

Population center	Dnipro.	Station Dnipro.-Dniprodz.	Dniprodz.	Station Dniprodz.-Verkhivts.	Verkhivts.	Station Verkhivts.-Piatykhatty.	Piatykhatty.
Kryvyi Rih (Verkhivtseve)	41 627,18	41 923,82	47 863,94	48 173,14	55 891,72	648,58	441,75
	41 627,18	296,64	5 940,12	309,20	7 070,00	206,83	441,75
Dnipropetrovsk	162 938,98	147 924,22	41 087,62	33 168,74	11 411,73	7 198,62	0,00
		15 014,76	106 836,60	7 918,88	21 757,01	4 213,11	7 198,62
Dniprodzerzhynsk		151,83	3 212,96	2 969,19	1 058,19	845,57	0,00
		151,83		91,94	1 911,00	212,62	845,57
Verkhivtseve		0,00		119,70	535,21	415,51	0,00
		69,06		50,64		96,91	318,60
Piatykhatty.		0,00	64,93	64,93	102,07	102,07	146,52
		64,93		37,14		44,45	
Total	204 566,2	189 999,9	92 229,5	84 495,7	68 998,9	9 210,4	588,3

Table 7 shows items, defining income from the passengers transportation at each station of given direction of the passenger running, and light items, indicating places of income recovery from the passengers transportation. Under the table 7 there is specified the data, defining amount of income from the passengers transportation at each station of given passenger running direction.

On the base of data, indicated in the table 7, there is prepares the diagram of income from the passengers transportation at the direction Dnipropetrovsk – Piatykhatty (fig.2). At the axis of ordinates there are sown values of aggregate income from the passengers transportation by various suburb trains within the year for different population centers (stops) of

direction. Values at axis of abscises, in km, the diagram shows distance to the main population centers, that correspond to the cities Dnipropetrovsk, Dniprodzerzhynsk, Verkhivtseve, Piatykhatty and intermediate values between them. On the base of actual income values here is created logarithmic line of trend. The figure 2 shows that the value of income from the passengers transportation at suburb communication at trains running distance increase continually tends to zero.

This article study objective is the definition of optimal area (distance) of the suburb trains running, where the passengers transportations will be without loss. For this purpose we used the concept of margin

income and methodology, represented in scientific paper [10].

Then, it is required to form the line of total expenditures from the passengers transportation at given direction as the amount of components of conventional permanent expenditures and conventional changeable expenditures at two directions of running, as income from the passengers transportation has been also considered in to and from directions.

To calculate expenditures from the passengers transportation at the direction Dnipropetrovsk – Piatykhatky, we analyzed first of all from 10, hall of Prydniprovsk railway station according to separate components: passenger component; motor car component; locomotive component; infrastructure. Then, there was defined the share of each component.

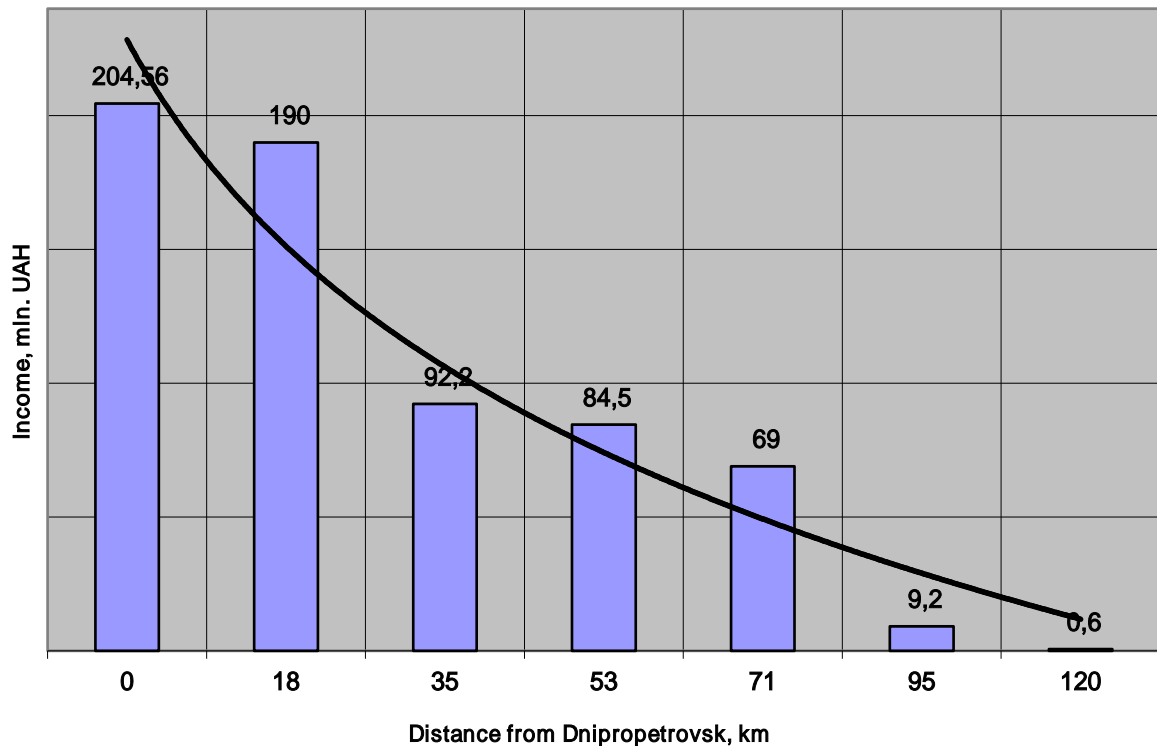


Fig. 2 – Diagram of income from the passengers transportation at the direction Dnipropetrovsk – Piatykhatky.

With the help of table 8, that has been calculated in the scientific research part [4], there are defined total expenditures from the passengers transportation at the direction Dnipropetrovsk – Piatykhatky, and then, with the help of form 10, there are calculated separate constant and changeable expenditures for income diagram preparation (fig. 3).

Figure 3 shows that the point of the suburb passenger transportations without loss is located at the distance of 66km from the station Dnipropetrovsk, that is 5km closer than the station Verkhivtseve. Due to the carried out studies one may make the conclu-

sion that for considerable reduction of the suburb transportations unprofitableness it is reasonable to arrange the suburb trains running to station Verkhivtseve.

The area Verkhivtseve – Piatykhatky shall be services with the help of railway bus that will run for workers of Prydniprovsk railway station shift transportation, as there is almost no other passengers at this direction. In addition, at this direction there are a lot of passenger trains that have the stop at station Piatykhatky

Table 8

Calculation of expenditures as per certain trains at the operating domain Dnipropetrovsk – Piatykhatky (present running arrangement) Source [4]

Expenditures description	Suburb train description	Passengers number	Trains number, pcs	Distance, km	Train-km per year	price in UAH from paper [72]	Total expenditures, thousand UAH
Passenger terminal stations expenditures	Sinelnikove- 1- Sukhachivka	86,0				0,0390	3,35
	Dnipropetrovsk - Sukhachivka	10,0					0,39
	Dnipropetrovsk - Dniprodzerzhynsk	12658,6					493,54
	Dnipropetrovsk - Verkhivtseve	2547,7					99,33
	Dnipropetrovsk - Piatykhatky	840,3					32,76
	Dnipropetrovsk - Kryvyi Rih	2440,6					95,16
	Verkhivtseve - Kryvyi Rih	538,0					20,98
	Total	19121,2					745,51
Suburb economy expenditures	Sinelnikove- 1- Sukhachivka		1,0	17,7	129210,0	4,0880	528,21
	Dnipropetrovsk - Sukhachivka		0,1	17,7	12921,0		52,82
	Dnipropetrovsk - Dniprodzerzhynsk		6,0	35,0	1533000,0		6 266,92
	Dnipropetrovsk - Verkhivtseve		4,0	71,0	1658560,0		6 780,22
	Dnipropetrovsk - Piatykhatky		8,0	120,0	5606400,0		22 919,04
	Dnipropetrovsk - Kryvyi Rih		3,0	152,0	3328800,0		13 608,18
	Verkhivtseve - Kryvyi Rih		1,0	81,0	591300,0		2 417,24
	Total				12860191,0		52 572,63
Expenditures for shunting locomotives	Sinelnikove- 1- Sukhachivka		1,0	17,7	129210,0	0,0145	1,44
	Dnipropetrovsk - Sukhachivka		0,1	17,7	12921,0		0,14
	Dnipropetrovsk - Dniprodzerzhynsk		6,0	35,0	1533000,0		17,05
	Dnipropetrovsk - Verkhivtseve		4,0	71,0	1658560,0		18,44
	Dnipropetrovsk - Piatykhatky		8,0	120,0	5606400,0		62,34
	Dnipropetrovsk - Kryvyi Rih		3,0	152,0	3328800,0		37,01
	Verkhivtseve - Kryvyi Rih		1,0	81,0	591300,0		6,58
	Total				12860191,0		143,00
Infrastructure expenditures	Sinelnikove- 1- Sukhachivka		1,0	17,7	129210,0	2,3250	300,41
	Dnipropetrovsk - Sukhachivka		0,1	17,7	12921,0		30,04
	Dnipropetrovsk - Dniprodzerzhynsk		6,0	35,0	1533000,0		3 564,22
	Dnipropetrovsk - Verkhivtseve		4,0	71,0	1658560,0		3 856,15
	Dnipropetrovsk - Piatykhatky		8,0	120,0	5606400,0		13 034,87
	Dnipropetrovsk - Kryvyi Rih		3,0	152,0	3328800,0		7 739,45
	Verkhivtseve - Kryvyi Rih		1,0	81,0	591300,0		1 374,77
	Total				12860191,0		29 899,91
Total expenditures	Sinelnikove- 1- Sukhachivka						833,41
	Dnipropetrovsk - Sukhachivka						83,40
	Dnipropetrovsk - Dniprodzerzhynsk						10 341,73
	Dnipropetrovsk - Verkhivtseve						10 754,14
	Dnipropetrovsk - Piatykhatky						36 049,01
	Dnipropetrovsk - Kryvyi Rih						21 479,80
	Verkhivtseve - Kryvyi Rih						3 819,56
	Total						83 361,05

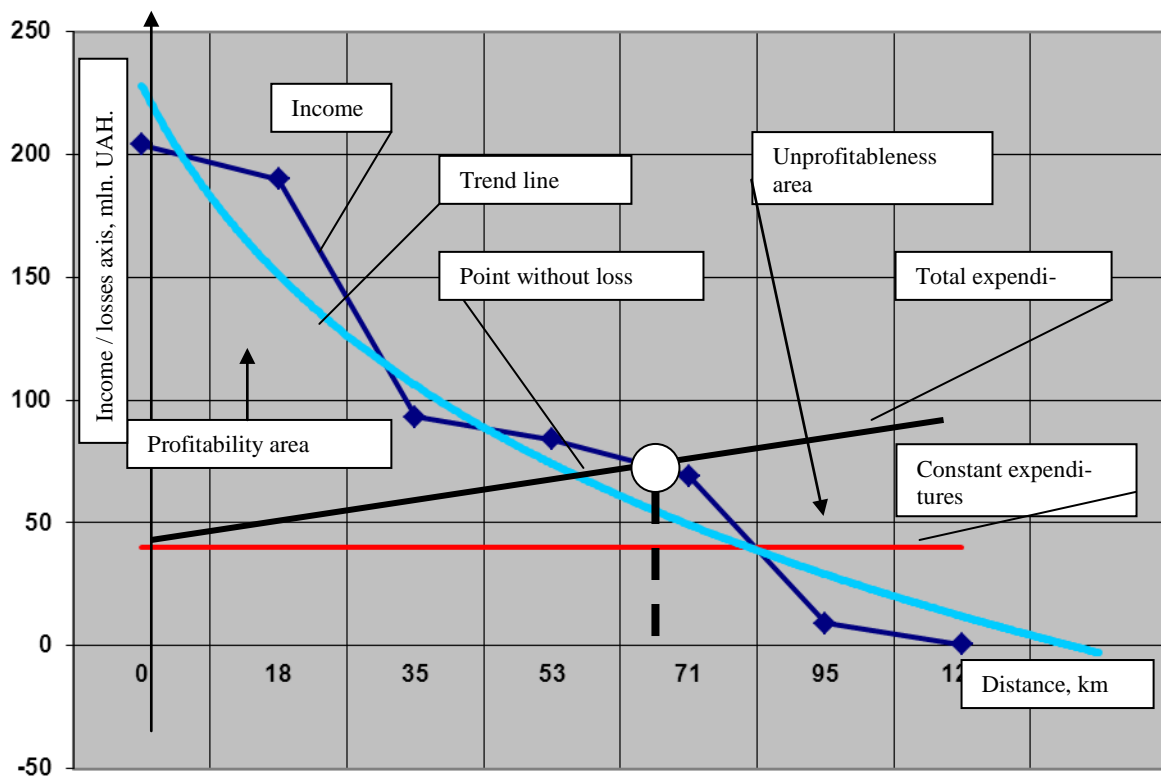


Fig. 3 – Diagram of income from the passengers transportation at the direction Dnipropetrovsk – Piatykhatky

It is assumed that the abovementioned analysis of the break even point and definition of optional (limit) distance of the suburb trains running is carried out within the measures of relevant range, where the functions of variable and constant expenditures for transportation are assumed as linear and functionally connected with the distance. However, even under such assumptions, the analysis require comparison of three variable functions: function of constant expenditures and two variable functions – function of income and function of variable expenditures. Thus, more demonstrative analysis of the break even point may be carried out with application of marginal approach, where it is required to compare constant expenditures only with one variable function – with marginal income in the form of difference between income and variable expenditures from the suburb transportations.

Margin Breakeven Analysis if the purpose of determining the optimal (maximum) mo-dstani suburban trains plying Nave, Lombardy-Denis in fig. 4.

The figure 4 shows that the break even point area of the suburb passenger transportations begins from the distance, where function of marginal income crosses the line of constant expenditures, i.e. marginal income from the transportations is equal to constant expenditures, allocated for relevant segment of the suburb passenger transportation.

Additional analysis that has been carried out with the help of marginal income shows that at the direction Dnipropetrovsk – Piatykhatky it economically reasonable to perform suburb passenger train running only up to the station Verkhivtseve. In such a case, the losses from the passenger transportation will be 5 mln. UAH per year or 2.4% in comparison with present 55.5 mln. UAH.

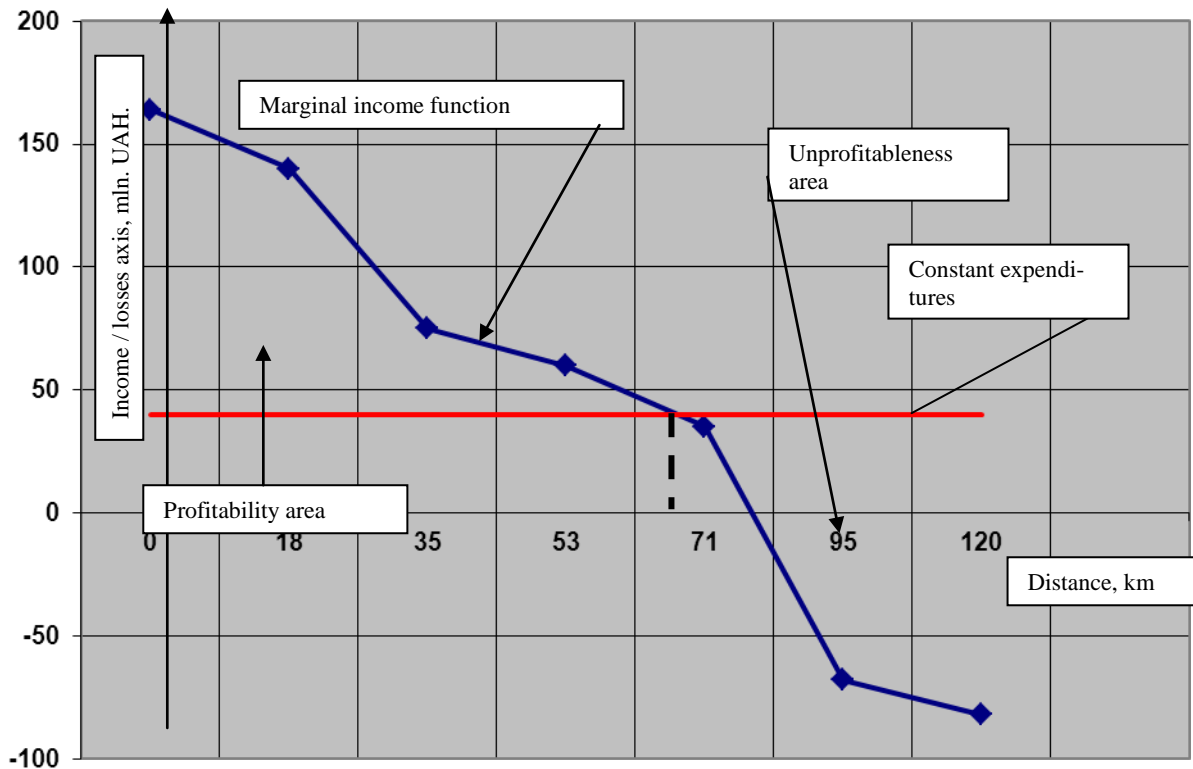


Fig. 4 –Diagram of the marginal income from the passengers transportation at the direction Dnipropetrovsk – Piatykhatky

Scientific novelty

There is improved the methodological approach to determination of optimal areas of suburban trains running at the account of establishment of rational length of route, depending on average passenger travels distance and their average number within the accounting year, that will give the possibility to considerably reduce operational expenditures and to increase transportations effectiveness.

Practical relevance

Introduction of mentioned methodology for determination of optimal suburban trains running areas will give the JSC Ukrainian Railway Lines the possibility to considerable reduce the unprofitableness of suburban transportations, and local power authorities at the level of city executive board and oblast – to reduce payments for services of the suburban companies or RPCH.

Conclusions

On the base of the carried out studies there is established:

1. Principles of definitions of volumes of the suburb passenger transportations subject to absence of statistical information at the railway line of Ukraine;
2. There is developed the methodology of definition of the rational areas for the suburb passenger trains running at the operating domain of the Prydniprovsk railway station at the account of establishment of optimal distance of their running that gives the possibility to considerably reduce the transportation unprofitableness.

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МЕТОДИЧНИЙ ПІДХІД ЩОДО ВИЗНАЧЕННЯ ЕФЕКТИВНОСТІ ФУНКЦІОНУВАННЯ ОКРЕМОГО ПРИМІСЬКОГО ПАСАЖИРСЬКОГО ПОЇЗДА

Мета. Розробити методику щодо визначення економічної ефективності функціонування окремого приміського пасажирського поїзда. **Методика.** Для вирішення задач такого класу в роботі запропоновано нову методику, яка розроблена на основі концепції маржинального доходу з використанням графічного методу. Ця методика дозволить визначити раціональні зони курсування приміських поїздів для суттєвого зменшення збитковості приміських перевезень. **Результати.** На основі проведеного аналізу можна констатувати, що в роботі розроблено методика визначення ефективності функціонування окремого приміського пасажирського поїзда, що дозволить зменшити збитковість приміського сполучення на теренах України. **Наукова новизна.** Удосконалено методичний підхід щодо визначення оптимальних зон курсування приміських поїздів за рахунок встановлення раціональної протяжності маршруту залежно від середньої дальності поїздки пасажирів та їх середньої кількості протягом звітного року, що дозволить суттєво знизити експлуатаційні витрати та підвищити ефективність перевезень. **Практична значимість.** Впровадження вказаної методики для визначення оптимальних зон курсування приміських поїздів дозволить АТ «Українські залізниці» суттєво знизити збитковість приміських перевезень, а місцевим органам влади на рівні мерій та області зменшити платежі за послуги приміських компаній або РПЧ.

Ключеві слова: приміський рух, приміські поїзди, плата за перевезення, доходи від перевезень, ефективність перевезень, доходи, витрати, збитковість

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МЕТОДИЧЕСКИЙ ПОДХОД К ОПРЕДЕЛЕНИЮ ЭФФЕКТИВНОСТИ ФУНКЦИОНИРОВАНИЯ ОТДЕЛЬНОГО ПРИГОРОДНОГО ПАССАЖИРСКОГО ПОЕЗДА

Цель. Разработать методику определения экономической эффективности функционирования отдельного пригородного пассажирского поезда. **Методика.** Для решения задач такого класса в работе предложена новая методика, которая разработана на основе концепции маржинального дохода с использованием графического метода. Эта методика позволит определить рациональные зоны движения пригородных поездов для существенного уменьшения убыточности пригородных перевозок. **Результаты.** На основе проведенного анализа можно заключить, что в работе разработана методика определения экономической эффективности функционирования отдельного пригородного пассажирского поезда, которая позволит уменьшить убыточность пригородного сообщения в Украине. **Научная новизна.** Усовершенствован методический подход к определению рациональных зон курсирования пригородных поездов за счет установления оптимальной протяженности маршрута в зависимости от средней дальности поездки пассажиров и их среднего количества на протяжении отчетного года, что позволит существенно снизить эксплуатационные затраты и повысить эффективность перевозок. **Практическое значение.** Внедрение указанной методики для определения рациональных зон курсирования пригородных поездов позволит АО «Украинские железные дороги» существенно снизить убыточность пригородных перевозок, а местным органам власти на уровне мэрий и области уменьшить платежи за услуги пригородных компаний или РПЧ.

Ключевые слова: пригородное движение, пригородные поезда, плата за перевозки, доходы от перевозок, эффективность перевозок, доходы, затраты, убыточность