２００２年度修士論文

RECOMMENDATIONS OF MULTI CRITERIA ANALYSIS UNDER MULTI ACTOR DECISION PROBLEM IN TRANSPORT PROJECT EVALUATION

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ABSTRACT

In Japan, transport project evaluation trends to employ multi criteria analysis (MCA) increasingly nowadays because, the traditional evaluation method, cost benefit analysis, has some limitation that it cannot estimate some aspects accurately. However, there are some details of MCA, especially in multi actor decision making, which has never been established in the guideline, since MCA still new to Japan. In this study, a stop working transport project, Kyushu International Airport site selection, was discussed why the concern actors could not reach a consensus. One important reason was about how to select appropriate decision making team. The representatives from concern interest groups must be involved in decision making team in order to allow them to protect their benefit in the decision making. On the other hand, southwestern Ehime road network improvement project prioritization also employed MCA as the case of KIA, but the representatives of local policy units were involved in the decision making team for weighting process. However, still, there were other aspects which were not handled appropriately; therefore, the guidelines for using MCA with multi actors were proposed in this study by featuring on the southern Ehime road network improvement project by assuming a scenario. In the assuming scenario, established rules constrained them to involve local policy units in decision maker team to have close communication, which was advantage to get feedback whether the decision team were satisfied evaluation model. If not, they could modify it to reflect their real needs. Moreover, the existing weighting procedure, which has been established in formal guidelines for the evaluation, was examined. The existing procedure composes of the concept of AHP and additive value method which was not correct theoretically and it could bring mistake result, especially in the multi actor team who had different perception. A stronger theoretical weighting method was proposed to support multi actor decision making.

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1. Introduction

Nowadays, a large scale transportation project always has widespread effect to many groups of people, who concern different interest, which lead to conflict among the groups. These conflict problems lead to negative impacts to transportation projects, for instance, the delay, cost increase and withdrawal of project. Refer to *Guidelines for the Evaluation of Road Investment Projects* (Japan), the conflicts among the groups has not been considered formally yet; therefore, conflict analysis should be implemented in decision making of public transport project evaluation to prevent the problem which may cause by conflict among interest groups.

1.1 Objective

In this study, the objective is to propose a structured way of thinking for decision making which contains conflict in transportation project of Japan public organization by implementation of systematically thinking about conflict analysis.

1.2 Accomplishment

The accomplishment of this study are (1) guideline for public transport project evaluation, how to select decision makers, what is the role of decision makers and (2) a guideline for evaluation model that easy to use for multi actor problem.

2. Overview of multi criteria analysis and conflict analysis

The evaluation of large scale infrastructure project always concerns with extensive benefit of many interest groups. As long as the Multi Criteria Analysis (MCA) has been just introduced to transport project evaluation in Japan recently, there is no formal guideline how to apply MCA with appropriate procedure; therefore, MCA are employed improper in some steps. For instance, Kyushu International Airport project site selection, some of the reasons that they could not get a consensus are improper decision makers choosing and lack of communication among the group.

2.1 Kyushu International Airport site selection

2.1.2 Problem statement

Even though Fukuoka Prefecture was the most urbanized prefecture in Kyushu area, the other prefecture governors had objection about this opinion, because the Fukuoka prefecture was over concentration; moreover, construction the new international airport in Fukuoka prefecture would increase the gap between Fukuoka prefecture and the other prefecture in Kyushu area. The other entire prefecture governors also wanted the Kyushu International Airport to be located in their own prefecture. Therefore, a third party was invited to handle this conflict by Multi Criteria Analysis.

2.1.3 Study of the third party

In the study of the third party (Wise men committee of Kyushu International Airport site selection), 1 framework structure and 1 evaluation model were used while there are 5 decision makers were involved in this study and the final results was derived from average score of the 5 decision makers.

The weight of preference was obtained by the 5 decision makers, who were experts from different fields and concerned each criterion with different importance, by 2 methods: (1) pairwise comparison: Analytic Hierarchy Process, or AHP and (2) direct assign method, whereas the score of each criterion was obtained from direct measure ment of impacts which was converted to score by the better utility condition had the higher score. After that, the total score of each alternative, which was obtained from summation of weight and score (equation1), could express how much utility did the alternative have. Then, decision makers could compare which alternative should be selected.

$$T_j = \sum_{1}^{n} (w_i s_{ij}) \quad (1)$$

Where:

T_j : Total score of alternative *j*

w_i : Weight of criterion *i*

s_{ij} : Score of criterion *i* alternative *j*

n : Number of criteria

Still, the alternative that performed the best score was located in Fukuoka prefecture. And this result made the other prefectures leave from the project and, finally, the project was turned down.

2.1.4 Sensitivity analysis

Sensitivity analysis was conducted to check the reliability of the result which was turned down. The sensitivity analysis showed that the reliability of the third party evaluation results were acceptable; therefore, the robustness was not the cause of rejection.

2.1.5 Discussion

The study of the third party does not support for conflict analysis because the decision makers were the third party who were not belong to any prefectures. Therefore, the third party could not act as a representative of the prefectures to propose their opinion about weighting for instance, the other entire prefectures expected the weight of economic effect on their own prefecture much more than the decision of the third party. As mention above that there was an agreement of the airport site selection, the third party was invited to handle the study; however, the study results were not accepted by the other entire prefectures. In this case study, the role of third party is like a referee who judges a competition for winner and loser. Even though the referee has done his/her job without bias, it still does not work well because, in this case, the situation of win -win was necessary to get a consensus.

2.2 Southwestern Ehime Road Network Project Prioritization: a case study

As a new era of transport project evaluation in Japan, The road line project prioritization also employed MCA. In order to reflect the needs of public involve, the study collect weighting value from lower policy units. However, the prioritization result cannot be opened to public; the government cannot know whether the result is good or bad. The evaluation procedure are necessary to be revised carefully because, it is high possibility that the local unit may not accept the result as it ever happen with the KIA case.

2.2.2 Methodology

- Evaluation structure.
- Major decision maker: government.
- Weighting designers: 12 local policy units.
- Frame work: 3 main criteria, 13 sub-criteria.
- Alternative: 118 road line projects.

2.2.2.1 Actor involvement

As in the project description, each local policy unit concern the different benefit, each of them were allowed to decide the weight value for the road line projects in their own area by using AHP as a tool to obtain the weight sets. There are 12 local governments were involved *only* in weighting procedure to decide importance of criteria in the evaluation model, while the government act as the main decision maker who design everything in the study.

2.2.2.2 Evaluation model

In this study, MCA was employed for investigation. There were 2 main component; (1) weight and (2) attribute score as explain in the equation;

$$T_j = \sum_{1}^{n} (w_i s_{ij}) \quad (4)$$

The overall score of the road line project was obtained from the product between weight and score. The higher overall score, the better ranking in prioritization result.

2.2.2.3 Evaluation framework structure

All the weight were obtained from AHP, while the attribute score was decided by the main decision maker as in the table 1.

Table 1 an example of score description

Score	1	3	5
description	The number of the injured per 100,000 people equal or lower than 912.3	The number of the injured per 100,000 people equal or lower than 928.8	The number of the injured per 100,000 people greater than 928.8

2.2.2.4 Weighting result

The weighting results of each local policy unit were widely different because, possibly, they have different concerns of benefit.

2.2.2.5 Prioritization result

Prioritization result showed that most of the top ranking projects belong to few local policy units which may leads to conflict of beneficial aspect. The proper procedure of evaluation is crucial to prevent this kind of problem.

2.2.3 Summary

The lower policy units had a little participation in the decision making. They had only one role in weighting step of the decision making, which may not adequate to reflect the real intention of those policy units, especially, they lack of communication. Moreover, the government did not monitor the feedback from those policy units about the prioritization result; therefore, it is ambiguous whether the result satisfies the policy units. The evaluation model of the southwestern Ehime is a combination between AHP and additive model. This method may not applicable theoretically and practically.

3. Proposal of using MCA under multi actor decision making

Since the project has widespread concern from the national level to the municipal level, the entire policy unit concerns are invited in decision making process. Not only are they involved in the weighting process, but also, the entire process from the beginning to the final stage. During the study, some conflict about the benefit occurs but, due to good communication, the conflict is solved at the initiation stage which is easier than leaving the problem until the final stage that it makes conflict more severe.

3.1 Proposal to dealing with multi actor project

3.1.1 Decision structure

All the 12 towns must be involved at the beginning of the decision making, as in figure 1, in order to prevent conflict problems that may occur after decision such as in the previous chapter.

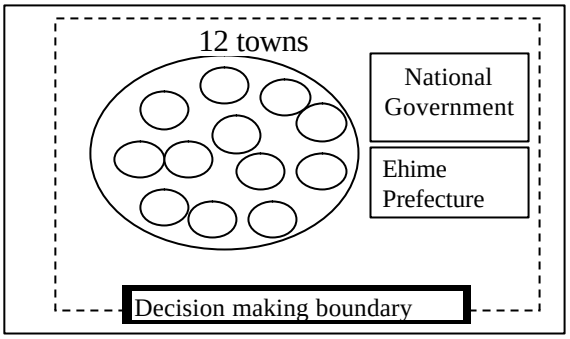

Figure1 Participation boundary

3.1.2 Rules

1. All the units are involved in the decision making process.
2. All units have right to discuss about the evaluation model. If the model cannot reflect the real intention, the evaluation model can be changed.
3. All the policy units must accept the final result that is obtained form revised evaluation model. If not, reasons must be given.

Attribute score in the decision is obtained from the improvement score which is measured form the condition of road, how necessary and urgent it is. Weighting is decided by each own area, by the town's preference.

3.2 Simulation the reaction of each policy unit to the original study result

The result shows that most of the top ranking road lines are in Uwajima. The other towns who get very low priority complain that "it's not fair to allocate the most of the budget to Uwajima city area because, it will make let Uwajima develop more and more despite the rest towns cannot develop much, since they lack budget. The difference of development between city area and the other areas will increase.

All of them have discussed about the problem of prioritization again, most of them agree that the first study result is too centralizing. Some aspects are not considered. Therefore, they will add one more criterion in the maintenance score, which is decentralization criterion. Then, calculate the overall score for the prioritization again.

3.3 Conflict analysis

3.3.1 Equity balance modification

To mitigate the conflict problem about centralization complaint, most of the policy actors agree to modify the decision criteria of the improvement score study by adding one more criterion which can increase score to the rural area. This action decrease the pressure from the rural area policy actors who are unsatisfied with the score they are given. The new criterion is urbanization level of the area by measuring from the location of the towns, how far it is from the city area as follows in the table 2 and figure 2.

Table 2 Description of equity balance modification criterion attribute score

Description	Attribute score
A town which is city area	1
A vicinity of a city area	3
A town located next to the city area	5

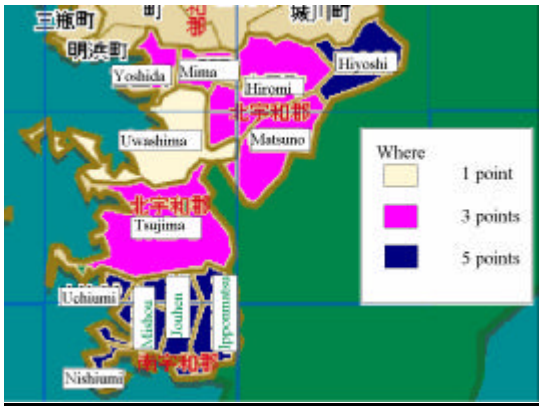

Figure 2 Attribute score of each town in the new criterion

3.3.2 Measurement of ranking improvement

The new prioritization score shows that the other entire towns get a little better of ranking, that make they are satisfied. This result supports that the degree of conflict problem is reduced due to the pressure from the rural areas has been decreased as shown in table 3.

3.4 Sensitivity analysis

Since each policy unit has different perception of the criterion, they give importance to each criterion with different weight and it cause the different of ranking results. This section is devoted to investigate the effect of changing weight set to ranking of the road projects.

Table 3 Result of ranking improvement

Town	No. of project in the town	Total Ranking improvement	Average
Ipponmatsu	4	+21	+5.25
Mima	9	+8	+0.89
Uchiumi	2	+9	+4.50
Yoshida	10	+10	+1.00
Jouhen	11	+62	+5.64
Uwajima	28	-179	-6.39
Hiromi	13	-19	-1.46
Mishou	7	+24	+3.43
Hiyoshi	6	+34	+5.67
Matsuno	8	-4	-0.50
Tsuchima	15	+13	+0.87
Nishiumi	5	+21	+4.20
Total	118	0	+23.08

3.4.1 Methodology

12 weight sets of the lowest policy units were applied to see how the ranking of the road change with different weight set and compare with the original ranking result.

1. Grouping by the lowest policy units: 12 towns.
2. Grouping by the characteristic of area: city area, flat area and mountainous area.

3.4.2 Result

1. Grouping by the lowest policy units: 12 towns.

The ranking position of each road project varies widely by the changing of weight set of each town. From the table comparison of ranking show that minimum and maximum ranking opposition of the projects is very wide. As represent by standard deviation, the overall average of standard deviation is about 32 positions from total 118 projects.

2. Grouping by the characteristic of area: city area, flat area and mountainous area.

In contrast to the previous results, the variation of ranking position and score is much lower than the results of grouping by lowest policy units. The standard deviation of ranking position and score is

very low as the difference between maximum and minimum of ranking. The overall average of standard deviation of ranking position is about 4.24 positions, while the score's one is about 0.08 points.

3.4.3 Discussion and conclusion of sensitivity analysis

The cause that ranking position and improvement score vary widely in grouping by the lowest policy units is the difference of weight set. For instance, safety improvement criteria, varies from 45% (Matsuno) to 3% (Mima), 42% difference, especially, the attribute score in this criterion varies from scale 1 to 5. Therefore, undoubtedly, score varies broadly as in the results. While the variation of results in grouping by characteristic of area is much less than the other grouping because the difference of weight set is very small.

3.4.4 Problem of the weight diversion

Refer to the table of weight set comparison; the weight sets of towns are too different, even though they are neighboring and located in the same characteristic area.

3.4.5 Summary

As the weights change, the positions also change widely. Therefore, the accuracy of the weighting is very important. It is one of the most crucial components of ranking. The mistake from the weighting procedure, because of the procedure itself or the lack of understanding of the decision makers, are not allowed to occur, it will reduce the correctness of the result.

3.5 Examination of Weighting method

3.5.1 The original AHP

Table 4 AHP comparison

Criterion	Option1	Option2	Option3	Option 4
Option1		1	3	5
Option2			3	5
Option3				3
Option4				

The AHP is used for evaluate or prioritization the option by consider a number of criteria. All the criteria in a same level including the alternative level, the lowest level, as shown the table 4, the alternatives must be compared the relative importance.

3.5.2 The weighting method in the original study

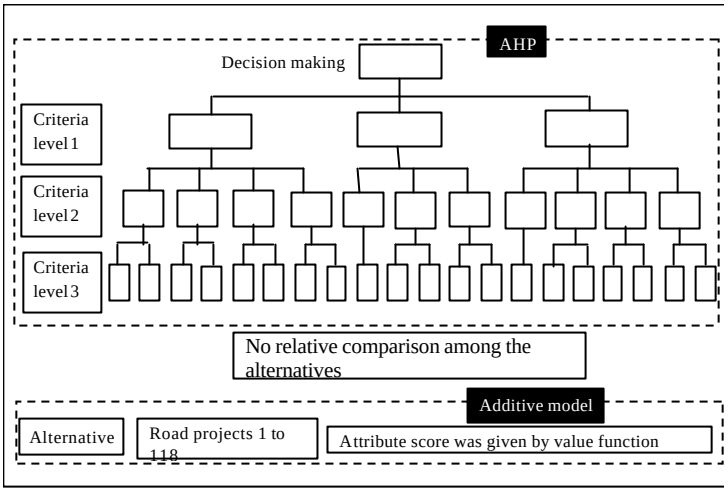

Figure 3 Evaluation structure of original study which is a combination between AHP and additive value model.

An example of attribute score which was given by the national government, contrast to the original AHP, the study of national government cannot do relative comparison in the bottom level, alternative level, because, there were 118 alternatives which 7021 times of comparison are needed. Therefore, the government make a evaluation model as combination between AHP (from criteria level 1-3) and additive model (attribute score of alternatives) as in table 2 for the ease of comparison in the bottom level. However, the combination cannot go together because AHP derive value form the relative importance between option while, additive model derive value from reference impact ranges; therefore, the using combination between AHP and additive model is not an effective method.

3.5.3 Additive value

This evaluation model compare the weight of importance refer to the range of impact. The additive model values weights have no absolute or intrinsic meaning. Therefore, it is meaningless to derive them without reference impact ranges. To correct the weights, it must be assessed with reference to impact ranges. One of the methods to assess the weights is trade-off procedure (Keeney and Raiffa, 1976) which has the strongest theoretical foundation. The concept is to compare two options described on two criteria; one option

has the best impact on the first and the worst impact on the second criterion, the other has the worst on the first and the best on the second criterion. By choosing the preferred option out of the two options, the decision maker decides on the more important criterion. Next, the critical step is the adjustment of the impact level in order to yield indifference between the two options. This is typically done by either worsening the chosen option in the best impact or improving the non-chosen option in the worst impact.

3.5.4 Illustration

Evaluate the relative importance between 2 criteria by trade-off.

Criterion 1 (c1): safety improvement, sub criterion to control "the number of the injured per 100,000 population less than 912.3 persons".
Criterion 2 (c2): cohesion improvement between town and city, sub criterion to "access Uwajima within 120 minutes from a town".

The 2 criteria were expressed in value function as in the figure 4.1 and the figure 4.2.

Suppose there are 2 options as alternative 1, a1, and alternative 2, a2, which are composed of criterion 1(No. of injured from traffic accident per 10,000 population) and criterion 2 (Access time to inner city area)as follows in figure 5;

a1 = (930 persons, 90 minutes)
a2 = (910 persons, 165 minutes)
Suppose there are 2 options as a1 and a2, the weighting procedure may start from a question like "Which option is more preferable between a1(930,90) and a2(910,165)?". If the answer is a1(930,90) is more preferable, the next question for weighting procedure is "Which x value such you are that indifferent between (x,90) and (910,165)". Suppose the answer is "x is roughly 920", the relative weight of importance between criterion c1 and c2 can be calculated as follows;

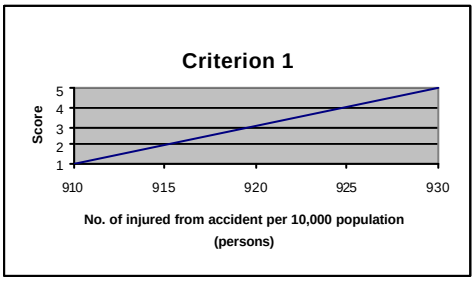

Figure 4.1 additive value models

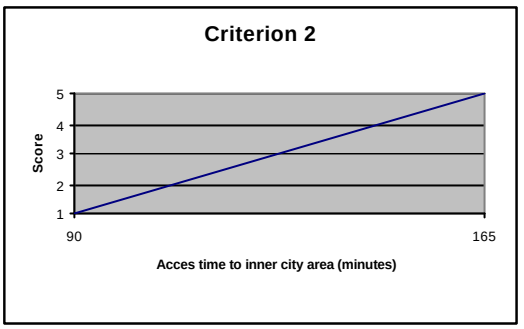

Figure 4.2 additive value models

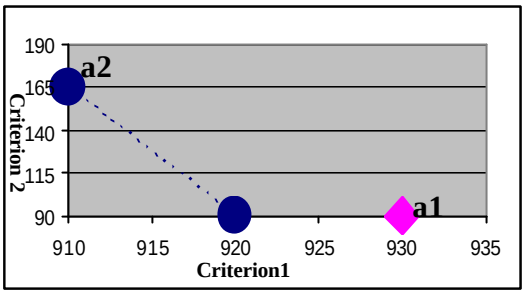

Figure 5 an example of Trade-off

Equation: value, v, of (920,90) is equal to (910,165), and l is relative importance.

$$v(920,90) = v(910,165)$$
$$l_1 v_x(920) + l_2 v_y(90) = l_1 v_x(910) + l_2 v_y(165)$$
$$1l_1 + 5l_2 = 3l_1 + 1l_2$$
$$4l_2 = 2l_1$$
$$l_2 = 0.5l_1$$

Therefore, the relative importance weight between c2 and c1 is 50%.

As mentioned above, even though the trade-off is more complex than AHP, it is worth to do, especially in group decision making, trade-off has advantage because it provide information to decision makers to consider the weight at the same definition of criteria.

3.5.5 Summary of weighting method

Combination of AHP and additive model is not a theoretically correct way of evaluation. It is better to employ only 1 method whether AHP or additive model. For the multi-actor decision making, additive model is preferable since it explain the definition of criteria in quantity and quality term more than a group of words, while the AHP the word like Safety can be perceived by different

definition by different decision makers. Especially, AHP evaluate criteria importance from top to bottom; during consider the top level, decision makers may not understand the sub criteria correctly while additive model just go to compare the bottom level criteria directly to get more accuracy.

5. Conclusion and further study

5.1 Conclusion

In this study, there are some significant issues of that will be helpful to be a guideline of transport project evaluation by MCA. The main components of MCA are (1) decision makers and (2) evaluation model.

For the decision making that concern a number of interest groups, they should have representative in the decision making group in order to speak for the benefit of groups, monitor each other and have better communication to handle with conflicts among the groups. The next question is "When and in which process the other interest groups should be involved?". The earlier and the more process the interest groups are involved, the easier conflict problems are solved. On the other hand, if the other interest groups are not involved or involved at the very last stage of decision making, when final result comes out and the conflict occurs, they cannot change the result and it may be too late to solve conflict problems. When the interest groups do not accept the result, they may boycott a project and it may be cancelled that cause extensive lose.

For evaluation model aspect, weighting procedure is one of the most important elements in MCA. Decision makers should pay a lot of attention on weighting procedure. The complicated method (additive model) at the start but definite is more preferable than easier but unclear, AHP mix with additive model (refer to the "Guideline of… No. 2", it recommends to use combination of AHP and additive model which may not applicable well with multi-actors problem). The weight must reflect the real need as close as possible to make the evaluation result close to the real. Normally, the weighting contains some small error which is acceptable. However, mistake, which cause by the misunderstood or fault of procedure, is not acceptable because it will make the evaluation result divert from the real.

5.2 Further study

This study only proposes the idea of using MCA properly to handle with conflict case. In order to prove the proposal, it must be applied in the real situation.

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Chapter 1: INTRODUCTION

Nowadays, a large scale transportation project always has widespread effect to many groups of people, who concern different interest, which lead to conflict among the groups. These conflict problems lead to negative impacts to transportation projects, for instance, the delay, cost increase and withdrawal of project. Refer to *Guidelines for the Evaluation of Road Investment Projects* (Japan)[1], the conflicts among the groups has not been considered formally yet; therefore, conflict analysis should be implemented in decision making of public transport project evaluation to prevent the problem which may cause by conflict among interest groups.

In contrast to Japan, conflict analysis has been implemented in transport site selection in European Union countries e.g. UK, Portugal. The procedure of dealing with conflict in European Union cases: (1) experts make study on conflict analysis and make empirical indices of conflict characteristic which is easily understandable, then (2) they give information and comments to stakeholder for mitigation and compensation to get consensus in the final stage which is an effective method to deal with conflict. In contrast, in Japan cases, the government acts as a negotiator. Unfortunately, conflict has not been analyzed formally, in term of empirical index to inform the cause of conflict; therefore, it is difficult do negotiation, mitigation and compensation. Moreover, sometimes, the government solves conflict problems by forcing the lower level to accept and ignore the conflict in the primary stage then, the real cause of conflicts, which is remaining unsolved, may re-emerge if power relation changes e.g. Kyushu International Airport site selection[2].

Since decision analysis is a tool to allow each actor to evaluate the policy from his/her own perception, identification and exploitation of conflicts should be done in the early stage before they affect the whole decision process and split between winner and looser. Decision making team need to consider the difference of each other. It will help policy actors to understand their position also in relation to the other. Moreover, the advantages of conflict analysis implementation in transportation project evaluation is to increase transparency of public decision making, the actions can be described by empirical indices which support for the analysis of the different value and communication among people including, decision makers, pressure groups and stakeholders.

1.1 Objective

In this study, the objective is to propose a structured way of thinking for decision making which contains conflict in transportation project of Japan public organization by implementation of systematically thinking about conflict analysis.

1.2 Accomplishment

The accomplishment of this study are (1) guideline for public transport project evaluation, how to select decision makers, what is the role of decision makers and (2) a guideline for evaluation model that easy to use for multi actor problem.

Chapter 2: LITERATURE REVIEW

Refer to "Guideline *for the Evaluation of Road Investment Projects*"[1], it has been prepared to show how a practical method of evaluating the effectiveness of road investment at the planning stage of the project. The guideline composes of 2 volume; (1) traditional cost benefit analysis, (2) multi criteria analysis. Nowadays, multi criteria analysis has been employed more commonly because, cost benefit analysis has some limitation. However, in multi criteria analysis, there are some aspects are not yet fully established, i.e. multi criteria analysis with multiple-actor decision making, which is necessary to be examined carefully.

2.1 Limitation of Cost Benefit Analysis

CBA has been employed in transport project evaluation for many years in Japan. Sometimes CBA is criticized on political or philosophical grounds, to the effect that it is the role of government to apply judgments that are not necessarily a reflection of current preferences in fields such as, for example, environmental degradation. Views on this differ, according to people's views on the role of government. However it is not in practice a major obstacle. In addition, there may be impacts which cannot readily be quantified in a way which could be set against a scale of monetary values. The number of deaths or injuries saved by a safety improvement, or the time saved by a public transport investment, can typically be quantified precisely and valued against a predetermined monetary scale.

2.2 Multi Criteria Analysis

2.2.1 An overview of multi-criteria analysis techniques

All MCA approaches make the options and their contribution to the different criteria explicit, and all require the exercise of judgment. They differ however in how they combine the data. Formal MCA techniques usually provide an explicit relative weighting system for the different criteria. The main role of the techniques is to deal with the difficulties that human decision-makers have been shown to have in handling large amounts of complex information in a consistent way. MCA techniques can be used to identify a single most preferred option, to rank options, to short-list a limited number of options for subsequent detailed appraisal, or simply to distinguish acceptable from unacceptable possibilities.

As is clear from a growing literature, there are many MCA techniques and their number is still rising. There are several reasons why this is so:

- There are many different types of decision which fit the broad circumstances of MCA.
- The time available to undertake the analysis may vary.
- The amount or nature of data available to support the analysis may vary.
- The analytical skills of those supporting the decision may vary.

- The administrative culture and requirements of organizations vary.

Criteria for selecting MCA techniques which is used in this manual for the selection of techniques are:

- Internal consistency and logical soundness.
- Transparency.
- Ease of use.
- Data requirements not inconsistent with the importance of the issue being considered.
- Realistic time and manpower resource requirements for the analysis process.
- Ability to provide an audit trail.
- Software availability, where needed.

2.2.2 Key features of MCA

A key feature of MCA is its emphasis on the judgment of the decision making team, in establishing objectives and criteria, estimating relative importance weights and, to some extent, in judging the contribution of each option to each performance criterion. The subjectivity that pervades this can be a matter of concern. Its foundation, in principle, is the decision makers' own choices of objectives, criteria, weights and assessments of achieving the objectives, although 'objective' data such as observed prices can also be included. MCA, however, can bring a degree of structure, analysis and openness to classes of decision that lie beyond the practical reach of CBA.

One limitation of MCA is that it cannot show that an action adds more to welfare than it detracts. Unlike CBA, there is no explicit rationale or necessity for a Pareto Improvement rule that benefits should exceed costs. Thus in MCA, as is also the case with cost effectiveness analysis, the 'best' option can be inconsistent with improving welfare, so doing nothing could in principle be preferable.

2.2.3 Advantages of MCA over informal judgment

MCA has many advantages over informal judgment unsupported by analysis:

- It is open and explicit.
- The choice of objectives and criteria that any decision making group may make are open to analysis and to change if they are felt to be inappropriate.
- Scores and weights, when used, are also explicit and are developed according to established techniques. They can also be cross-referenced to other sources of information on relative values, and amended if necessary.
- Performance measurement can be sub-contracted to experts, so need not necessarily be left in the hands of the decision making body itself.
- It can provide an important means of communication, within the decision making body and sometimes, later, between that body and the wider community.
- Scores and weights are used, it provides an audit trail.

There are many different MCA procedures. This review concentrates on the procedures which are used normally in public transport project evaluation; AHP and additive value model.

2.2.4 Linear additive models

If it can either be proved, or reasonably assumed, that the criteria are preferentially independent of each other and if uncertainty is not formally built into the MCA model, then the simple linear additive evaluation model is applicable. The linear model shows how an option's values on the many criteria can be combined into one overall value. This is done by multiplying the value score on each criterion by the weight of that criterion, and then adding all those weighted scores together. However, this simple arithmetic is only appropriate if the criteria are mutually preference independent. Most MCA approaches use this additive model.

Models of this type have a well-established record of providing robust and effective support to decision-makers working on a range of problems and in various circumstances. However, as was argued earlier, the variety of circumstances in which decision support has been sought has led to the development of a range of different decision support models.

2.2.5 The Analytical Hierarchy Process

The Analytic Hierarchy Process (AHP) also develops a linear additive model, but, in its standard format, uses procedures for deriving the weights and the scores achieved by alternatives which are based, respectively, on pairwise comparisons between criteria and between options. Thus, for example, in assessing weights, the decision maker is asked a series of questions, each of which asks how important one particular criterion is relative to another for the decision being addressed.

The strengths and weaknesses of the AHP have been the subject of substantial debate among specialists in MCA. It is clear that users generally find the pairwise comparison form of data input straightforward and convenient. On the other hand, serious doubts have been raised about the theoretical foundations of the AHP and about some of its properties. In particular, the rank reversal phenomenon has caused concern. This is the possibility that, simply by adding another option to the list of options being evaluated, the ranking of two other options, not related in any way to the new one, can be reversed. This is seen by many as inconsistent with rational evaluation of options and thus questions the underlying theoretical basis of the AHP.

2.3 Conflicts

Cooperation and competition Conflicts naturally emerge in multi-actor contexts. Managing conflicts and providing support for their resolution is a fundamental activity to reach a satisfactory output in a co-decision environment. There is no universal definition

of conflict. Bogetoft and Pruzan[3] distinguish between intra-personal and interpersonal conflicts. Intra-personal conflicts refer to the need, in most cases, to accept poorer results in some areas in order to achieve better results for others. An intra-personal conflict occurs when none of the possible choices available to an individual is best on all counts. Interpersonal conflicts occur when individuals disagree on a course of action: what is the best (or good, or acceptable) for someone is not such for someone else. A widely used definition of conflict is that of Deutsch[4]: conflicts are the result of "incompatible activities; one person's actions interfere, obstruct or in some way get in the way of another's action" (Tjosvold[5]). Conflicts emerge because of two fundamental motivations: cooperation (an actor has an interest in its own welfare as well as in that of the other actors) and competitive (an actor is interested in doing as well as possible for itself, and better than the others) (Deutsch[6]). The cooperative motive is the incentive to establish a relationship with another actor and search for a solution which is suitable for both. The competitive motive is the incentive to exploit a situation at one's advantage. The relative strength of these motives dictates the extent to which actors engage in cooperative or competitive behavior. Examples of these behaviors are (from Janssen and van de Vliert[7]) as follows;

Cooperative:	Competitive:
Exchanging information about ones' goals and preferences.	Be secretive about information and preferences.
Being helpful in the exploration conflict issues.	Disqualification of the other parties' intentions and capabilities.
Emphasize common interests.	Emphasize opposing interests.
Show trust.	Enhance, rather than diminish power differences with other actors.
Search for solutions which increase own's and other's welfare.	Use threats and coercion.

2.3.1 Factors which cause conflicts

There is a variety of factors which may induce an actor to prefer a course of action which interferes with that preferred by another actor (that is, which creates a conflict). This includes (adapted from Bogetoft and Pruzan[3]):

Value system factors:

- Individuals have different values, goals, concerns, objectives, etc.
- They employ different criteria when representing their objectives.
- They have different preference relations; i.e., even if they are in agreement as to which values to employ, they are not in agreement as to which course of action is best.

Impact distribution factors:

- Even if they have the same underlying values and preferences they are likely to be affected by different costs and benefits of the action.
- The distribution of costs and benefits is perceived as unequal and unjust.

Uncertainty factors:

- Even if they have the same underlying values and preferences they may disagree as to the likely outcomes of an action and therefore as to which action is best.
- They may hesitate and be uncertain about their priorities.
- There may be insufficient evidence on the expected outcomes of an action or insufficient understanding of the phenomena involved.
- There may be uncertainty on the related agendas, i.e. on the effects of other decisions which may follow, or other decisions which may have synergetic effects.

Process factors:

- Actors have difficulty in communicating with each other as to their values, objectives, criteria, preferences and expectations.
- The role played by the actors, and the degree to which they participate and determine the decision, is not satisfactory for all actors.

The rest of the report will mainly focus on value system factors, impact distribution factors and uncertainty factors, and address process factors indirectly. Within this framework, *Spatial conflicts in transport policies* conflict is defined as *"a disagreement between two or more actors on the outcome of the decision"*. This definition requires a precise definition of the term "disagreement" and "outcome of the decision". This definition is especially suitable to explore the causes of conflicts. It also implies that disagreements on individual factors do not necessarily lead to conflicts. If the preferred outcome for an actor is identified through a model of preferences, for example a multi criteria model, then it is possible to establish a link between preferred outcomes and the factors which determine this preference, such as objectives, concerns, impacts, criteria, weights. Conflict analysis reveals the reason for conflicts by identifying the influence of individual factors. This evidence can be used to support conflict management and negotiation, for instance by supporting the search for solutions which may diminish disagreement.

2.3.2 Dealing with conflicts

There are five basic strategies for managing conflicts: avoidance, forcing, compromising, accommodation and problem solving. Figure 2.1 relates strategies with the degree of concern for people and concern for results (Hamilton and Parker[8]). The same relationship can be described in terms of the degree of self-concern and other-concern (Janssen and van de Vliert[7]). These strategies include win-lose situations (forcing, accommodating), lose-lose situations (avoidance and compromise), and win-win situations(problem solving).

Table 2.1 summarizes the characteristics of these strategies. An actors generally applies a mix of strategies for managing conflicts. The same actor may avoid some issues, search for a compromise on others, engage in problem solving for others more. Also, an actor may shift from one strategy to another depending on the behavior of the other players. This occurs also in co-decision environments, although some strategies appear more

suitable than others. The objectives of co-decision processes are clearly compatible with the characteristics of "problem solving" and those of "compromising". To a lesser extent, co-decision is also compatible with "accommodation", especially as a temporary solution. Co-decision is not compatible with "forcing", a top-down strategy which requires cooperation based on power relations, and "avoidance", which simply prevents the involvement of parties in the search for a solution.

Table 2.1 Characteristics of conflict management strategies (adapted from Hamilton and Parker[8]).

	Characteristics	When to use	Shortcomings
Avoidance	- concern for neutrality and non-involvement - conflicts as negative experience - closed management style	- issues are trivial - parties lack sufficient communication skills - losses of open conflict outweigh gains	- conflicts are usually delayed or transferred to other issues
Accommodation	- concern for people: make them happy - give in to prevent conflict - surface harmony is crucial - hidden management style	- minor issues - damage to relationship is costly - reduce tension and gain time	- may be only a temporary solution, incapable of resolving the issues in the long run
Forcing	- production of results is more important than people - conflicts are win-lose situations - respect for power - blind management style	- emergency/immediate decisions - parties recognise power relations	- real cause of conflict remains unsolved; - conflicts re-emerge if power relations change
Compromising	- equal chance to express opinions - agreeable solutions are better than "high-quality" ones - find solutions everybody can live with - open management style	- all parties can gain - "optimum" solutions are not necessary - parties in conflict are equals	- all parties loose something; "best" solution is usually not reached
Problem solving	- production of results and people are equally important - conflicts as creative forces - willingness to spend time and resources on reaching solution - open management style (all cards on the table)	- parties are skilled problem-solvers - misunderstandings and miscommunication are cause of conflicts - there are common goals to be achieved	- requires time and resources - requires a positive engagement of people

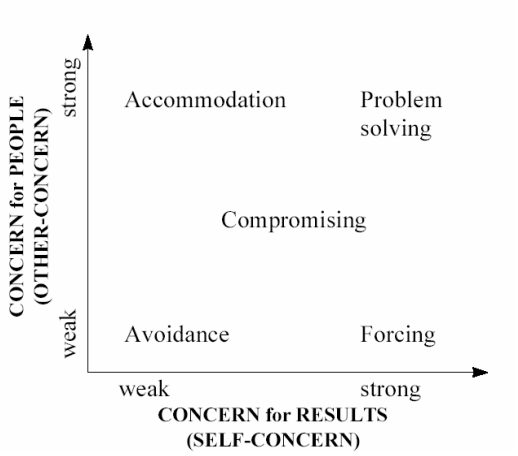


Figure 2.1 Conflict management strategies (adapted from Hamilton and Parker[8]).

2.4 International transport project evaluation guideline comparison

The hierarchical setup regarding planning, policy and decision making varies to certain degree of decentralization among different countries[9].
For Germany case, it is rather decentralization. National transport master plan is decided by the federal government. While all other state and urban roads and regional and local public transport system are decided by the state and communities. Furthermore, the state decided whether federal projects can be integrated in the existing spatial structure and local communities, and participate in the final design of the project particularly on the alignments. Moreover, the lower policy units suggest projects and partly secure data for the federal government .The case of France is also decentralized decision making to the lower units, except in Paris.
The case of Japan and UK are partly decentralized. Event though all the planning, except motorways, is done by local authority in both countries, it still needs approval by the national government. Moreover, all policy making are under responsibility of the national government.

From this part shows that, in Japan, the lower policy units are involved only in local roads projects, but not involved in the decision making in the national projects as the national government. This can cause conflict problem in some case that the there are various interest groups who may concern different benefit.

Table 2.2 International comparison of planning, policy & decision making of transport project appraisal

Germany	Federal government prepares national transport master plan as decided on by the federal parliament (a 20 year rolling plan). Lower level political bodies suggest project projects and partly deliver data for evaluation process. States have to confirm that projects can be integrated in their spatial structure and communities participate in the design of alignments.
France	Public agency, *Sindicat des Transports Parisiens* (STP) decides on new investments and tariffs in *Ile* de France. Except Paris, decision making, financing and tariff on urban areas is decentralized. For non-urban matters, decision on national highways is by the State after consultation with local authorities.
Japan	National government is in-charge of overall policymaking and funding of road projects Local government prepares annual plans for regional and local roads, for approval by national government. Rail, seaport and airport projects require approval of central and local government and are usually subsidized
United Kingdom	National government is in-charge of overall policy making and funding of road projects. Local government prepares annual plans for regional and local roads, for approval by national government. Rail projects usually require act of parliament, through provision for (usually for smaller) schemes is under public work order

Chapter 3: OVERVIEW OF MULTICRITERIA ANALYSIS AND CONFLICT ANALYSIS

The evaluation of large scale infrastructure project always concerns with extensive benefit of many interest groups. Each interest group may concern and gain different benefit which can lead to conflict among interest groups. When the interest groups do not agree with the study result, all of them may refuse it which make the project cannot continue.

As long as the Multi Criteria Analysis (MCA) has been just introduced to transport project evaluation in Japan recently, there are some details about procedure of multi actor decision problem, which have not been established in guideline; therefore, MCA are employed improper in these steps. For instance, Kyushu International Airport project site selection, one of the reasons that they could not get a consensus is improper decision makers choosing and lack of communication among the interest groups.

3.1 Kyushu International Airport site selection[2]

This chapter illustrates the importance of conflict analysis: including, decision structuring, public involvement in decision process, decision maker selection, whether the study which is not structured properly cannot solve the conflict problem to get a consensus.

3.1.1 Background

As an interchange of Asia-Pacific region to Europe and America, Kyushu International Airport was planned to meet the aviation demands of the region, which increased greatly during the last decade, refer to aviation demand forecast of International Air Transportation Association, there will be about 400,000,000 trips in 2010. The scale of the project was extremely large, which was certain to cause problems, including noise pollution. Even though it was planned to construct the airport on a man-made island to reduce that problem, still, there were other impacts on the existing situation, on one hand, including changes of marine life, scenery, natural environment, noise pollution and fisheries, which are negative effects, on the other hand, employment enlargement and economic development, which are positive effect so, various aspects of impacts had to be investigated. Therefore, Multi Criteria Analysis was used in order to support the study of those criteria.

3.1.2 Problem statement

Even though Fukuoka Prefecture was the most urbanized prefecture in Kyushu area, the other prefecture governors had objection about this opinion, because the Fukuoka prefecture was over concentration; moreover, construction the new international airport in Fukuoka prefecture would increase the gap between Fukuoka prefecture and the other prefecture in Kyushu area. The other entire prefecture governors also wanted the Kyushu International Airport to be located in their own prefecture. Therefore, a third party was invited to handle this conflict by Multi Criteria Analysis.

3.1.3 Study of the third party

In the study of the third party (Wise men committee of Kyushu International Airport site selection), 1 framework structure and 1 evaluation model were used while there are 5 decision makers were involved in this study and the final results was derived from average score of the 5 decision makers . The structure was composed of 3 levels, top, middle and bottom (Figure3.1).

Prefecture	Alternative	Site	Detail
Fukuoka	case1	Shingu? Tsuyasaki	Stop operation the present Fukuoka airport
	case2	Shingu? Tsuyasaki	Operate the present Fukuoka airport
	case3	Itoshima	Stop operation the present Fukuoka airport
Saga	case4	Saga	Stop operation the present Fukuoka airport, construct a new Fukuoka airport
	case5	Saga	Opererate the present Fukuoka airport
Nagasaki	case6	Nagasaki	Opererate the present Fukuoka airport
Kumamoto	case7	Omuta? Aramu	Opererate the present Fukuoka airport, operate the present Kumamoto airport
	case8	Omuta? Aramu	Opererate the present Fukuoka airport, stop operation of the present Kumamoto airport

Table 3.1 Alternatives in KIA site selection

The weight of preference was obtained by the 5 decision makers, who were experts from different fields (including economic, environment but not decision making or MCA) and concerned each criterion with different importance, by 2 methods: (1) pairwise comparison: Analytic Hierarchy Process, or AHP and (2) direct assign method, whereas the score of each criterion was obtained from direct measurement of impacts which was converted to score by the better utility condition had the higher score. For instance, table3.2, the best measure, 0 meter, was converted to 2 points, and the worse measures were converted to the worse values as in the table 3.2. After that, the total score of each alternative, which was obtained from summation of weight and score (equation1), could express how much utility did the alternative have. Then, decision makers could compare which alternative should be selected.

$$T_j = \sum_{1}^{n} (w_i s_{ij}) \qquad (1)$$

Where: T_j : Total score of alternative j

w_i : Weight of criterion i

s_{ij} : Score of criterion i alternative j

n : Number of criteria

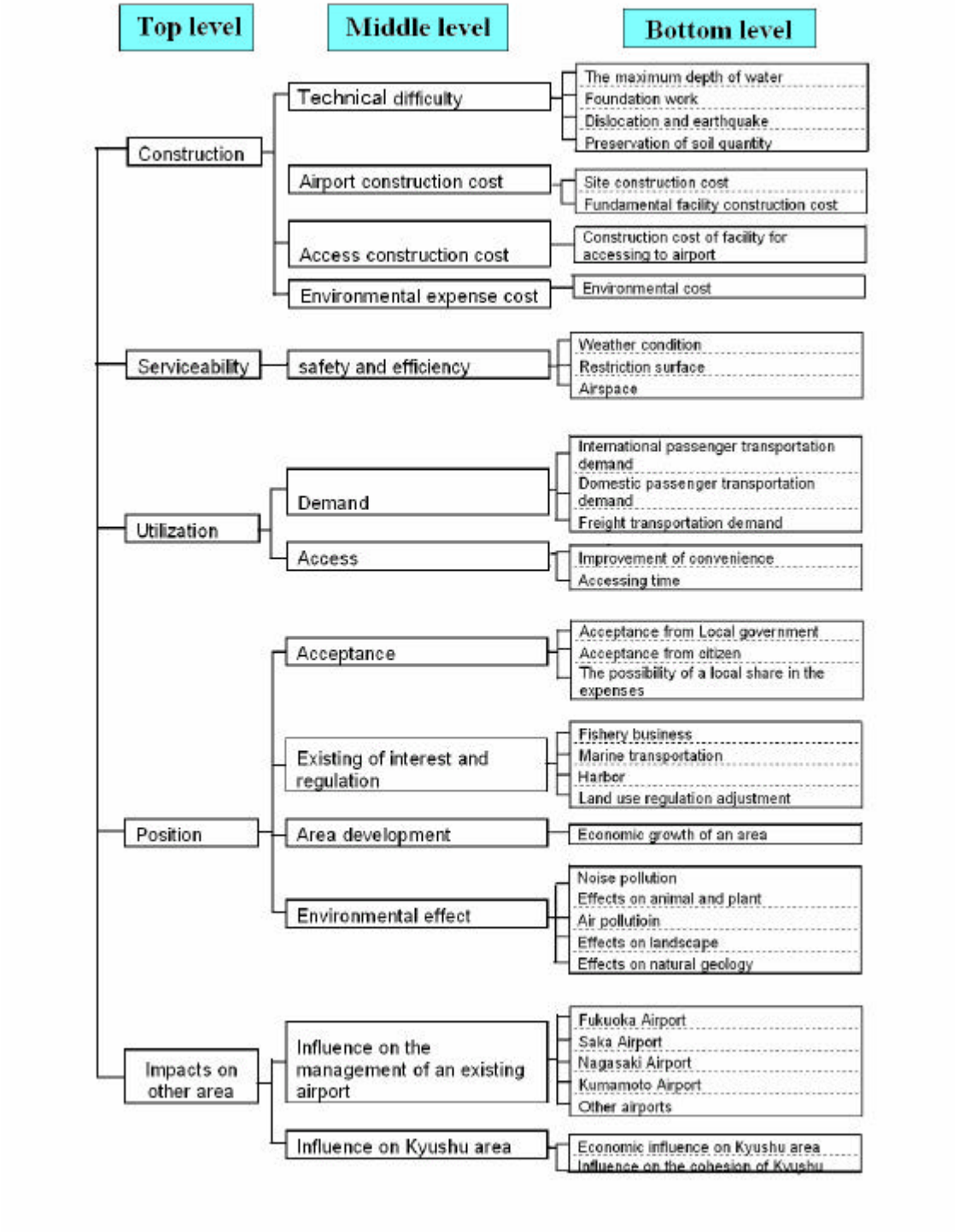


Figure 3.1 Evaluation structure of KIA site selection

Next, the score and ranking could be shown as in the table 3.3. Even though the score results of the 2 methods were a little different, the ranking results of them were almost the same. Refer to the data in table3.3 and table 3.4 and figure 3.2, the alternative case 1 in Fukuoka prefecture performed the highest score, which could indicate that it was the best alternative.

Table3.2 The measures of water depth were converted to score value

		Maximum Depth of water	Score
Fukuoka	case 1	- 23 m	0
	case 2	- 23 m	0
	case 3	- 33 m	-1
Saga	case 4	0 m	2
	case 5	0 m	2
Nagasaki	case 6	- 18 m	1
Kumamoto	case 7	- 15 m	1
	case 8	- 15 m	1

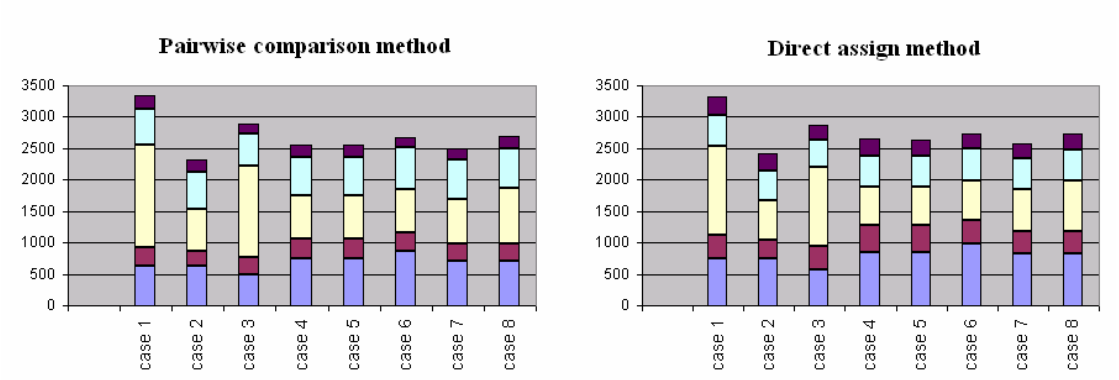


Figure3.2 Total score results of alternative

Table3.3 Detail of preference score (pairwise method)

	Criterion	construction	service	utilization	position	impacts on other area	total score	rank
	Weight	2.4	0.9	4.2	2	0.6		
Fukuoka	case 1	265	317	390	287	350	**3343**	**1**
	case 2	265	258	160	287	333	**2314**	**8**
	case 3	202	317	347	255	268	**2898**	**2**
Saga	case 4	308	367	160	311	327	**2559**	**5**
	case 5	308	367	160	311	307	**2547**	**6**
Nagasaki	case 6	361	317	165	332	258	**2666**	**4**
Kumamoto	case 7	295	307	169	313	290	**2491**	**7**
	case 8	295	307	211	313	317	**2685**	**3**

Table3.4 Detail of preference score (direct method)

	Criterion	construction	service	utilization	position	impacts on other area	total score	rank
	Weight	2.8	1.14	3.7	1.6	0.76		
Fukuoka	case 1	268	320	384	304	387	**3316**	**1**
	case 2	268	260	168	304	359	**2426**	**8**
	case 3	206	320	339	271	322	**2875**	**2**
Saga	case 4	305	370	168	298	368	**2653**	**5**
	case 5	305	370	168	298	336	**2628**	**6**
Nagasaki	case 6	354	320	171	325	305	**2739**	**3**
Kumamoto	case 7	293	310	184	300	308	**2567**	**7**
	case 8	293	310	221	300	351	**2737**	**4**

3.1.4 Sensitivity analysis

Since there was conflict that study result was not accepted by some prefectures' government, in order to check reliability of the study result, the sensitivity analysis were conducted to check whether the conflict caused by the reliability of the study. The value score may be changed by 2 sources of uncertainty (1) weight of preference, (2) measure of preference, which cause evaluation result have low level of reliability, for instance, rank reversal of the alternative. Therefore, the result should be examined by Sensitivity Analysis in order to prevent those effects.

3.1.4.1 Sensitivity Analysis of weight

This method is employed in order to find how many percent of the weight in each criterion change that rank reversal between alternatives will occur. The sensitivity of weight can be calculated as the formula follows

$$d_{ijk=} \frac{P_j - P_i}{a_{jk} - a_{ik}} \times \frac{100}{w_k} \quad (2)$$

Where:

d_{ijk}; the least change of weight in criterion k for rank reversal between alternative i and j.

Pj; total score of alternative j

Pi; total score of alternative i

a_{jk}; attribute score of alternative j, criterion k

a_{ik}; attribute score of alternative i, criterion k

w_k; weight of criterion k

Table3.5. Sensitivity analysis of weight (pairwise comparison method) in percent (N/F means not feasible)

pairwise comparison	Criterion and weight				
rank reversal between case	construction	service	utilization	position	impacts on other area
	2.4	0.9	4.2	2	0.6
1 – 2	N/F	N/F	N/F	N/F	N/F
1 – 3	N/F	N/F	N/F	N/F	N/F
1 – 4	-761	-1742	81	-1633	N/F
1 – 5	-772	-1768	82	-1658	N/F
1 – 6	-294	N/F	***71***	-743	N/F
1 – 7	-1217	N/F	91	-1638	N/F
1 – 8	-940	N/F	87	-1265	N/F

Table3.6 Sensitivity analysis of weight (direct method) in percent (N/F means not feasible)

Direct method	Criterion and weight				
rank reversal between case	construction	service	utilization	position	impacts on other area
	2.8	1.14	3.7	1.6	0.76
1 – 2	N/F	N/F	N/F	N/F	N/F
1 – 3	N/F	N/F	N/F	N/F	N/F
1 – 4	-879	-1742	86	N/F	N/F
1 – 5	-892	-1768	87	N/F	N/F
1 – 6	-326	N/F	***75***	-1592	N/F
1 – 7	-1400	N/F	N/F	N/F	N/F
1 – 8	-1081	N/F	95	N/F	N/F

3.1.4.1.1 Result of Sensitivity Analysis of weight

In this paper, only the reversal cases which occurred between alternative case 1 and the others were considered, because it was the most critical point for appraisal. As in table3.5 and table3.6, the most sensitive of rank reversal between the first rank and the others was the rank reversal between case 1 and case 6 by the change of utilization weight: 71% decrease for pairwise comparison method, 75% decrease for direct method. This means if the weight of utilization criterion decreases about 71% for pairwise comparison method and 75% for direct assign method, rank reversal occurs between alternative case 1 and alternative case 6. From this result, decision makers have to be more careful about the weight of utilization criterion than the other.

3.4.1.2 Sensitivity Analysis ofpreference measure

Beside the uncertainty in weight of preference, still, there was the uncertainty of preference measure. In this study, the uncertainty of preference measure was examined

for example, how many percent change of measure would effect the rank reversal between the first rank and the others. The sensitivity analysis of preference measure can be calculated by this formula as follows

$$T_{ijk} = \frac{P_j - P_i}{a_{ij}} \times \frac{100}{w_k} \quad (3)$$

Where:

T_{ijk} ; the least change of attribute in criterion k for rank reversal between alternative i and j.

Pj ; total score of alternative j

Pi ; total score of alternative i

a_{jk} ; attribute score of alternative j, criterion k

w_k ; weight of criterion k

3.1.4.2 Result of Sensitivity Analysis in Measure

This analysis was concentrated only on the reversal between alternative case 1 and the others. As in table 3.7, the results indicated that the extreme case was rank reversal between case 1 (rank 1) and case 3 (rank 2) in pairwise comparison method, 27% decreased in utilization measure of case 1. This result indicated that the decision makers had to pay attention on the preference measure of utilization criterion in both alternative case 1 and alternative case 3 because it could effect on the rank reversal.

Table3.7 Sensitivity analysis of preference measure (pairwise comparison) in percent

Alternative	construction	service	utilization	position	impacts on other area	Alternative
case 1	161	361	62	179	490	case2
case 1	69	156	27	77	211	case3
case 1	123	275	47	136	373	case4
case 1	124	279	48	138	379	case5
case 1	106	237	41	118	322	case6
case 1	133	298	52	148	405	case7
case 1	103	230	40	114	313	case8

3.1.4.3 Sensitivity Analysis results conclusion

Refer to the results in the previous part, the robustness of preference weight were less sensitive than the measure attribute. Therefore, the measure of preference should be evaluated more carefully, especially utilization criterion, which was the most sensitive one. Even though, the sensitivity analysis results indicated that the reliability of this study was fairly high, the project was rejected by the other prefecture. Therefore, the cause of the conflict was not the robustness of the evaluation model. The conflict may caused by other reasons.

Finally, KIA project was terminated, because the other prefectures boycott from the decision making. The prefectures wanted the KIA in their own areas.

3.1.5 Discussion

The study of the third party does not support for conflict analysis because the decision makers were the third party who were not belong to any prefectures. Therefore, the third party could not act as a representative of the prefectures to propose their opinion about weighting for instance, the other entire prefectures expected the weight of economic effect on their own prefecture much more than the decision of the third party. As mention above that there was no agreement of the airport site selection, the third party was invited to handle the study; however, the study results were not accepted by the other entire prefectures. In this case study, the role of third party is like a referee who judges a competition for winner and loser. Even though the referee has done his/her job without bias, it still does not work well because, in this case, the situation of win-win was necessary to get a consensus.

Representative from interest groups must be involved in decision making team in order to reflect real needs and gain acceptance from the interest groups.

3.2 Southwestern Ehime Road Network Project Prioritization: a case study

As a new era of transport project evaluation in Japan, The road line project prioritization also employed MCA. In order to reflect the needs of public involve, the study collect weighting value from lower policy units, for instance administrator of towns and cities. However, the prioritization result cannot be opened to public; the government cannot know whether the result is good or bad. The evaluation procedure are necessary to be revised carefully because, it is high possibility that the local unit may not accept the result as it ever happen with the KIA case.

3.2.1 Case description[10]

The description of Southwestern Ehime road network project prioritization was obtained as secondary data as in reference 10.

Position

Uwajima area is located in the southwestern of Ehime prefecture, 100 km from Matsuyama city. In the 1,049km^2 of Uwajima area, it composes of Uwajima city, Yoshida village, Mima town, Hiromi town, Hiyoshi town, Matsuno town, Tsushima town, Uchiumi village, Misho town, Nishiumi town, Johen town and Ipponmatsu town.

Depopulation

In Uwajima area, 9 towns form 12 are significant depopulation. The towns are Yoshida village, Mima town, Hiromi town, Hiyoshi town, Matsuno town, Tsushima town, Uchiumi village, Nishiumi town and Ipponmatsu town.
Average speed travel during peak hour

In Uwajima city, travel speed is lower than 20km/hr which create traffic congestion. For the Uwajima area, on national road no. 320, weekday rush hour, travel speed is about 65.5km/hr while weekend, travel speed during rush hour is 14.5 km/hr which show that the road are use as sightseeing road strongly. About the other road lines, almost the routes, travel speed during rush hour. For the routes that there is not much traffic congestion, the routes that have average travel speed during rush hour lower than 40 km/hr are considered as low speed (bad alignment) routes, which there are a lot of existing bad alignment routes in Uwajima area.

3.2.2 Methodology

Evaluation structure composes of (1) major decision maker: government, (2) weighting designers: 12 local policy units, (3) frame work: 3 main criteria, 13 sub-criteria and (4) alternative: 118 road line projects

3.2.2.1 Actor involvement

As in the project description, each local policy unit concern the different benefit, each of them were allowed to decide the weight value for the road line projects in their own area by using AHP as a tool to obtain the weight sets. There are 12 local governments were involved *only* in weighting procedure to decide importance of criteria in the evaluation model, while the government act as the main decision maker who design everything in the study.

3.2.2.2 Evaluation model

In this study, MCA was employed for investigation. There were 2 main component; (1) weight and (2) attribute score as explain in the equation;

$$T_j = \sum_{1}^{n} (w_i s_{ij}) \tag{4}$$

The overall score of the road line project was obtained from the product between weight and score. The higher overall score, the better ranking in prioritization result.

3.2.2.3 Evaluation framework structure

The structure composed of 3 main criteria; safety, energy reservation and fascination as shown in the table 3.9. All the weight were obtained from AHP, while the attribute score was decided by the main decision maker as in the table 3.8.

Table 3.8 an example of score description

Score	1	3	5
description	The number of the injured per 100,000 people equal or lower than 912.3	The number of the injured per 100,000 people equal or lower than 928.8	The number of the injured per 100,000 people greater than 928.8

3.2.2.3.1 AHP questionnaire outline

AHP questionnaires were employed in order to reflect the needs of people in the towns. The questionnaires were collected from the towns' representative; head and road administrator of the towns.

3.2.2.3.2 Questionnaire

Table 3.9 a questionnaire form of AHP

	Extreme importance		Importance		Equal importance		Importance		Extreme importance	
Safety	*	-	*	-	*	-	*	-	*	Energy reservation
Safety	*	-	*	-	*	-	*	-	*	Fascination
Energy reservation	*	-	*	-	*	-	*	-	*	Fascination

The questionnaire composed of 3 level; top level, middle level and bottom level. All of the criteria were compare pair by pair, pairwise comparison, then, the weight of criteria was calculated in the next stage.

3.2.2.3.3 Calculation

In this stage, the data of questionnaires were used for calculation of weight of importance.

Table 3.10 Value of relative importance

Level of comparison	a_{ij}
Equal importance	1
Importance	3
Extreme importance	5
	$a_{ij}=1, a_{ji}=1/a_{ij}$

$$A=\begin{bmatrix} 1 & a_{12} & \dots & a_{1n} \\ a_{21} & 1 & \dots & a_{2n} \\ \dots & \dots & \dots & \dots \\ a_{n1} & a_{n2} & \dots & 1 \end{bmatrix}=\begin{bmatrix} 1 & w_1/w_2 & \dots & w_1/w_n \\ w_2/w_1 & 1 & \dots & w_2/w_n \\ \dots & \dots & \dots & \dots \\ w_n/w_1 & w_n/w_1 & \dots & 1 \end{bmatrix} \quad (5)$$

$$W=\begin{bmatrix} 1 & w_1/w_2 & \dots & w_1/w_n \\ w_2/w_1 & 1 & \dots & w_2/w_n \\ \dots & \dots & \dots & \dots \\ w_n/w_1 & w_n/w_1 & \dots & 1 \end{bmatrix}\begin{bmatrix} w_1 \\ w_2 \\ w_3 \\ w_4 \end{bmatrix}=nw \quad (6)$$

The a_{ij}, as in table 3.10, is the relative weight of w_i/w_j which is obtained from a questionnaire. Next, the vector of weight can be calculated by the product of vector A and the eigen vector of vector A. Then, the results have to be examined consistency whether it is reliable. The consistency index (C.I.) can be calculated as follow;

$$C.I.=\frac{l_{\max}-n}{n-1} \quad (7)$$

where; $l_{\max}$ is the maximum value of eigen value

C.I. equal to 0 when it is perfect consistent, while the minimum value of C.I. is 0.15. If the value is higher than that, the matrix has to be reevaluated.

3.2.2.4 Weighting result

The weighting results of each local policy unit were widely different because, possibly, they have different concerns of benefit as shown in appendix 1.

3.2.2.5 Prioritization result

Prioritization result showed that most of the top ranking projects belong to few local policy units which may leads to conflict of beneficial aspect. The proper procedure of evaluation is crucial to prevent conflict problem.

3.2.3 Summary

The lower policy units had a little participation in the decision making. They had only one role in the decision making, weighting step, which may not adequate to reflect the real intention of those policy units, especially, they lack of communication. Moreover, the government did not monitor the feedback from those policy units about the prioritization result; therefore, it is ambiguous whether the result satisfies the policy units. The evaluation model of the southwestern Ehime is a combination between AHP and additive model. This method may not applicable theoretically and practically. All of these issues will be discussed in the next chapter.

Chapter 4: Proposal of using MCA under multi actor decision making

There were some multi-actor decision cases in abroad, for instance, a Lisbon Metropolitan Region (LMR) road network is one of the successful cases[11]. The purpose of LMR case study was the analysis of regional investments for the construction of the main road network in the LMR, involving both the national road network and the inter-municipal road network proposals. Given a fixed budget at local level and the programmed sequence of the construction of the national road links in the regional network, the objective was to define several sequences (alternatives) for the construction of the inter-municipal roads. The Case Study was investigated a variety of specific impacts of the construction of the inter-municipal road links, with respect to regional accessibility, environmental impacts and urban development. Since the project had widespread concern from the national level to the municipal level, the entire policy unit concerns were invited in decision making process. Not only were they involved in the weighting process, but also, the entire processes from the beginning to the final stage were involved. During the study, some conflict about the benefit occurs but, due to good communication, the conflict is solved at the initiation stage which is easier than leaving the problem until the final stage that it makes conflict more severe.

Contrast to Japan cases, as KIA and southwestern Ehime, the procedures to handle conflict from multi actors has not been established yet. In this research, the procedures to employ MCA in order to handle conflict problems from multi actor were proposed as a prototype for using in future by using southwestern Ehime project as a model case.

4.1 Proposal to dealing with multi actor project

4.1.1 Decision structure

Refer to chapter 3, there were some weak points in decision making process of Japan that the interest groups were not involved in decision making team as in figure 4.1a and 4.1b. Therefore, in this proposal, all the 12 towns must be involved at the beginning of the decision making, as in figure 4.1c, in order to prevent conflict problems that may occur after decision such as in the previous chapter.

4.1.2 Rules

1. All the units are involved in the decision making process.
2. All units have right to discuss about the evaluation model. If the model cannot reflect the real individual preference, the evaluation model can be changed.
3. All the policy units must accept the final result that is obtained form revised evaluation model. If not, reasons must be given.

Set the rules for road project prioritization which must be accepted by all of the policy units. Then, let them discuss about problems. Each policy unit can propose its own idea if it think that the decision process is not appropriate. Moreover, all the data collection,

decision making process must be shown for transparency, all the policy units have equity to receive the same information.

Attribute score in the decision is obtained from the improvement score which is measured form the condition of road, how necessary and urgent it is. Weighting is decided by each own area, by the town's preference.

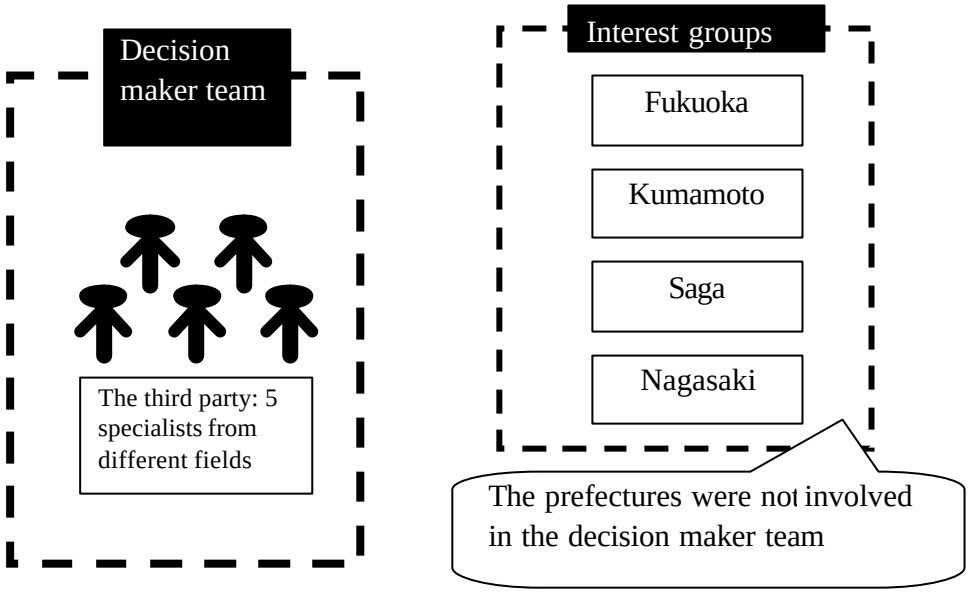


Figure 4.1a Decision making diagram of Kyushu International Airport project. The interest groups such prefecture's governments were not involved in the decision making.

4.2 Simulation the reaction of each policy unit to the original study result

The result shows that most of the top ranking road lines are in Uwajima. The other towns who get very low priority such as Nishiumi town, Hiyoshi town, Ipponmatsu town, Uchiumi village, Yoshida town, Mima town complain that "it's not fair to allocate the most of the budget to Uwajima city area because, it will make let Uwajima develop more and more despite the rest towns cannot develop much, since they lack budget. The difference of development between city area and the other areas will increase.

Discussion among the decision maker team

Uwajima: It's fair, because, refer to the improvement score study result, Uwajima really needs them the most, most of the road lines are not in a good condition. Furthermore, Uwajima population is the largest in the region.
The other towns: This decision making seem to be centralization, it will make the gap between Uwajima and the others higher. We *do not accept* the study result of the government.

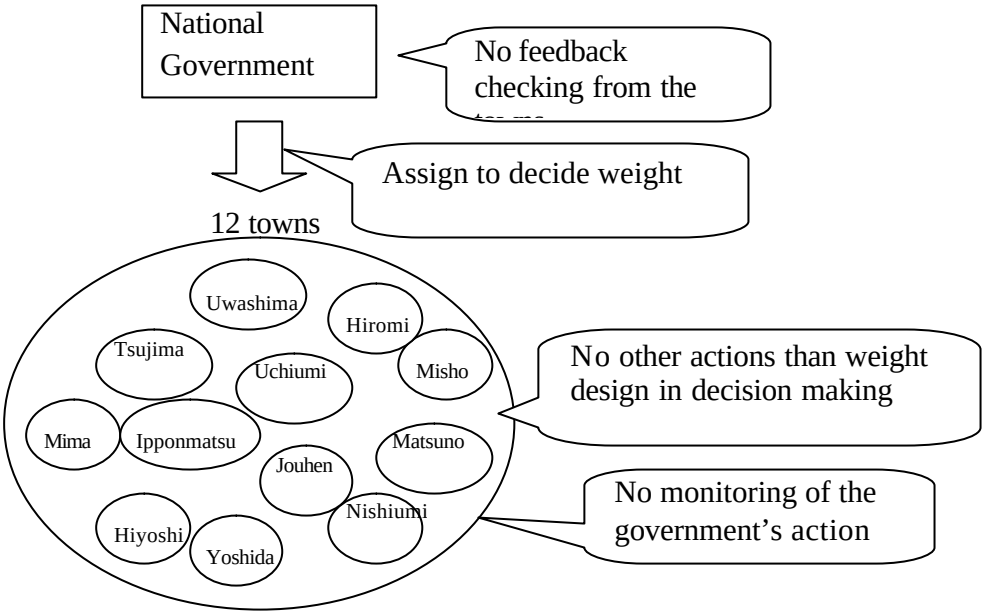


Figure 4.1b The decision making diagram of southwestern Ehime road project. The 12 towns' administrators were involved in decision making only weight design action.

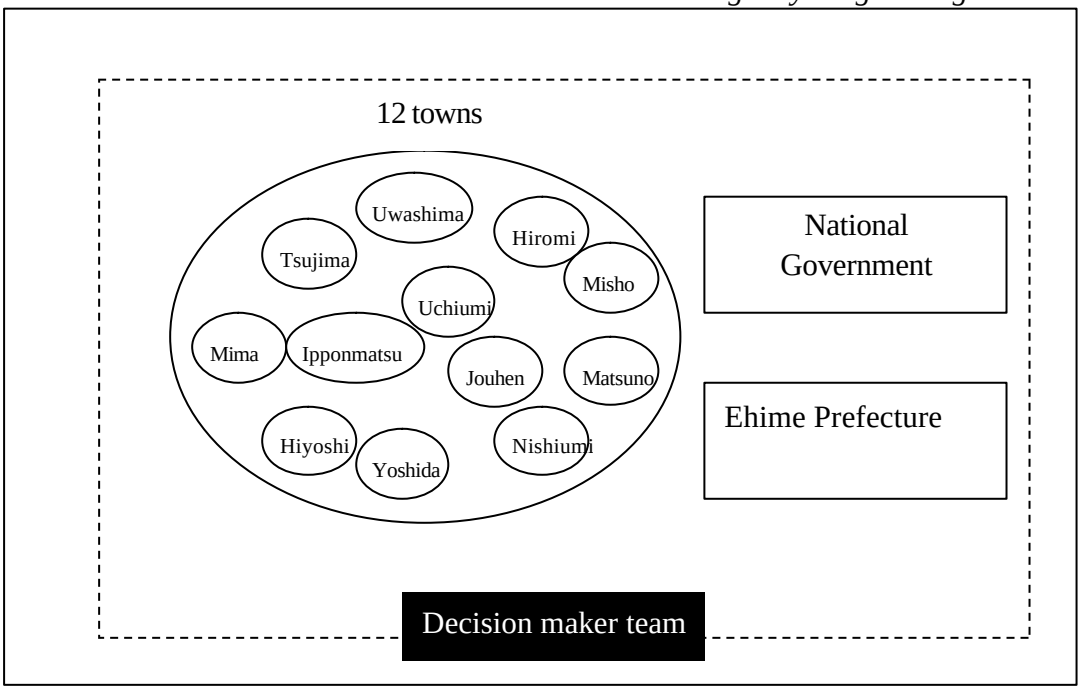


Figure 4.1c Participation boundary of this proposal method. All towns, interest groups, were involved in the decision maker team also as national government and Ehime prefecture government.

All of them have discussed about the problem of prioritization again, most of them agree that, in the first study result, many road projects were concentrated too many in Uwajima city. Some aspects are not considered. Therefore, they will add one more criterion in the maintenance score, which is rural area development distribution criterion. Then, calculate the overall score for the prioritization again.

4.3 Conflict analysis

First of all, all of the policy units re-evaluate the structure of improvement score. They found that, they misunderstood about the weight and scale of the criteria, especially Yoshida town, it thought that the criterion "Support activity inside central part (Uwajima)" was the most important criterion, which was given about 40% of weight despite most of the attribute score in this criterion of the Yoshida town are almost 0. The reason is Yoshida town did not know the measurement scale of criteria then, it could not make equivalent between each criterion. This is one of the reasons that all the information must be told to all actors involved. Possibly, the weight must be redesigned by the towns.

Next problem, as the rural area complain that the improvement score was done for centralization, to reduce the conflict, the structure of improvement score must be modified to make equity balance to rural area.

4.3.1 Equity balance modification

To mitigate the conflict problem about centralization complaint, most of the policy actors agree to modify the decision criteria of the improvement score study by adding one more criterion which can increase score to the rural area. This action decrease the pressure from the rural area policy actors who are unsatisfied with the score they are given. The new criterion is urbanization level of the area by measuring from the location of the towns, how far it is from the city area as follows in the table 4.1 and table 4.2 and figure 4.2.

Then, the weight of the new criterion is assumed to be 5% and 10% of the decision weight. The new improvements score result is as follows in the appendix 3 and appendix 4.

Table 4.1 Description of equity balance modification criterion attribute score

1	3	5
A town which is city area	A vicinity of a city area	A town located next to the city area

4.3.2 Measurement of ranking improvement

Ranking improvement (table 4.3): it shows how many position that the project has been changed after the new criterion model scoring

Total ranking improvement: it shows the overall position that the projects have been changed in the town.

Table 4.2 Attribute score of each town in the new criterion

Town	Score
Ipponmatsu	5
Mima	3
Uchiumi	5
Yoshida	3
Jouhen	5
Uwajima	1
Hiromi	3
Mishou	5
Hiyoshi	5
Matsuno	3
Tsuchima	3
Nishiumi	5

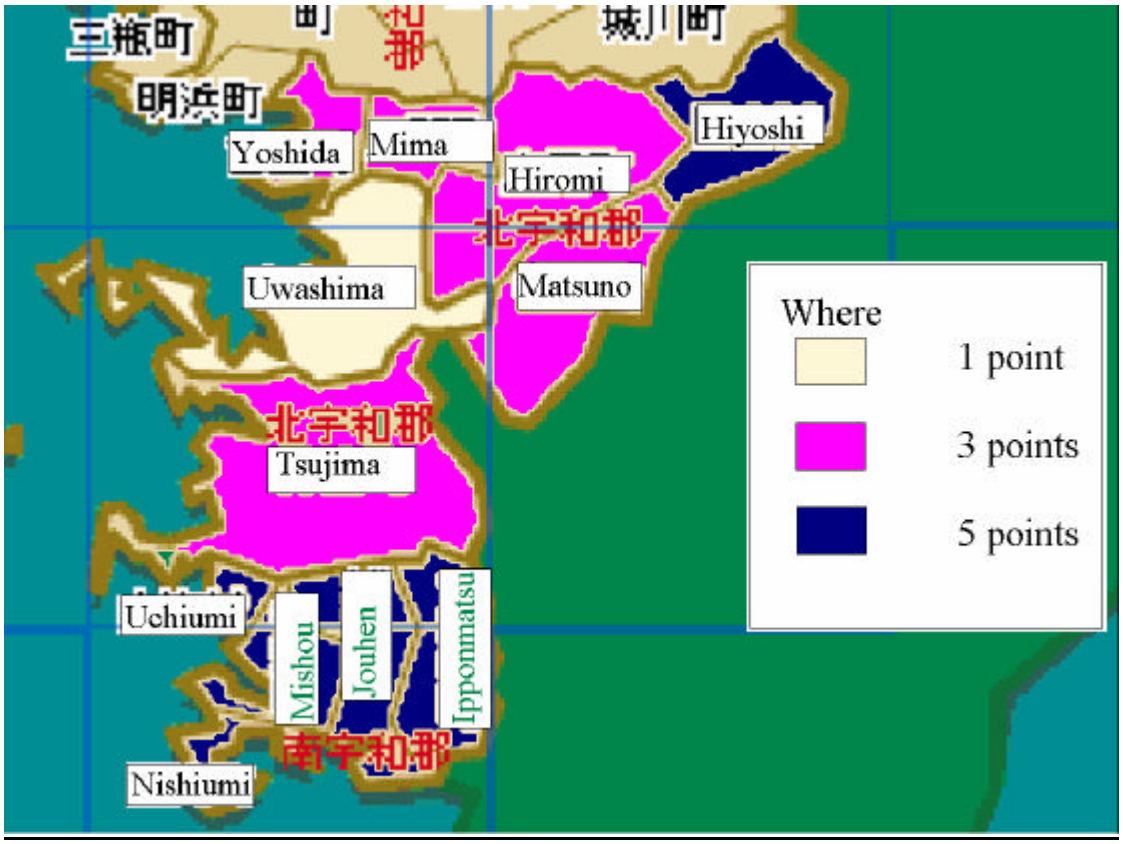


Figure 4.2 Attribute score of each town in the new criterion

Average ranking improvement: it shows the average position improvement which is calculated by total ranking improvement divide by number of the project. This value tells how the town get better ranking by the new model scoring.

4.3.3 Results

The new prioritization score shows that the other entire towns get a little better of ranking, that make they are satisfied. Especially, the rural areas including Ipponmatsu, Uchima, Jouhen, Uwajima, Mishou, Hiyoshi and Nishiumi get average ranking improvement about 5 positions in the 5 percent weight and 10 positions in 10 percent weight. This result supports that the degree of conflict problem is reduced due to the pressure from the rural areas has been decreased.

Table 4.3 Result of ranking improvement

Town	No. of project in the town	Weight 0.05		Weight 0.10	
		Total Ranking improvement	Average	Total Ranking improvement	Average
Ipponmatsu	4	+21	+5.25	+32	+8.00
Mima	9	+8	+0.89	+26	+2.89
Uchiumi	2	+9	+4.50	+18	+9.00
Yoshida	10	+10	+1.00	+23	+2.30
Jouhen	11	+62	+5.64	+111	+10.09
Uwajima	28	-179	-6.39	-360	-12.86
Hiromi	13	-19	-1.46	-29	-2.23
Mishou	7	+24	+3.43	+42	+6.00
Hiyoshi	6	+34	+5.67	+68	+11.33
Matsuno	8	-4	-0.50	-16	-2.00
Tsuchima	15	+13	+0.87	+44	+2.93
Nishiumi	5	+21	+4.20	+41	+8.20
Total	118	0	+23.08	0	+43.66

4.4 Sensitivity analysis

Since each policy unit has different perception of the criterion, they give importance to each criterion with different weight and it cause the different of ranking results. This section is devoted to investigate the effect of changing weight set to ranking of the road projects.

4.4.1 Methodology

12 weight sets of the lowest policy units were applied to see how the ranking of the road change with different weight set and compare with the original ranking result.

1. Grouping by the lowest policy units: 12 towns.
2. Grouping by the characteristic of area: city area, flat area and mountainous area.

4.4.2 Result

1. Grouping by the lowest policy units: 12 towns.

The ranking position of each road project varies widely by the changing of weight set of each town. From the table comparison of ranking show that minimum and maximum ranking opposition of the projects is very wide. As represent by standard deviation, the overall average of standard deviation is about 32 positions. For the improvement score aspect, it also differs as the ranking by the overall average score of standard deviation is about 0.37 point. The details are shown in appendix 5.
2. Grouping by the characteristic of area: city area, flat area and mountainous area.

In contrast to the previous results, the variation of ranking position and score is much lower than the results of grouping by lowest policy units. The standard deviation of ranking position and score is very low as the difference between maximum and minimum of ranking. The overall average of standard deviation of ranking position is about 4.24 positions, while the score's one is about 0.08 points. The detail of results are shown in appendix 6.

4.4.3 Discussion and conclusion of sensitivity analysis

The cause that ranking position and improvement score vary widely in grouping by the lowest policy units is the difference of weight set. For instance, the weight of criteria 5, support safety, varies from 45% (Matsuno) to 3% (Mima), 42% difference, especially, the attribute score in this criterion varies from scale 1 to 5. Therefore, undoubtedly, score varies broadly as in the results. While the variation of results in grouping by characteristic of area is much less than the other grouping because the difference of weight set is very small.

4.4.4 Problemof the weight diversion

Refer to the table of weight set comparison; the weight sets of towns are too different, even though they are neighboring and located in the same characteristic area as in table 4.4.

Table 4.4 Weight comparison in mountainous area

	Yoshida	Mima	Hiromi	Hiyoshi	Matsuno
Safety	0.09	0.26	0.70	0.71	0.10
Vitality	0.30	0.64	0.10	0.14	0.70
Attractiveness	0.62	0.10	0.20	0.14	0.20

4.4.5 Summary

As seen that the weight change, the position also change widely. Therefore, the accuracy of the weighting is very important. It is one of the most crucial components of ranking. The mistake from the weighting procedure by the procedure itself or the lack of understanding of the decision makers are not allowed to occur, it will reduce the correctness of the result.

4.5 Examination of weighting method

4.5.1 The original AHP

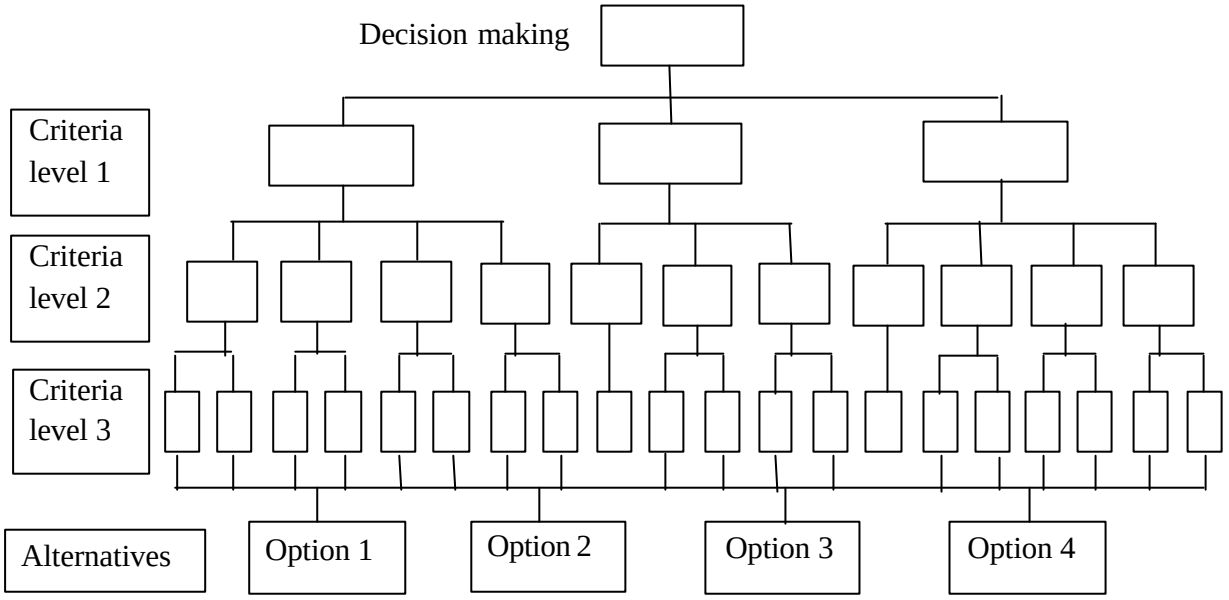


Figure 4.3 AHP theoretical structures

Table 4.5 AHP comparison

Criterion	Option 1	Option2	Option 3	Option 4
Option 1		1	3	5
Option 2			3	5
Option 3				3
Option 4				

The AHP is used for evaluate or prioritization the option by consider a number of criteria. All the criteria in a same level (refer to the figure 4.3 and table 4.5, from the top level –criteria level 1- to the bottom level –alternatives) are compared by the relative

importance as equal importance, weak importance, strong importance and demonstrated importance, to calculate the overall score of each alternative by using eigen value.

4.5.1.1 The weighting method in the original study

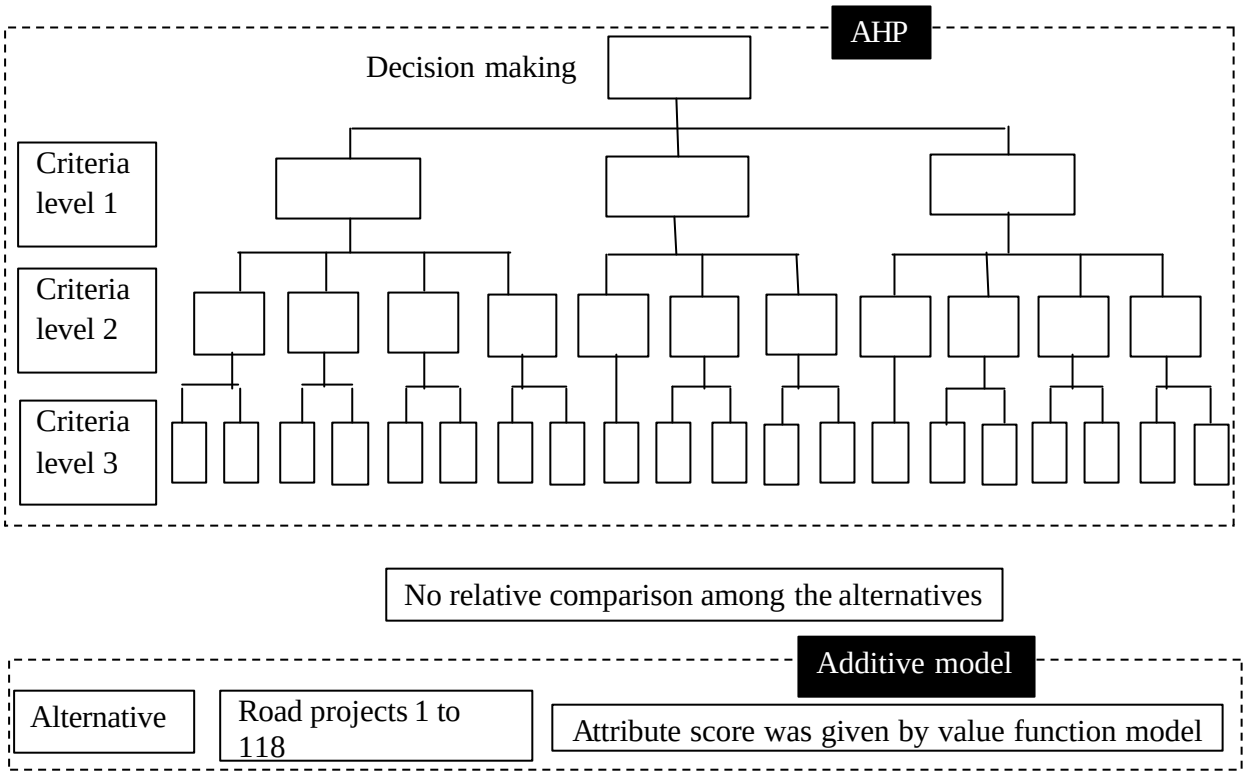


Figure 4.4 Evaluation structure of original study.

Table 4.6 an example of additive part of the original study

Score	1	3	5
description	The number of the injured per 100,000 people equal or lower than 912.3	The number of the injured per 100,000 people equal or lower than 928.8	The number of the injured per 100,000 people greater than 928.8

4.5.2 An example of attribute score which was given by the national government

Contrast to the original AHP, the study of national government cannot do relative comparison in the bottom level, alternative level, because, there were 118 alternatives which 7021 times of comparison are needed. Therefore, the government make a evaluation model as combination between AHP (from criteria level 1-3) and additive model (attribute score of alternatives) as in table 4.6 for the ease of comparison in the bottom level. However, the combination cannot go together because AHP derive value

form the relative importance between option while, additive model derive value from reference impact ranges; therefore, the using combination between AHP and additive model is not an effective method.

4.5.3 Additive value

This evaluation model compare the weight of importance refer to the range of impact. The additive model values weights have no absolute or intrinsic meaning. Therefore, it is meaningless to derive them without reference impact ranges as Keeney[13] clearly explained the issue in the most common critical mistake:

"There is one mistake that is very commonly made in prioritizing objectives. Unfortunately, this mistake is sometimes the basis for poor decision making. It is always a basis for poor information. As an illustration, consider an air pollution problem where the concerns are air pollution concentrations and the costs of regulating air pollution emissions. Administrators, regulators, and members of the public are asked questions such us 'In this air pollution problem, which is more important, costs or pollutant concentrations?' Almost anyone will answer such a question. They will even answer when asked how much more important the state 'more important' objective is. For instance, a respondent might state that pollutant concentrations are three times as important as costs. While the sentiment of this statement may make sense, it is completely useless for understanding values or for building a model of values. Does it mean, for example, that lowering pollutant concentrations in a metropolitan area by one part per billion would be worth the cost of $2 billion? The likely answer is 'of course not.' Indeed, this answer would probably come from the respondent who had just stated that pollutant concentrations were three times as important as costs. When asked to clarify the apparent discrepancy, he or she would naturally state that the decrease in air pollution was very small, only one part in a billion, and the cost was a very large $2 billion.

The point should now be clear. It is necessary to know how much the change in air pollution concentrations will be and how much the costs of regulation will be in order to logically discuss and quantify the relative importance of the two objectives.

This error is significant for two reasons. First, it doesn't really afford the in-depth appraisal of values that should be done in important decision situations. If we are talking about the effects on the public health of pollutant concentrations and billion-dollar expenditures, I personally don't want some administrator to give two minutes of thought to the matter and state that pollutant concentrations are three times as important as costs. Second, such judgements are often elicited from the public, concerned groups, or legislators. Then decisionmakers use these indications of relative importance in inappropriate ways.

If the value tradeoffs are done properly and address the question of how much of one specific attribute is worth how much of another specific attribute, the insights from the analysis are greatly increased and the likelihood of misuse of those judgments is greatly decreased."

To correct the weights, it must be assessed with reference to impact ranges. One of the method to assess the weights is trade-off procedure (Keeney and Raiffa[13]) which has the strongest theoretical foundation. The concept is to compare two options described on two criteria; one option has the best impact on the first and the worst impact on the second criterion, the other has the worst on the first and the best on the second criterion. By choosing the preferred option out of the two options, the decision maker decides on the more important criterion. Next, the critical step is the adjustment of the impact level in order to yield indifference between the two options. This is typically done by either worsening the chosen option in the best impact or improving the non-chosen option in the worst impact.

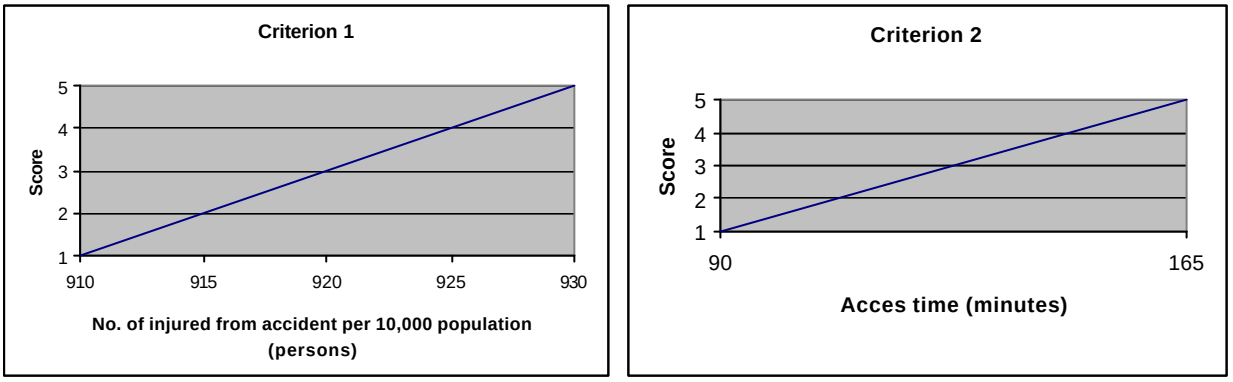
4.5.4 Illustration

Evaluate the relative importance between 2 criteria by trade-off as follows;

- Criterion 1 (c1): safety improvement, sub criterion to control "the number of the injured per 100,000 population less than 912.3 persons".
- Criterion 2 (c2): cohesion improvement between town and city, sub criterion to "access Uwajima within 120 minutes from a town".

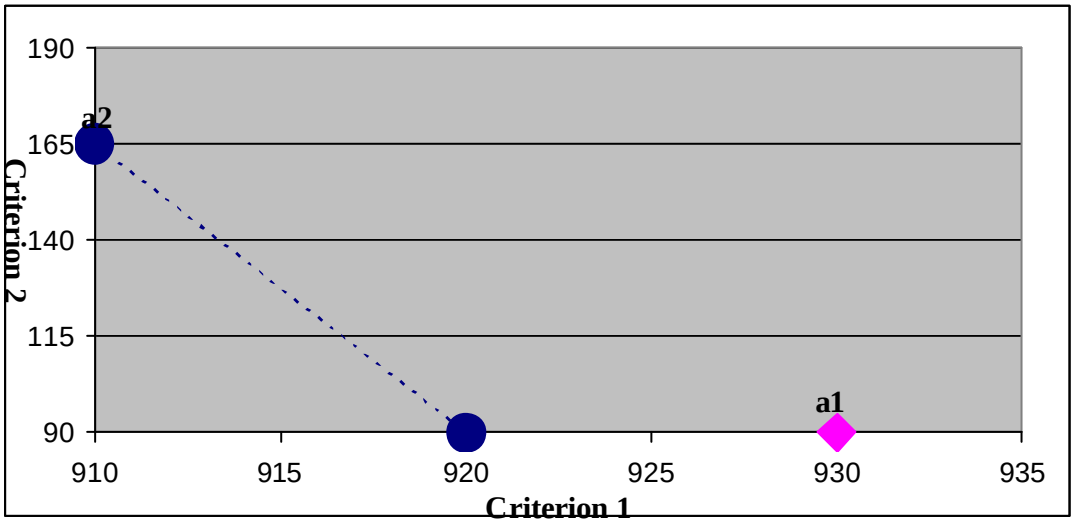
The 2 criteria are expressed in value function as in the figures 4.5.

Figure 4.5 additive value models



Suppose there are 2 options as alternative 1, a1, and alternative 2, a2, which are composed of c1 and c2 as follows in figure 4.6;

Figure 4.6 an example of Trade-off



a1 = (930 persons, 90 minutes)
a2 = (910 persons, 165 minutes)
Suppose there are 2 options as a1 and a2, the weighting procedure may start from a question like "Which option is more preferable between a1(930,90) and a2(910,165)?". If the answer is a1(930,90) is more preferable, the next question for weighting procedure is "Which x value such you are that indifferent between (x,90) and (910,165)". Suppose the answer is "x is roughly 920", the relative weight of importance between criterion c1 and c2 can be calculated as follows;

Equation: value, *v*, of (920,90) is equal to (910,165); l is relative importance.

$$\begin{aligned} v(920,90) &= v(910,165) \\ l_1 v_x(920) + l_2 v_y(90) &= l_1 v_x(910) + l_2 v_y(165) \\ 1l_1 + 5l_2 &= 3l_1 + 1l_2 \\ 4l_2 &= 2l_1 \\ l_2 &= 0.5l_1 \end{aligned}$$

Therefore, the relative importance weight between c2 and c1 is 50%.

As mentioned above, even though the trade-off is more complex than AHP, it is worth to do, especially in group decision making, trade-off has advantage because it provide information to decision makers to consider the weight at the same definition of criteria.

4.5.5 Summary of weighting method

Combination of AHP and additive model is not a theoretically correct way of evaluation. It is better to employ only 1 method whether AHP or additive model. For the multi-actor decision making, additive model is preferable since it explain the definition of criteria in quantity and quality term more than a group of words, while the AHP the word like Safety can be perceived by different definition by different decision makers. Especially, AHP evaluate criteria importance from top to bottom; during consider the top level, decision makers may not understand the sub criteria correctly while additive model just go to compare the bottom level criteria directly to get more accuracy.

Chapter 5: CONCLUSION AND FURTHER STUDY

5.1 Conclusion

In this study, there are some significant issues of that will be helpful to be a guideline of transport project evaluation by MCA. The main components of MCA are (1) decision makers and (2) evaluation model.

For the decision making that concern a number of interest groups, they should have representative in the decision making group in order to speak for the benefit of groups, monitor each other and have better communication to handle with conflicts among the groups. The next question is "When and in which process the other interest groups should be involved?". The earlier and the more process the interest groups are involved, the easier conflict problems are solved. On the other hand, if the other interest groups are not involved or involved at the very last stage of decision making, when final result comes out and the conflict occurs, they cannot change the result and it may be too late to solve conflict problems. When the interest groups do not accept the result, they may boycott a project and it may be cancelled that cause extensive lose.

For evaluation model aspect, weighting procedure is one of the most important elements in MCA. Decision makers should pay a lot of attention on weighting procedure. The existing weighting procedure, which compares the importance without referring to the range of impact, can cause the misunderstanding among the decision maker team, because the individual perception of the criterion is different. Therefore, the decision maker team should inform members how to rate attribute score, the difference between the worst and the best in the criterion to confirm that all members of decision maker team consider the same thing in weighting procedure.

5.2 Further study

This study only proposes the idea of using MCA properly to handle with conflict case. In order to prove the proposal, it must be applied in the real situation.

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APPENDIX

サービス項目	長期（30年）	中期（10年）	1	3	5	下位項目のウェイト												下位項目のウェイト							
						吉田町	三間町	広見町	日吉町	宇和島市	松野町	津島町	内海村	御荘町	西海町	城辺町	一本松町	吉田町	三間町	広見町	日吉町	宇和島市	松野町	津島町	内海村
						1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8
災害時の代替ルートの形成	隣接市町村間の道路距離2倍以内の迂回路の設置率100%	隣接市町村間の迂回路の設置率100%	道路距離2倍以内の迂回路がある	迂回路はあるが、距離が2倍以上ある	迂回路がない	0.0063	0.0095	0.0514	0.2585	0.0787	0.1107	0.0037	0.2672	0.1502	0.0546	0.2868	0.2607	0.0063	0.0095	0.0514	0.2585	0.0787	0.1107	0.0037	0.2672
公共交通の強化		高齢化率14%以上地域へのバス路線の設置率100%	高齢化率14%以上でバス路線が設置してある		高齢化率14%以上でバス路線が設置されていない	0.0382	0.0476	0.3128	0.0425	0.0787	0.0369	0.0077	0.0771	0.0501	0.1638	0.1379	0.0752	0.0127	0.0159	0.1043	0.0142	0.0262	0.0123	0.0026	0.0257
		運行本数20本/日以上路線のピーク時走行速度20km/h以上	運行本数20本/日でピーク速度20km/h以上		運行本数20本/日以上でピーク時走行速度が20km未満													0.0127	0.0159	0.1043	0.0142	0.0262	0.0123	0.0026	0.0257
	バス路線の道路改良率100%	バス路線の道路改良率88%	バス路線で改良率100%	バス路線で道路改良率80%以上	バス路線で道路改良率80%以下													0.0127	0.0159	0.1043	0.0142	0.0262	0.0123	0.0026	0.0257
福祉の支援	道路改良率80%	道路改良率75%	道路改良率80%以上	道路改良率74%以上	道路改良率74%未満	0.0155	0.0095	0.1268	0.1048	0.0262	0.0369	0.0018	0.0371	0.0501	0.0546	0.0663	0.0362	0.0155	0.0095	0.1268	0.1048	0.0262	0.0369	0.0018	0.0371
広域消防・医療の支援	医療施設（第2次、第3次医療）まで30分圏域100%	医療施設（第2次、第3次医療）まで53分圏域100%			各市町村役場から医療施設（総合病院まで）30分以上必要	0.0083	0.1645	0.0681	0.1645	0.1837	0.0748	0.0568	0.1833	0.1204	0.273	0.1416	0.1789	0.0028	0.0548	0.0227	0.0548	0.0612	0.0249	0.0189	0.0611
	消防署まで30分圏域100%	消防署まで43分圏域100%			各市町村役場から消防署まで30分以上必要													0.0028	0.0548	0.0227	0.0548	0.0612	0.0249	0.0189	0.0611
	警察署まで30分圏域100%	警察署まで45分圏域100%			各市町村役場から警察署まで30分以上必要													0.0028	0.0548	0.0227	0.0548	0.0612	0.0249	0.0189	0.0611
安全性の確保（道路のﾊﾞﾘｱﾌﾘｰ化）	10万人当たりの死者数が7.2人以下	10万人当たりの死者数が8．8人以下	10万人当たりの死者数：7.2人以下	10万人当たりの死者数：8．8人以下	10万人当たりの死者数：8．8人以上	0.086	0.027	0.1416	0.0667	0.0612	0.455	0.0273	0.0529	0.0579	0.091	0.0681	0.086	0.0287	0.009	0.0472	0.0222	0.0204	0.1517	0.0091	0.0176
	10万人当たりの負傷者数が912．3人以下	10万人当たりの負傷者数が928.8人	10万人当たりの負傷者数：912．3人以下	10万人当たりの負傷者数：928．8人以下	10万人当たりの負傷者数：928．8人以上													0.0287	0.009	0.0472	0.0222	0.0204	0.1517	0.0091	0.0176
	歩道設置率40%	歩道設置率35%	歩道設置率40%以上	歩道設置率35%以上	歩道設置率35%未満													0.0287	0.009	0.0472	0.0222	0.0204	0.1517	0.0091	0.0176
県内地域間の連携強化	宇和島圏域の全ての市町村から県都（松山市）まで120分以内でｱｸｾｽ可能	宇和島圏域の全ての市町村から県都（松山市）まで178分以内でｱｸｾｽ可能	市町村役場から県都（松山市）まで90以内でｱｸｾｽ可能	市町村役場から県都（松山市）まで165以内でｱｸｾｽ可能	市町村役場から県都（松山市）まで165以上のｱｸｾｽ時間が必要	0.2061	0.1194	0.0202	0.1614	0.0595	0.0804	0.2628	0.1237	0.1607	0.0589	0.1137	0.1453	0.1031	0.0597	0.0101	0.0807	0.0298	0.0402	0.1314	0.0619
	市町村間のアクセス時間30分以内	市町村間のアクセス時間40分以内	市町村間のアクセス時間30分以内	市町村間のアクセス時間40分以内	市町村間のアクセス時間40分以上													0.1031	0.0597	0.0101	0.0807	0.0298	0.0402	0.1314	0.0619
広域的な交流強化	全ての市町村から空港（松山空港）へのアクセス時間を120分以内とする。	全ての市町村から空港（松山空港）へのアクセス時間を185分以内とする。	空港までのアクセス時間が120分以内	空港までのアクセス時間が165分以内	空港までのアクセス時間が165分以上	0.0412	0.3583	0.0607	0.0323	0.2976	0.0268	0.2628	0.0247	0.1607	0.0196	0.0379	0.0484	0.0206	0.1792	0.0304	0.0162	0.1488	0.0134	0.1314	0.0124
	全ての市町村から港湾（宇和島港）へのアクセス時間を60分以内とする。	全ての市町村から港湾（宇和島港）へのアクセス時間を88分以内とする。	重要港湾までのアクセス時間が60分以内	重要港湾までのアクセス時間が80分以内	重要港湾までのアクセス時間が80分以内													0.0206	0.1792	0.0304	0.0162	0.1488	0.0134	0.1314	0.0124
渋滞緩和	中心市街地（宇和島市）へ至る道路の混雑度が全線で1.0以下	中心市街地（宇和島市）へ至る道路の混雑度が全線で1．5以下	中心市街地（宇和島市）へ至る道路の混雑度が全線で1.0以下	中心市街地（宇和島市）へ至る道路の混雑度が全線で1．5以上	中心市街地（宇和島市）へ至る道路の混雑度が全線で1．5より大きい	0.0495	0.1592	0.0162	0.0646	0.0714	0.0357	0.1752	0.1484	0.1071	0.0262	0.0505	0.0646	0.0165	0.0531	0.0054	0.0215	0.0238	0.0119	0.0584	0.0495
		主要渋滞ﾎﾟｲﾝﾄの解消			主要渋滞ﾎﾟｲﾝﾄあり													0.0165	0.0531	0.0054	0.0215	0.0238	0.0119	0.0584	0.0495
	中心市街地（宇和島市）へ至る道路のピーク時速度35km/h以上	中心市街地（宇和島市）へ至る道路のピーク時速度27km/ｈ	中心市街地（宇和島市）へ至る道路のピーク時旅行速度35km/h以上	中心市街地（宇和島市）へ至る道路のピーク時旅行速度27km以上	中心市街地（宇和島市）へ至る道路のピーク時旅行速度27以下													0.0165	0.0531	0.0054	0.0215	0.0238	0.0119	0.0584	0.0495
圏域中心部（宇和島市）の活性化の支援		宇和島市内の道路混雑度が全線2.0以下	宇和島市内の道路で混雑度2.0以下		宇和島市内の道路で混雑度2．0以上	0.3933	0.0667	0.0289	0.027	0.091	0.0204	0.0273	0.0254	0.0476	0.1509	0.0131	0.0141	0.1311	0.0222	0.0096	0.009	0.0303	0.0068	0.0091	0.0085
	宇和島圏域の全ての市町村から圏域中心都市（宇和島市）まで60分でｱｸｾｽ可能	宇和島市まで88分以下でｱｸｾｽ可能	宇和島市まで60分以下でｱｸｾｽ可能	宇和島市まで80分以下でｱｸｾｽ可能	宇和島市まで80分以上のｱｸｾｽ時間が必要													0.1311	0.0222	0.0096	0.009	0.0303	0.0068	0.0091	0.0085
		宇和島市内の旅行速度が20km/h以下	宇和島市内の旅行速度20km/h以上		宇和島市内の旅行速度20km/h以下													0.1311	0.0222	0.0096	0.009	0.0303	0.0068	0.0091	0.0085
圏内の文化交流の促進		公共施設沿道の整備				0.0647	0.027	0.0866	0.0667	0.015	0.0612	0.1181	0.0073	0.0476	0.0349	0.0273	0.0294	0.0647	0.027	0.0866	0.0667	0.015	0.0612	0.1181	0.0073
産業の振興		関連道路の整備 ・卸売り市場へのｱｸｾｽ道路である。 ・沿道に工業団地がある、または計画がある。 ・沿道に大規模リゾート施設がある、または計画がある。 ・沿道に大規模ショッピングセンターがある、または計画がある。 ・特定重要港湾、重要港湾へのｱｸｾｽ道路である。 ・流通地区へのｱｸｾｽ道路である。				0.1118	0.0007	0.0607	0.007	0.0168	0.0195	0.0159	0.0309	0.0204	0.0349	0.0332	0.0357	0.1118	0.0007	0.0607	0.007	0.0168	0.0195	0.0159	0.0309
広域観光ルートの支援	レクリエーション施設へのｱｸｾｽ道路の改良率100%	レクリエーション施設へのｱｸｾｽ道路の改良率100%	ｱｸｾｽ道路の改良率100%	ｱｸｾｽ道路の改良率84%以上	ｱｸｾｽ道路の改良率84%未満	0.0322	0.0028	0.0084	0.0028	0.0168	0.0135	0.0332	0.0148	0.0204	0.0294	0.0159	0.0172	0.0161	0.0014	0.0042	0.0014	0.0084	0.0068	0.0166	0.0074
	松山市から観光施設までのアクセス時間を120分以内	松山市から観光施設までのアクセス時間を120分以内	松山市から保養施設までのアクセス時間120分以下	松山市から保養施設までのアクセス時間160分以下	松山市から保養施設までのアクセス時間160分以上													0.0161	0.0014	0.0042	0.0014	0.0084	0.0068	0.0166	0.0074
環境（騒音、振動）の保全		騒音ﾚﾍﾞﾙが夜間養成限度を超過している箇所をなくす。			該当あり	0.0155	0.0011	0.0175	0.0011	0.0034	0.0282	0.0077	0.0071	0.0068	0.0083	0.0077	0.0083	0.0155	0.0011	0.0175	0.0011	0.0034	0.0282	0.0077	0.0071

				一般国道56号	一般国道56号	一般国道56号	一般国道56号	一般国道56号	一般国道56号	一般国道56号	一般国道56号	一般国道56号	一般国道56号	一般国道56号	一般国道56号	一般国道56号	一般国道56号	一般国道56号	一般国道56号	一般国道56号	一般国道56号
				1040	1041	1042	1042	1043	1044	1045	1046	1047	1047	1048	1049	1050	1051	1052	1053	11048	11049
御荘町	西海町	城辺町	一本松町	一本松町	一本松町	御荘町	城辺町	御荘町	内海村	津島町	津島町	宇和島市	津島町	宇和島市	宇和島市	宇和島市	宇和島市	吉田町	吉田町	宇和島市	宇和島市
9	10	11	12	12	12	9	11	9	8	7	7	5	7	5	5	5	5	1	1	5	5
0.1502	0.0546	0.2868	0.2607	0.00	0.00	0.15	0.29	0.15	0.27	0.00	0.02	0.39	0.02	0.39	0.39	0.08	0.08	0.01	0.00	0.00	0.00
0.0167	0.0546	0.046	0.025067	0.03	0.03	0.02	0.05	0.02	0.03	0.00	0.00	0.03	0.00	0.03	0.03	0.03	0.03	0.01	0.01	0.13	0.13
0.0167	0.0546	0.046	0.025067	0.03	0.03	0.00	0.00	0.02	0.03	0.00	0.00	0.13	0.01	0.03	0.03	0.03	0.03	0.01	0.00	0.00	0.00
0.0167	0.0546	0.046	0.025067	0.03	0.03	0.02	0.05	0.02	0.03	0.00	0.00	0.03	0.00	0.03	0.03	0.03	0.03	0.01	0.01	0.00	0.00
0.0501	0.0546	0.0663	0.0362	0.04	0.04	0.05	0.07	0.05	0.04	0.00	0.00	0.03	0.00	0.03	0.03	0.03	0.03	0.02	0.02	0.03	0.03
0.0401	0.091	0.0472	0.059633	0.06	0.06	0.04	0.05	0.04	0.18	0.06	0.06	0.06	0.02	0.06	0.06	0.06	0.06	0.00	0.00	0.06	0.06
0.0401	0.091	0.0472	0.059633	0.06	0.06	0.04	0.05	0.04	0.06	0.02	0.02	0.06	0.02	0.06	0.06	0.06	0.06	0.00	0.00	0.06	0.06
0.0401	0.091	0.0472	0.059633	0.06	0.06	0.04	0.05	0.04	0.06	0.02	0.02	0.06	0.02	0.06	0.06	0.06	0.06	0.00	0.00	0.06	0.06
0.0193	0.0303	0.0227	0.028667	0.14	0.14	0.02	0.02	0.02	0.02	0.05	0.05	0.02	0.05	0.02	0.02	0.02	0.02	0.03	0.03	0.02	0.02
0.0193	0.0303	0.0227	0.028667	0.03	0.03	0.02	0.02	0.02	0.02	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.14	0.14	0.02	0.02
0.0193	0.0303	0.0227	0.028667	0.03	0.03	0.02	0.02	0.02	0.02	0.01	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.03	0.14	0.10	0.02
0.0804	0.0295	0.0569	0.07265	0.36	0.36	0.40	0.28	0.40	0.31	0.66	0.66	0.15	0.66	0.00	0.00	0.00	0.15	0.52	0.52	0.15	0.15
0.0804	0.0295	0.0569	0.07265	0.00	0.36	0.40	0.28	0.40	0.31	0.66	0.66	0.09	0.39	0.00	0.03	0.03	0.03	0.10	0.00	0.09	0.09
0.0804	0.0098	0.019	0.0242	0.12	0.12	0.40	0.09	0.40	0.06	0.66	0.66	0.74	0.66	0.00	0.00	0.00	0.74	0.10	0.10	0.74	0.74
0.0804	0.0098	0.019	0.0242	0.00	0.07	0.24	0.06	0.24	0.04	0.39	0.39	0.45	0.39	0.00	0.45	0.15	0.15	0.02	0.00	0.45	0.45
0.0357	0.0087	0.0168	0.021533	0.02	0.02	0.11	0.05	0.04	0.05	0.06	0.18	0.00	0.29	0.00	0.00	0.00	0.00	0.05	0.05	0.00	0.00
0.0357	0.0087	0.0168	0.021533	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00
0.0357	0.0087	0.0168	0.021533	0.02	0.02	0.11	0.05	0.04	0.05	0.06	0.06	0.00	0.29	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.00
0.0159	0.0503	0.0044	0.0047	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.15	0.03	0.03	0.03	0.00	0.00	0.03	0.03
0.0159	0.0503	0.0044	0.0047	0.00	0.01	0.05	0.01	0.05	0.03	0.03	0.03	0.09	0.03	0.00	0.03	0.03	0.03	0.13	0.00	0.09	0.09
0.0159	0.0503	0.0044	0.0047	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.00	0.03	0.03	0.03	0.03	0.00	0.00	0.03	0.15
0.0476	0.0349	0.0273	0.0294	0.03	0.15	0.24	0.14	0.14	0.02	0.00	0.35	0.02	0.12	0.08	0.05	0.02	0.00	0.06	0.00	0.02	0.00
0.0204	0.0349	0.0332	0.0357	0.00	0.00	0.02	0.03	0.00	0.00	0.00	0.02	0.02	0.02	0.08	0.02	0.02	0.00	0.11	0.00	0.02	0.02
0.0102	0.0147	0.008	0.0086	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.02	0.01	0.01	0.00	0.01	0.02	0.02	0.01	0.01
0.0102	0.0147	0.008	0.0086	0.00	0.00	0.05	0.04	0.05	0.04	0.08	0.08	0.04	0.08	0.03	0.03	0.00	0.04	0.08	0.08	0.04	0.04
0.0068	0.0083	0.0077	0.0083	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.04	0.02	0.02	0.02	0.02	0.00	0.00	0.02	0.02

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	1040	1041	1042	1042	1043	1044	1045	1046	1047	1047	1048	1049	1050	1051	1052	1053	11048	11049
	一本松町	一本松町	御荘町	城辺町	御荘町	内海村	津島町	津島町	宇和島市	津島町	宇和島市	宇和島市	宇和島市	宇和島市	吉田町	吉田町	宇和島市	宇和島市
	平地部	平地部	平地部	平地部	平地部	平地部	平地部	平地部	都市部	平地部	都市部	都市部	都市部	都市部	山間部	山間部	都市部	都市部
整備得点	1.05	1.62	2.44	1.71	2.20	1.65	2.78	3.28	2.65	3.14	1.13	1.42	0.75	1.66	1.56	1.15	2.16	2.19

一般国道56号	一般国道197号	一般国道197号	一般国道320号	一般国道320号	一般国道320号	一般国道320号	一般国道320号	一般国道320号	一般国道320号	一般国道378号	一般国道381号	一般国道381号	一般国道381号	一般国道441号	宿毛津島線	宿毛津島線	宿毛城辺線	宿毛城辺線
11050	1094	1095	1123	1124	1124	1125	1126	1126	1127	1137	1145	1146	1146	1152	64005	64006	4010	4011
宇和島市	日吉村	日吉村	宇和島市	宇和島市	広見町	広見町	広見町	日吉村	宇和島市	吉田町	松野町	広見町	松野町	広見町	津島町	津島町	城辺町	城辺町
5	4	4	5	5	3	3	3	4	5	1	6	3	6	3	7	7	11	11
0.08	0.00	0.00	0.00	0.08	0.05	0.26	0.26	1.29	0.00	0.00	0.55	0.05	0.11	0.26	0.00	0.00	0.00	0.00
0.13	0.01	0.01	0.03	0.03	0.10	0.10	0.10	0.01	0.03	0.01	0.01	0.10	0.01	0.10	0.00	0.01	0.05	0.05
0.00	0.00	0.00	0.03	0.03	0.10	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00
0.00	0.01	0.01	0.03	0.08	0.31	0.10	0.10	0.01	0.03	0.06	0.06	0.10	0.01	0.52	0.01	0.00	0.23	0.05
0.03	0.10	0.10	0.03	0.03	0.13	0.13	0.13	0.10	0.03	0.08	0.04	0.13	0.04	0.63	0.01	0.00	0.07	0.07
0.06	0.27	0.16	0.06	0.06	0.02	0.02	0.07	0.16	0.06	0.01	0.07	0.02	0.02	0.07	0.06	0.02	0.05	0.05
0.06	0.27	0.05	0.06	0.06	0.02	0.02	0.02	0.05	0.06	0.00	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.05
0.06	0.27	0.05	0.06	0.06	0.02	0.02	0.02	0.05	0.06	0.00	0.02	0.02	0.02	0.02	0.02	0.02	0.05	0.05
0.02	0.11	0.11	0.02	0.02	0.24	0.24	0.24	0.11	0.02	0.03	0.15	0.24	0.15	0.24	0.05	0.05	0.02	0.02
0.02	0.02	0.02	0.02	0.02	0.05	0.05	0.05	0.02	0.02	0.14	0.15	0.05	0.15	0.05	0.01	0.01	0.02	0.02
0.10	0.02	0.02	0.02	0.02	0.05	0.05	0.05	0.02	0.02	0.14	0.15	0.05	0.15	0.24	0.05	0.01	0.11	0.02
0.15	0.00	0.08	0.00	0.09	0.03	0.00	0.00	0.00	0.00	0.00	0.12	0.03	0.12	0.03	0.00	0.00	0.00	0.00
0.03	0.00	0.08	0.03	0.03	0.01	0.01	0.01	0.08	0.03	0.00	0.04	0.01	0.04	0.01	0.00	0.00	0.00	0.00
0.74	0.00	0.05	0.00	0.45	0.09	0.00	0.00	0.00	0.00	0.00	0.04	0.09	0.04	0.09	0.00	0.00	0.00	0.00
0.15	0.00	0.02	0.15	0.15	0.03	0.03	0.03	0.02	0.15	0.00	0.01	0.03	0.01	0.03	0.00	0.00	0.00	0.00
0.00	0.02	0.02	0.00	0.00	0.01	0.01	0.01	0.02	0.00	0.05	0.01	0.01	0.01	0.01	0.06	0.06	0.02	0.02
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.02	0.02	0.00	0.00	0.01	0.01	0.01	0.02	0.00	0.05	0.01	0.01	0.01	0.01	0.06	0.06	0.08	0.02
0.03	0.00	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.03	0.00	0.00	0.03	0.03	0.01	0.01	0.01	0.01	0.03	0.00	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
0.03	0.00	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.02	0.00	0.07	0.00	0.05	0.26	0.00	0.26	0.20	0.02	0.00	0.06	0.09	0.06	0.09	0.00	0.12	0.00	0.00
0.02	0.00	0.00	0.02	0.08	0.30	0.00	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00
0.01	0.00	0.00	0.01	0.03	0.01	0.00	0.00	0.00	0.01	0.00	0.03	0.00	0.01	0.00	0.00	0.02	0.00	0.00
0.04	0.00	0.00	0.03	0.03	0.01	0.00	0.00	0.00	0.03	0.00	0.02	0.01	0.02	0.00	0.00	0.08	0.00	0.00
0.02	0.00	0.00	0.00	0.02	0.09	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

一般国道56号	一般国道197号	一般国道197号	一般国道320号	一般国道320号	一般国道320号	一般国道320号	一般国道320号	一般国道320号	一般国道320号	一般国道378号	一般国道381号	一般国道381号	一般国道381号	一般国道441号	宿毛津島線	宿毛津島線	宿毛城辺線	宿毛城辺線
11050	1094	1095	1123	1124	1124	1125	1126	1126	1127	1137	1145	1146	1146	1152	64005	64006	4010	4011
宇和島市	日吉村	日吉村	宇和島市	宇和島市	広見町	広見町	広見町	日吉村	宇和島市	吉田町	松野町	広見町	松野町	広見町	津島町	津島町	城辺町	城辺町
都市部	山間部	山間部	都市部	都市部	山間部	山間部	山間部	山間部	都市部	山間部	山間部	山間部	山間部	山間部	平地部	平地部	平地部	平地部
1.82	1.15	0.90	0.67	1.48	1.96	1.05	1.42	2.21	0.68	0.58	1.60	1.07	1.04	2.48	0.34	0.47	0.79	0.40

宿毛城辺線	宇和三間線	宇和三間線	城辺高茂岬線	城辺高茂岬線	城辺高茂岬線	宇和島下波津島線	宇和島下波津島線	宇和島下波津島線	宇和島下波津島線	宇和島城辺線	宇和島城辺線	宇和島城辺線	宇和島城辺線	広見三間宇和島線	広見三間宇和島線	広見三間宇和島線	十和吉野線	藪ケ市松野線	宇和島港線
44002	4057	4057	64060	64060	64061	4064	4065	4066	44008	64085	64085	64086	64086	4102	4102	4102	66002	6003	6123
城辺町	三間町	吉田町	西海町	城辺町	西海町	宇和島市	宇和島市	津島町	宇和島市	宇和島市	津島町	城辺町	津島町	宇和島市	三間町	広見町	松野町	松野町	宇和島市
11	2	1	10	11	10	5	5	7	5	5	7	11	7	5	2	3	6	6	5
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.29	0.00	0.08	0.01	0.05	0.00	0.00	0.00
0.23	0.02	0.01	0.05	0.05	0.05	0.03	0.03	0.00	0.13	0.03	0.00	0.05	0.00	0.03	0.02	0.10	0.01	0.06	0.03
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.08	0.06	0.27	0.23	0.27	0.08	0.13	0.01	0.00	0.13	0.01	0.23	0.01	0.03	0.02	0.10	0.06	0.00	0.03
0.07	0.05	0.08	0.27	0.33	0.05	0.03	0.08	0.01	0.13	0.13	0.01	0.33	0.01	0.03	0.01	0.13	0.18	0.04	0.03
0.14	0.05	0.00	0.27	0.05	0.27	0.06	0.06	0.02	0.06	0.06	0.06	0.05	0.06	0.06	0.05	0.02	0.07	0.07	0.06
0.05	0.05	0.00	0.09	0.05	0.46	0.06	0.06	0.02	0.06	0.06	0.02	0.24	0.02	0.06	0.05	0.02	0.02	0.02	0.06
0.05	0.05	0.00	0.09	0.05	0.27	0.06	0.06	0.02	0.06	0.06	0.02	0.14	0.02	0.06	0.05	0.02	0.02	0.02	0.06
0.02	0.01	0.03	0.03	0.02	0.03	0.02	0.02	0.05	0.02	0.02	0.05	0.02	0.05	0.02	0.01	0.24	0.15	0.15	0.02
0.02	0.01	0.14	0.03	0.02	0.03	0.02	0.02	0.01	0.02	0.02	0.01	0.02	0.01	0.02	0.01	0.05	0.15	0.15	0.02
0.11	0.05	0.14	0.15	0.11	0.15	0.02	0.02	0.05	0.10	0.10	0.05	0.11	0.05	0.02	0.01	0.05	0.76	0.76	0.02
0.00	0.18	0.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.18	0.03	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.06	0.01	0.00	0.00	0.00
0.00	0.54	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.54	0.09	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.18	0.03	0.00	0.00	0.45
0.05	0.05	0.02	0.01	0.02	0.01	0.00	0.00	0.06	0.00	0.00	0.18	0.02	0.06	0.00	0.05	0.00	0.01	0.01	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.05	0.05	0.02	0.04	0.08	0.03	0.00	0.00	0.06	0.00	0.00	0.18	0.05	0.18	0.00	0.05	0.00	0.04	0.04	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.00	0.03	0.03	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.03
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.02	0.01	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.00	0.03	0.03	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.15
0.00	0.03	0.06	0.00	0.00	0.03	0.02	0.02	0.12	0.00	0.02	0.12	0.03	0.12	0.02	0.03	0.09	0.00	0.00	0.05
0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.00	0.03	0.02	0.02	0.00	0.06	0.00	0.00	0.02
0.00	0.01	0.08	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.04	0.08	0.04	0.08	0.01	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.04	0.08	0.04	0.08	0.03	0.00	0.01	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.01	0.09	0.00	0.00	0.02

宿毛城辺線	宇和三間線	宇和三間線	城辺高茂岬線	城辺高茂岬線	城辺高茂岬線	宇和島下波津島線	宇和島下波津島線	宇和島下波津島線	宇和島下波津島線	宇和島城辺線	宇和島城辺線	宇和島城辺線	宇和島城辺線	広見三間宇和島線	広見三間宇和島線	広見三間宇和島線	十和吉野線	藪ケ市松野線	宇和島港線
44002	4057	4057	64060	64060	64061	4064	4065	4066	44008	64085	64085	64086	64086	4102	4102	4102	66002	6003	6123
城辺町	三間町	吉田町	西海町	城辺町	西海町	宇和島市	宇和島市	津島町	宇和島市	宇和島市	津島町	城辺町	津島町	宇和島市	三間町	広見町	松野町	松野町	宇和島市
平地部	山間部	山間部	平地部	平地部	平地部	都市部	都市部	平地部	都市部	都市部	平地部	平地部	平地部	都市部	山間部	山間部	山間部	山間部	都市部
0.79	1.23	1.07	1.32	1.01	1.69	0.49	0.56	0.55	0.67	0.85	0.86	1.69	0.76	1.29	1.36	1.21	1.49	1.33	1.03

無月宇和島線	滑床松野線	滑床松野線	玉津港線	河内立間停車場線	奥浦白浦線	吉田宇和島線	吉田宇和島線	大内停車場線	伊予宮ノ下停車場宮ノ下線	伊予宮ノ下停車場務田線	西谷吉田線	西谷吉田線	下鍵山松野線	下鍵山松野線	下鍵山松野線	下鍵山松野線	近永停車場線
6124	66125	66125	6126	66127	6128	66129	66129	46042	46043	66130	6131	6131	46044	46044	66132	66132	46018
宇和島市	宇和島市	松野町	吉田町	吉田町	吉田町	吉田町	宇和島市	三間町	三間町	三間町	吉田町	三間町	広見町	日吉村	広見町	松野町	広見町
5	5	6	1	1	1	1	5	2	2	2	1	2	3	4	3	6	3
0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.39	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.26	0.55	0.00
0.03	0.03	0.01	0.01	0.01	0.01	0.01	0.03	0.08	0.02	0.02	0.01	0.02	0.10	0.01	0.52	0.06	0.10
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.13	0.13	0.06	0.06	0.04	0.06	0.06	0.13	0.00	0.02	0.05	0.06	0.08	0.52	0.07	0.00	0.00	0.10
0.13	0.13	0.18	0.05	0.02	0.08	0.08	0.13	0.01	0.01	0.01	0.02	0.01	0.38	0.31	0.13	0.04	0.13
0.06	0.06	0.07	0.00	0.00	0.00	0.00	0.06	0.05	0.05	0.05	0.00	0.05	0.07	0.16	0.07	0.02	0.02
0.06	0.06	0.02	0.00	0.00	0.00	0.00	0.06	0.05	0.05	0.05	0.00	0.05	0.02	0.27	0.02	0.02	0.02
0.06	0.06	0.02	0.00	0.00	0.00	0.00	0.06	0.05	0.05	0.05	0.00	0.05	0.02	0.16	0.02	0.02	0.02
0.02	0.02	0.15	0.03	0.03	0.03	0.03	0.02	0.01	0.01	0.01	0.03	0.01	0.24	0.11	0.24	0.15	0.24
0.02	0.02	0.15	0.14	0.14	0.14	0.14	0.02	0.01	0.01	0.01	0.14	0.01	0.05	0.02	0.05	0.15	0.05
0.10	0.10	0.76	0.14	0.03	0.14	0.14	0.10	0.05	0.01	0.01	0.14	0.05	0.24	0.11	0.24	0.76	0.24
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.03	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.15	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.01	0.02	0.02	0.02	0.02	0.00	0.05	0.05	0.05	0.02	0.05	0.01	0.02	0.01	0.01	0.01
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.01	0.02	0.08	0.05	0.08	0.00	0.27	0.27	0.05	0.02	0.05	0.01	0.02	0.02	0.04	0.03
0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.39	0.09	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.02	0.02	0.06	0.00	0.06	0.00	0.19	0.05	0.00	0.00	0.00	0.19	0.08	0.00	0.00	0.00	0.00	0.00
0.05	0.00	0.00	0.00	0.11	0.00	0.11	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.02	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.02	0.00	0.00	0.00	0.00	0.00	0.08	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

無月宇和島線	滑床松野線	滑床松野線	玉津港線	河内立間停車場線	奥浦白浦線	吉田宇和島線	吉田宇和島線	大内停車場線	伊予宮ノ下停車場宮ノ下線	伊予宮ノ下停車場務田線	西谷吉田線	西谷吉田線	下鍵山松野線	下鍵山松野線	下鍵山松野線	下鍵山松野線	近永停車場線
6124	66125	66125	6126	66127	6128	66129	66129	46042	46043	66130	6131	6131	46044	46044	66132	66132	46018
宇和島市	宇和島市	松野町	吉田町	吉田町	吉田町	吉田町	宇和島市	三間町	三間町	三間町	吉田町	三間町	広見町	日吉村	広見町	松野町	広見町
都市部	都市部	山間部	山間部	山間部	山間部	山間部	都市部	山間部	山間部	山間部	山間部	山間部	山間部	山間部	山間部	山間部	山間部
0.76	0.69	1.53	0.48	0.55	0.54	1.64	1.48	0.63	0.55	0.64	0.64	0.52	1.65	1.29	1.62	1.86	0.96

小倉三間線	小倉三間線	広見吉田線	広見吉田線	広見吉田線	日向谷高野子線	節安下鍵山線	御内下畑地線	嵐田之浜岩松線	嵐田之浜岩松線	美砂子郡線	美砂子郡線	網代島越線	猿鳴平城線	中浦西海線	中浦西海線	長月城辺線	長月城辺線	久良城辺線	久良城辺線	深浦港線
66133	66133	6134	6134	6134	56135	6136	66137	6138	56138	56148	46049	66139	6140	66141	66141	6142	6142	6143	6143	66144
三間町	広見町	宇和島市	三間町	広見町	日吉村	日吉村	津島町	津島町	津島町	宇和島市	宇和島市	内海村	御荘町	御荘町	西海町	御荘町	城辺町	御荘町	城辺町	城辺町
2	3	5	2	3	4	4	7	7	7	5	5	8	9	9	10	9	11	9	11	11
0.00	0.00	0.08	0.01	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	0.29	0.15	0.29	0.00
0.02	0.10	0.03	0.02	0.10	0.07	0.01	0.00	0.00	0.01	0.13	0.13	0.03	0.02	0.08	0.27	0.02	0.05	0.02	0.05	0.05
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.05	0.00	0.00	0.00
0.08	0.52	0.13	0.08	0.52	0.00	0.07	0.01	0.01	0.00	0.00	0.00	0.13	0.08	0.00	0.00	0.08	0.23	0.08	0.23	0.23
0.03	0.38	0.13	0.05	0.63	0.00	0.52	0.01	0.01	0.00	0.13	0.13	0.11	0.25	0.25	0.27	0.25	0.33	0.25	0.33	0.33
0.05	0.07	0.06	0.05	0.02	0.05	0.27	0.06	0.06	0.02	0.18	0.18	0.18	0.12	0.04	0.27	0.04	0.05	0.04	0.14	0.05
0.05	0.02	0.06	0.05	0.02	0.05	0.27	0.02	0.02	0.02	0.18	0.18	0.31	0.04	0.04	0.09	0.04	0.05	0.04	0.05	0.05
0.05	0.02	0.06	0.05	0.02	0.05	0.27	0.02	0.02	0.02	0.18	0.18	0.31	0.04	0.04	0.09	0.04	0.05	0.04	0.05	0.05
0.01	0.24	0.02	0.01	0.24	0.11	0.11	0.05	0.05	0.05	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02
0.01	0.05	0.02	0.01	0.05	0.02	0.02	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.02	0.02
0.05	0.24	0.02	0.01	0.05	0.11	0.11	0.05	0.05	0.05	0.10	0.10	0.09	0.10	0.10	0.15	0.02	0.02	0.10	0.11	0.11
0.00	0.00	0.09	0.18	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.28	0.00
0.00	0.00	0.03	0.06	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.28	0.40	0.28	0.00
0.00	0.00	0.45	0.54	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.40	0.09	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.06	0.24	0.06	0.00
0.05	0.01	0.00	0.05	0.00	0.00	0.02	0.06	0.06	0.06	0.00	0.00	0.05	0.11	0.04	0.01	0.18	0.08	0.11	0.05	0.05
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.05	0.01	0.00	0.05	0.00	0.00	0.02	0.18	0.06	0.06	0.00	0.00	0.15	0.11	0.11	0.03	0.04	0.02	0.18	0.08	0.05
0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.01	0.05	0.01	0.00
0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.03	0.09	0.05	0.08	0.26	0.00	0.07	0.00	0.12	0.00	0.02	0.02	0.01	0.00	0.00	0.00	0.05	0.03	0.05	0.03	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.04	0.01	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.03	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.02	0.01	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

小倉三間線	小倉三間線	広見吉田線	広見吉田線	広見吉田線	日向谷高野子線	節安下鍵山線	御内下畑地線	嵐田之浜岩松線	嵐田之浜岩松線	美砂子郡線	美砂子郡線	網代島越線	猿鳴平城線	中浦西海線	中浦西海線	長月城辺線	長月城辺線	久良城辺線	久良城辺線	深浦港線
66133	66133	6134	6134	6134	56135	6136	66137	6138	56138	56148	46049	66139	6140	66141	66141	6142	6142	6143	6143	66144
三間町	広見町	宇和島市	三間町	広見町	日吉村	日吉村	津島町	津島町	津島町	宇和島市	宇和島市	内海村	御荘町	御荘町	西海町	御荘町	城辺町	御荘町	城辺町	城辺町
山間部	山間部	都市部	山間部	山間部	山間部	山間部	平地部	平地部	平地部	都市部	都市部	平地部	平地部	平地部	平地部	平地部	平地部	平地部	平地部	平地部
0.48	1.74	1.40	1.35	2.23	0.48	1.79	0.45	0.45	0.29	0.97	1.03	1.42	0.90	0.73	1.25	1.65	1.63	2.58	2.18	1.01

一本松城辺線	一本松城辺線	高茂岬船越線	九島循環線	舟間伊予吉田停車場線	音地清延線	音地清延線	奈良近永線	目黒松丸線	後柿之浦線	後柿之浦線	後柿之浦線	御代の川清重線	船越平城線	船越平城線	船越平城線	篠山公園線	柿之浦下波線	柿之浦下波線
6145	6145	66146	46050	66157	6158	6158	66159	6160	46019	56161	66161	6162	66163	66163	66163	66173	6188	56188
城辺町	一本松町	西海町	宇和島市	吉田町	三間町	広見町	広見町	松野町	津島町	津島町	津島町	津島町	御荘町	西海町	城辺町	一本松町	宇和島市	宇和島市
11	12	10	5	1	2	3	3	6	7	7	7	7	9	10	11	12	5	5
0.29	0.26	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.05	0.03	0.05	0.13	0.01	0.08	0.52	0.10	0.06	0.01	0.01	0.00	0.01	0.02	0.05	0.05	0.03	0.03	0.13
0.05	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.23	0.13	0.27	0.00	0.06	0.00	0.00	0.10	0.00	0.00	0.00	0.01	0.00	0.02	0.05	0.05	0.13	0.08	0.00
0.33	0.18	0.27	0.13	0.02	0.01	0.13	0.13	0.18	0.00	0.00	0.01	0.01	0.05	0.05	0.07	0.18	0.03	0.00
0.05	0.06	0.46	0.18	0.00	0.05	0.02	0.02	0.07	0.06	0.02	0.06	0.06	0.04	0.09	0.05	0.30	0.06	0.06
0.05	0.06	0.46	0.18	0.00	0.05	0.02	0.02	0.02	0.09	0.02	0.09	0.02	0.04	0.09	0.05	0.30	0.31	0.06
0.05	0.06	0.27	0.18	0.00	0.05	0.02	0.02	0.02	0.09	0.02	0.06	0.02	0.04	0.09	0.05	0.30	0.18	0.06
0.02	0.14	0.03	0.02	0.03	0.01	0.24	0.24	0.15	0.05	0.05	0.05	0.05	0.02	0.03	0.02	0.14	0.02	0.02
0.02	0.03	0.03	0.02	0.14	0.01	0.05	0.05	0.15	0.01	0.01	0.01	0.01	0.02	0.03	0.02	0.03	0.02	0.02
0.11	0.14	0.15	0.10	0.14	0.05	0.24	0.24	0.76	0.05	0.05	0.05	0.05	0.10	0.15	0.11	0.14	0.10	0.10
0.28	0.36	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.40	0.15	0.28	0.00	0.00	0.00
0.28	0.36	0.03	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.08	0.03	0.06	0.00	0.00	0.00
0.09	0.12	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.40	0.05	0.09	0.00	0.00	0.00
0.06	0.07	0.03	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.24	0.03	0.06	0.00	0.00	0.00
0.02	0.02	0.01	0.00	0.02	0.05	0.01	0.02	0.06	0.29	0.29	0.06	0.06	0.04	0.01	0.00	0.02	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.02	0.02	0.03	0.00	0.02	0.05	0.01	0.02	0.04	0.18	0.18	0.18	0.06	0.04	0.01	0.00	0.02	0.00	0.00
0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03
0.01	0.01	0.15	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.05	0.15	0.01	0.00	0.00	0.00
0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03
0.03	0.03	0.03	0.00	0.06	0.03	0.09	0.00	0.06	0.00	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.03	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.07	0.04	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

一本松城辺線	一本松城辺線	高茂岬船越線	九島循環線	舟間伊予吉田停車場線	音地清延線	音地清延線	奈良近永線	目黒松丸線	後柿之浦線	後柿之浦線	後柿之浦線	御代の川清重線	船越平城線	船越平城線	船越平城線	篠山公園線	柿之浦下波線	柿之浦下波線
6145	6145	66146	46050	66157	6158	6158	66159	6160	46019	56161	66161	6162	66163	66163	66163	66173	6188	56188
城辺町	一本松町	西海町	宇和島市	吉田町	三間町	広見町	広見町	松野町	津島町	津島町	津島町	津島町	御荘町	西海町	城辺町	一本松町	宇和島市	宇和島市
平地部	平地部	平地部	都市部	山間部	山間部	山間部	山間部	山間部	平地部	平地部	平地部	平地部	平地部	平地部	平地部	平地部	都市部	都市部
2.07	2.15	2.28	1.14	0.61	0.45	1.33	1.18	1.59	0.83	0.64	0.68	0.33	1.64	1.16	1.01	1.58	0.89	0.52

蒋淵下波線	西土佐松野線	喜路能登線
66189	64012	46048
宇和島市	松野町	宇和島市
5	6	5
0.00	0.00	0.00
0.03	0.01	0.13
0.00	0.00	0.00
0.13	0.06	0.00
0.03	0.04	0.13
0.06	0.07	0.18
0.31	0.02	0.18
0.31	0.02	0.18
0.02	0.15	0.02
0.02	0.15	0.02
0.10	0.76	0.10
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.01	0.00
0.00	0.00	0.00
0.00	0.01	0.00
0.03	0.00	0.03
0.00	0.00	0.00
0.03	0.00	0.03
0.02	0.18	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
0.00	0.00	0.00
蒋淵下波線	西土佐松野線	喜路能登線
66189	64012	46048
宇和島市	松野町	宇和島市
都市部	山間部	都市部
1.08	1.50	1.02

■整備順位及びスコア

路線名	センサス番号	市町村名	整備得点	整備順位	県道のみ整備優先順位	災害時の代替ルートの形成	公共交通の強化			福祉の支援	広域消防・医療の支援			安全性の確保			県内地域間の連携強化		広域的な交流強化		渋滞緩和			圏域中心部の活性化の支援			圏内の文化交流の支援	産業の振興	広域観光ルートの支援		環境の保全	中期以下個数	中期以上長期未満個数	達成率
						代替ルートの有無	バス路線設置率	他路線区間での定時性確保	バス路線の道路改良率	道路改良率	医療施設までのアクセス時間	消防署までのアクセス時間	警察署までのアクセス時間	交通事故による死者数	交通事故による負傷者数	歩道設置率	市町村間のアクセス時間（県都（松山市）までのアクセス時間）		宇和島港までのアクセス時間	松山空港までのアクセス時間	宇和島市へ至る道路の混雑度	主要渋滞ポイントの有無	宇和島市や至る道路の混雑時旅行速度	宇和島市内の混雑度	宇和島市までのアクセス時間	宇和島市内の混雑時旅行速度	文化交流施設の有無	産業関連施設の有無	観光地へのアクセス道路の道路改良率	観光地までのアクセス時間	騒音の夜間要請限度超過区間			
一般国道56号	1046	津島町	3.28	1位		5	1	1	1	1	3	1	1	5	1	1	5	5	5	3	3	0	1	0	3	0	3	1	1	5	0	6	5					
一般国道56号	1047	津島町	3.14	2位		5	1	5	1	1	1	1	1	5	1	1	5	3	5	3	5	0	5	0	3	0	3	1	1	5	5	9	3					
一般国道56号	1045	津島町	2.78	3位		1	1	1	1	1	3	1	1	5	1	1	5	5	5	3	1	0	1	0	3	0	0	0	1	5	0	5	3					
一般国道56号	1047	宇和島市	2.65	4位		5	1	5	1	1	1	1	1	1	1	1	5	3	5	3	0	0	0	1	3	5	1	1	1	5	5	7	3					
久良城辺線	6143	御荘町	2.58	5位	1位	1	1	0	5	5	1	1	1	1	1	5	5	5	5	3	3	0	5	0	3	0	1	0	0	0	0	7	3					
一般国道441号	1152	広見町	2.48	6位	2位	5	1	0	5	5	3	1	1	5	1	5	3	1	3	1	1	0	1	0	1	0	1	1	0	0	0	5	3					
一般国道56号	1042	御荘町	2.44	7位		1	1	0	1	1	1	1	1	1	1	1	5	5	5	3	3	0	3	0	3	0	5	1	1	5	0	5	4					
高茂岬船越線	66146	西海町	2.28	8位	3位	0	1	0	5	5	5	5	3	1	1	5	0	1	0	3	1	0	3	0	3	0	1	0	0	0	0	5	4					
広見吉田線	6134	広見町	2.23	9位	4位	1	1	0	5	5	1	1	1	5	1	1	3	1	3	0	0	0	0	0	1	0	3	0	5	3	5	5	4					
一般国道320号	1126	日吉村	2.21	10位	5位	5	1	0	1	1	3	1	1	5	1	1	0	1	0	1	1	0	1	0	1	0	3	1	0	0	0	2	2					
一般国道56号	1043	御荘町	2.20	11位		1	1	1	1	1	1	1	1	1	1	1	5	5	5	3	1	0	1	0	3	0	3	0	1	5	0	4	3					
一般国道56号	11049	宇和島市	2.19	12位		0	5	0	0	1	1	1	1	1	1	1	5	3	5	3	0	0	0	1	3	5	0	1	1	5	5	6	3					
久良城辺線	6143	城辺町	2.18	13位	6位	1	1	0	5	5	3	1	1	1	1	5	5	5	5	3	3	0	5	0	3	0	1	0	0	0	0	7	4					
一般国道56号	11048	宇和島市	2.16	14位		0	5	0	0	1	1	1	1	1	1	5	5	3	5	3	0	0	0	1	3	1	1	1	1	5	5	6	3					
一本松城辺線	6145	一本松町	2.15	15位	7位	1	1	1	5	5	1	1	1	5	1	5	5	5	5	3	1	0	1	0	3	0	1	1	0	0	0	7	2					
一本松城辺線	6145	城辺町	2.07	16位	8位	1	1	1	5	5	1	1	1	1	1	5	5	5	5	3	1	0	1	0	3	0	1	1	0	0	0	6	2					
一般国道320号	1124	広見町	1.96	17位	9位	1	1	1	3	1	1	1	1	5	1	1	3	1	3	1	1	0	1	0	1	0	3	5	3	3	5	3	6					
下鍵山松野線	66132	松野町	1.86	18位	10位	5	5	0	0	1	1	1	1	1	1	5	0	0	0	0	1	0	3	0	0	0	0	1	0	0	0	3	1					
一般国道56号	11050	宇和島市	1.82	19位		1	5	0	0	1	1	1	1	1	1	5	5	1	5	1	0	0	0	1	1	1	1	1	1	5	5	6	0					
節安下鍵山線	6136	日吉村	1.79	20位	11位	0	1	0	5	5	5	5	5	5	1	5	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	7	0					
小倉三間線	66133	広見町	1.74	21位	12位	0	1	0	5	3	3	1	1	5	1	5	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	3	2					
一般国道56号	1042	城辺町	1.71	22位		1	1	0	1	1	1	1	1	1	1	1	5	5	5	3	3	0	3	0	3	0	5	1	1	5	0	5	4					
城辺高茂岬線	64061	西海町	1.69	23位	13位	0	1	0	5	1	3	5	3	1	1	5	0	1	0	0	1	0	3	0	0	0	1	0	0	0	0	3	3					
宇和島城辺線	64086	城辺町	1.69	24位	14位	1	1	0	5	5	1	5	3	1	1	5	0	0	0	0	1	0	3	0	0	0	1	1	5	5	0	6	2					
一般国道56号	1051	宇和島市	1.66	25位		1	1	1	1	1	1	1	1	1	1	1	5	1	5	1	0	0	0	1	1	1	0	0	1	5	5	4	0					
下鍵山松野線	46044	広見町	1.65	26位	15位	0	1	0	5	3	3	1	1	5	1	5	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	3	2					
長月城辺線	6142	御荘町	1.65	27位	16位	1	1	1	5	5	1	1	1	1	1	1	0	5	0	3	5	0	1	0	3	0	1	0	0	0	0	4	2					
一般国道56号	1044	内海村	1.65	28位		1	1	1	1	1	3	1	1	1	1	1	5	5	5	3	1	0	1	0	3	0	3	0	1	5	0	4	4					
船越平城線	66163	御荘町	1.64	29位	17位	0	1	0	1	1	1	1	1	1	1	5	5	1	5	3	1	0	1	0	3	0	0	0	1	5	0	4	2					
吉田宇和島線	66129	吉田町	1.64	30位	18位	5	1	0	5	5	1	1	1	1	5	5	0	1	0	1	1	0	5	0	3	0	3	1	5	3	5	8	3					
長月城辺線	6142	城辺町	1.63	31位	19位	1	1	1	5	5	1	1	1	1	1	1	0	5	0	3	5	0	1	0	3	0	1	0	0	0	0	4	2					
下鍵山松野線	66132	広見町	1.62	32位	20位	5	5	0	0	1	3	1	1	5	1	5	0	0	0	0	1	0	3	0	0	0	0	1	0	0	0	4	2					
一般国道56号	1041	一本松町	1.62	33位		0	1	1	1	1	1	1	1	5	1	1	5	5	5	3	1	0	1	0	3	0	5	0	0	0	0	5	2					
一般国道381号	1145	松野町	1.60	34位	21位	5	1	0	5	1	3	1	1	1	1	1	3	1	3	1	1	0	1	0	1	0	1	0	5	3	0	3	4					
目黒松丸線	6160	松野町	1.59	35位	22位	0	5	0	0	5	3	1	1	1	1	5	0	0	0	0	5	0	3	0	0	0	1	0	0	0	0	4	2					
篠山公園線	66173	一本松町	1.58	36位	23位	0	1	0	5	5	5	5	5	5	1	5	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	7	0					
一般国道56号	1052	吉田町	1.56	37位		1	1	1	1	1	1	1	1	1	5	1	5	1	5	1	3	5	1	0	1	0	1	1	1	5	0	5	1					
滑床松野線	66125	松野町	1.53	38位	24位	0	1	0	5	5	3	1	1	1	1	5	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	3	1					
西土佐松野線	64012	松野町	1.50	39位	25位	0	1	0	5	1	a	1	1	1	1	5	0	0	0	0	1	0	1	0	0	0	3	0	0	0	0	2	2					
十和吉野線	66002	松野町	1.49	40位	26位	0	1	0	5	5	3	1	1	1	1	5	0	0	0	0	1	0	3	0	0	0	0	0	0	0	0	3	2					
吉田宇和島線	66129	宇和島市	1.48	41位	27位	5	1	0	5	5	1	1	1	1	1	5	0	1	0	1	0	0	0	1	3	1	3	1	5	3	5	6	3					
一般国道320号	1124	宇和島市	1.48	42位	28位	1	1	1	3	1	1	1	1	1	1	1	3	1	3	1	0	0	0	1	1	1	3	5	3	3	5	2	6					
一般国道56号	1049	宇和島市	1.42	43位		5	1	1	1	1	1	1	1	1	1	1	0	1	0	3	0	0	0	1	1	1	3	1	1	3	5	2	3					
網代鳥越線	66139	内海村	1.42	44位	29位	0	1	0	5	3	3	5	5	1	1	5	0	0	0	0	1	0	3	0	0	0	1	1	0	0	0	4	3					
一般国道320号	1126	広見町	1.42	45位	30位	5	1	0	1	1	3	1	1	5	1	1	0	1	0	1	1	0	1	0	1	0	3	1	0	0	0	2	2					
広見吉田線	6134	宇和島市	1.40	46位	31位	1	1	0	5	5	1	1	1	1	1	1	3	1	3	0	0	0	0	1	1	1	3	0	5	3	5	4	4					
広見三間宇和島線	4102	三間町	1.36	47位	32位	1	1	0	1	1	1	1	1	1	1	1	3	1	3	1	1	0	1	0	1	0	1	1	1	3	5	1	3					
広見吉田線	6134	三間町	1.35	48位	33位	1	1	0	5	5	1	1	1	1	1	1	3	1	3	0	1	0	1	0	1	0	3	0	5	3	5	4	4					
音地清延線	6158	広見町	1.33	49位	34位	0	5	0	0	1	1	1	1	5	1	5	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	3	0					
藪ケ市松野線	6003	松野町	1.33	50位	35位	0	5	0	0	1	3	1	1	1	1	5	0	0	0	0	1	0	3	0	0	0	0	0	0	0	0	2	2					
城辺高茂岬線	64060	西海町	1.32	51位	36位	0	1	0	5	5	3	1	1	1	1	5	0	0	0	0	1	0	5	0	0	0	0	0	0	0	0	4	1					
下鍵山松野線	46044	日吉村	1.32	52位	37位	0	1	0	5	3	3	5	3	5	1	5	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	4	3					
広見三間宇和島線	4102	宇和島市	1.29	53位	38位	1	1	0	1	1	1	1	1	1	1	1	3	1	3	1	0	0	0	1	1	1	1	1	1	3	5	1	3					
中浦西海線	66141	西海町	1.25	54位	39位	0	5	0	0	5	3	1	1	1	1	5	0	0	0	0	1	0	3	0	0	0	0	0	0	0	0	3	2					
宇和三間線	4057	三間町	1.23	55位	40位	0	1	0	5	5	1	1	1	1	1	5	3	0	3	0	1	0	1	0	0	0	1	0	5	3	0	4	3					
広見三間宇和島線	4102	広見町	1.21	56位	41位	1	1	0	1	1	1	1	1	5	1	1	3	1	3	1	0	0	0	0	1	0	1	1	1	3	5	2	3					
奈良近永線	66159	広見町	1.18	57位	42位	1	1	0	1	1	1	1	1	5	1	5	3	1	3	1	3	0	3	0	1	0	0	0	0	0	0	2	4					
船越平城線	66163	西海町	1.16	58位	43位	0	1	0	1	1	1	1	1	1	1	5	5	1	5	3	1	0	1	0	3	0	0	0	1	5	0	4	2					
一般国道197号	1094	日吉村	1.15	59位	44位	0	1	0	1	1	5	5	5	5	1	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	4	0					
一般国道56号	1053	吉田町	1.15	60位		0	1	0	1	1	1	1	1	1	5	5	5	0	5	0	3	0	1	0	0	0	0	0	1	5	0	5	1					
九島循環線	46050	宇和島市	1.14	61位	45位	0	5	0	0	5	3	3	3	1	1	5	0	0	0	0	0	0	0	1	0	5	0	0	0	0	0	4	3					
一般国道56号	1048	宇和島市	1.13	62位		5	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	5	0	1	5	5	1	3	5	5	1					
蒋淵下波線	66189	宇和島市	1.08	63位	46位	0	1	0	5	1	1	5	5	1	1	5	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	4	0					
宇和三間線	4057	吉田町	1.07	64位	47位	0	1	0	5	5	1	1	1	1	5	5	3	0	3	0	1	0	1	0	0	0	1	0	5	3	0	5	3					
一般国道381号	1146	広見町	1.07	65位	48位	1	1	0	1	1	1	1	1	5	1	1	3	1	3	1	1	0	1	0	1	0	1	0	1	3	0	1	3					
一般国道320号	1125	広見町	1.05	66位	49位	5	1	0	1	1	1	1	1	5	1	1	0	1	0	1	1	0	1	0	1	0	0	0	0	0	0	2	0					
一般国道56号	1040	一本松町	1.05	67位		0	1	1	1	1	1	1	1	5	1	1	5	0	5	0	1	0	1	0	0	0	1	0	0	0	0	3	0					
一般国道381号	1146	松野町	1.04	68位	50位	1	1	0	1	1	1	1	1	1	1	1	3	1	3	1	1	0	1	0	1	0	1	0	1	3	0	0	3					
美砂子郡線	46049	宇和島市	1.03	69位	51位	0	5	0	0	5	3	3	3	1	1	5	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	3	3					
宇和島港線	6123	宇和島市	1.03	70位	52位	0	1	0	1	1	1	1	1	1	1	1	0	0	0	3	0	0	0	1	0	5	3	1	0	0	5	2	2					
喜路能登線	46048	宇和島市	1.02	71位	53位	0	5	0	0	5	3	3	3	1	1	5	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	3	3					
船越平城線	66163	城辺町	1.01	72位	54位	0	1	0	1	1	1	1	1	1	1	5	5	1	5	3	0	0	0	0	3	0	0	0	1	5	0	4	2					
城辺高茂岬線	64060	城辺町	1.01	73位	55位	0	1	0	5	5	1	1	1	1	1	5	0	0	0	0	1	0	5	0	0	0	0	0	0	0	0	4	0					
深浦港線	66144	城辺町	1.01	74位	56位	0	1	0	5	5	1	1	1	1	1	5	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	3	2					
美砂子郡線	56148	宇和島市	0.97	75位	57位	0	5	0	0	5	3	3	3	1	1	5	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3	3					
近永停車場線	46018	広見町	0.96	76位	58位	0	1	0	1	1	1	1	1	5	1	5	0	0	0	0	1	0	5	0	0	0	0	0	0	0	0	3	0					
猿鳴平城線	6140	御荘町	0.90	77位	59位	0	1	0	5	5	3	1	1	1	1	5	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	3	3					
一般国道197号	1095	日吉村	0.90	78位	60位	0	1	0	1	1	3	1	1	5	1	1	1	1	3	1	1	0	1	0	0	0	1	0	0	0	0	1	2					
柿之浦下波線	6188	宇和島市	0.89	79位	61位	0	1	0	3	1	1	5	3	1	1	5	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2	2					
宇和島城辺線	64085	津島町	0.86	80位	62位	1	1	0	5	5	3	1	1	5	1	5	0	0	0	0	3	0	3	0	0	0	1	0	5	5	0	6	3					
宇和島城辺線	64085	宇和島市	0.85	81位	63位	1	1	0	5	5	1	1	1	1	1	5	0	0	0	0	0	0	0	1	0	1	1	0	5	5	0	5	0					
後柿之浦線	46019	津島町	0.83	82位	64位	0	5	0	0	0	3	5	5	5	1	5	0	0	0	0	5	0	3	0	0	0	0	0	0	0	0	6	2					
宿毛城辺線	44002	城辺町	0.79	83位	65位	0	5	0	0	1	3	1	1	1	1	5	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	2	3					
宿毛城辺線	4010	城辺町	0.79	84位	66位	0	1	1	5	1	1	1	1	1	1	5	0	0	0	0	1	0	5	0	0	0	0	0	0	0	0	3	0					
無月宇和島線	6124	宇和島市	0.76	85位	67位	0	1	0	5	5	1	1	1	1	1	5	0	0	0	0	0	0	0	1	0	1	1	3	0	0	5	4	1					
宇和島城辺線	64086	津島町	0.76	86位	68位	1	1	0	5	5	3	1	1	5	1	5	0	0	0	0	1	0	3	0	0	0	1	1	5	5	0	6	2					
一般国道56号	1050	宇和島市	0.75	87位		1	1	1	1	1	1	1	1	1	1	1	0	1	0	1	0	0	0	1	1	1	1	1	0	0	5	1	0					
中浦西海線	66141	御荘町	0.73	88位	69位	0	5	0	0	5	1	1	1	1	1	5	0	0	0	0	1	0	3	0	0	0	0	0	0	0	0	3	1					
滑床松野線	66125	宇和島市	0.69	89位	70位	0	1	0	5	5	1	1	1	1	1	5	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	3	0					
一般国道320号	1127	宇和島市	0.68	90位	71位	0	1	1	1	1	1	1	1	1	1	1	0	1	0	1	0	0	0	1	1	1	1	0	1	3	5	1	1					

達成率 :10%
達成率 :20%
達成率 :30%
達成率 :40%
達成率 :50%

後柿之浦線	66161	津島町	0.68	91位	72位	0	1	0	**5**	**5**	**3**	**5**	**3**	**5**	1	**5**	0	0	0	0	1	0	**3**	0	0	0	1	0	0	0	0	5	3
一般国道320号	1123	宇和島市	0.67	92位	73位	0	1	1	1	1	1	1	1	1	1	1	0	1	0	1	0	0	0	1	1	1	0	1	1	**3**	0	0	1		
宇和島下波津島線	44008	宇和島市	0.67	93位	74位	0	**5**	0	0	**5**	1	1	1	1	1	**5**	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	3	0		
西谷吉田線	6131	吉田町	0.64	94位	75位	0	1	0	**5**	1	1	1	1	1	**5**	**5**	0	0	0	0	1	0	1	0	0	0	**3**	0	0	0	0	3	1		
伊予宮ノ下停車場務田線	66130	三間町	0.64	95位	76位	1	1	0	**3**	1	1	1	1	1	1	1	0	1	0	1	1	0	1	0	1	0	0	0	0	0	0	0	1		
後柿之浦線	56161	津島町	0.64	96位	77位	0	**5**	0	0	0	1	1	1	**5**	1	**5**	0	0	0	0	**5**	0	**3**	0	0	0	0	0	0	0	0	4	1		
大内停車場線	46042	三間町	0.63	97位	78位	0	**5**	0	0	1	1	1	1	1	1	**5**	0	0	0	0	1	0	**5**	0	0	0	0	0	0	0	0	3	0		
舟間伊予吉田停車場線	66157	吉田町	0.61	98位	79位	0	1	0	**5**	1	1	1	1	1	**5**	**5**	0	0	0	0	1	0	1	0	0	0	1	0	**5**	1	0	4	0		
一般国道378号	1137	吉田町	0.58	99位	80位	0	1	0	**5**	**5**	**3**	1	1	1	**5**	**5**	0	0	0	0	**3**	0	**3**	0	0	0	0	0	0	0	0	4	3		
宇和島下波津島線	4065	宇和島市	0.56	100位	81位	0	1	0	**5**	**3**	1	1	1	1	1	1	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	1	1		
伊予宮ノ下停車場宮ノ下線	46043	三間町	0.55	101位	82位	0	1	0	1	1	1	1	1	1	1	1	0	0	0	0	1	0	**5**	0	0	0	0	0	0	0	0	1	0		
河内立間停車場線	66127	吉田町	0.55	102位	83位	0	1	0	**3**	1	1	1	1	1	**5**	1	0	0	0	0	1	0	**5**	0	0	0	1	1	0	0	0	2	1		
宇和島下波津島線	4066	津島町	0.55	103位	84位	0	1	0	**5**	**5**	1	1	1	**5**	1	**5**	0	0	0	0	1	0	1	0	0	0	1	0	**5**	**3**	0	5	1		
奥浦白浦線	6128	吉田町	0.54	104位	85位	0	1	0	**5**	**5**	1	1	1	1	**5**	**5**	0	0	0	0	1	0	**3**	0	0	0	0	0	0	0	0	4	1		
西谷吉田線	6131	三間町	0.52	105位	86位	0	1	0	**5**	1	1	1	1	1	1	**5**	0	0	0	0	1	0	1	0	0	0	**3**	0	0	0	0	2	1		
柿之浦下波線	56188	宇和島市	0.52	106位	87位	0	**5**	0	0	0	1	1	1	1	1	**5**	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0		
宇和島下波津島線	4064	宇和島市	0.49	107位	88位	0	1	0	**3**	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	0	1	1	1	0	0	**5**	1	1		
小倉三間線	66133	三間町	0.48	108位	89位	0	1	0	**5**	**3**	1	1	1	1	1	**5**	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	2	1		
日向谷高野子線	56135	日吉村	0.48	109位	90位	0	**5**	0	0	0	1	1	1	**5**	1	**5**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0		
玉津港線	6126	吉田町	0.48	110位	91位	0	1	0	**5**	**3**	1	1	1	1	**5**	**5**	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	3	1		
宿毛津島線	64006	津島町	0.47	111位	92位	1	**5**	0	0	1	1	1	1	**5**	1	1	0	0	0	0	1	0	1	0	0	0	1	0	1	**5**	0	3	0		
嵐田之浜岩松線	6138	津島町	0.45	112位	93位	0	1	0	**5**	**5**	**3**	1	1	**5**	1	**5**	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	4	1		
御内下畑地線	66137	津島町	0.45	113位	94位	0	1	0	**5**	**5**	**3**	1	1	**5**	1	**5**	0	0	0	0	1	0	**3**	0	0	0	0	0	0	0	0	4	2		
音地清延線	6158	三間町	0.45	114位	95位	0	**5**	0	0	1	1	1	1	1	1	**5**	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	2	0		
宿毛城辺線	4011	城辺町	0.40	115位	96位	0	1	0	1	1	1	1	1	1	1	1	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0		
宿毛津島線	64005	津島町	0.34	116位	97位	0	1	0	**5**	**5**	**3**	1	1	**5**	1	**5**	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	4	1		
御代の川清重線	6162	津島町	0.33	117位	98位	0	**5**	0	0	**5**	**3**	1	1	**5**	1	**5**	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	4	1		
嵐田之浜岩松線	56138	津島町	0.29	118位	99位	0	**5**	0	0	0	1	1	1	**5**	1	**5**	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	3	0		

New prioritization result, weight of the new criterion =0.05

Road line name	No. Census	Town	Original score	Score of equity balance criterion	New score	Original position	New Position	Position change	No. of project in the town	Average position change
一本松城辺線	6145	Ipponmatsu	2.15	5	2.30	15	12	3		
一般国道56号	1041	Ipponmatsu	1.62	5	1.78	33	28	5		
篠山公園線	66173	Ipponmatsu	1.58	5	1.76	36	30	6		
一般国道56号	1040	Ipponmatsu	1.05	5	1.25	67	60	7		
								21	4	5.25
広見三間宇和島線	4102	Mima	1.36	3	1.45	47	47	0		
広見吉田線	6134	Mima	1.35	3	1.43	48	49	-1		
宇和三間線	4057	Mima	1.23	3	1.32	55	56	-1		
伊予宮ノ下停車場務田線	66130	Mima	0.64	3	0.76	95	91	4		
大内停車場線	46042	Mima	0.63	3	0.75	97	93	4		
伊予宮ノ下停車場宮ノ下線	46043	Mima	0.55	3	0.67	101	101	0		
西谷吉田線	6131	Mima	0.52	3	0.64	105	105	0		
小倉三間線	66133	Mima	0.48	3	0.61	108	107	1		
音地清延線	6158	Mima	0.45	3	0.58	114	113	1		
								8	9	0.89
一般国道56号	1044	Uchiumi	1.65	5	1.82	28	24	4		
網代鳥越線	66139	Uchiumi	1.42	5	1.60	44	39	5		
								9	2	4.50
吉田宇和島線	66129	Yoshida	1.64	3	1.71	30	32	-2		
一般国道56号	1052	Yoshida	1.56	3	1.64	37	36	1		
一般国道56号	1053	Yoshida	1.15	3	1.24	60	61	-1		
宇和三間線	4057	Yoshida	1.07	3	1.17	64	65	-1		
西谷吉田線	6131	Yoshida	0.64	3	0.76	94	89	5		
舟間伊予吉田停車場線	66157	Yoshida	0.61	3	0.73	98	94	4		
一般国道378号	1137	Yoshida	0.58	3	0.70	99	97	2		
河内立間停車場線	66127	Yoshida	0.55	3	0.67	102	102	0		
奥浦白浦線	6128	Yoshida	0.54	3	0.67	104	104	0		
玉津港線	6126	Yoshida	0.48	3	0.61	110	108	2		
								10	10	1.00
久良城辺線	6143	Johen	2.18	5	2.32	13	11	2		

一本松城辺線	6145	Johen	2.07	5	2.21	16	14	2		
一般国道56号	1042	Johen	1.71	5	1.87	22	20	2		
宇和島城辺線	64086	Johen	1.69	5	1.85	24	22	2		
長月城辺線	6142	Johen	1.63	5	1.80	31	26	5		
船越平城線	66163	Johen	1.01	5	1.21	72	62	10		
城辺高茂岬線	64060	Johen	1.01	5	1.21	73	63	10		
深浦港線	66144	Johen	1.01	5	1.21	74	64	10		
宿毛城辺線	44002	Johen	0.79	5	1.00	83	78	5		
宿毛城辺線	4010	Johen	0.79	5	1.00	84	79	5		
宿毛城辺線	4011	Johen	0.40	5	0.63	115	106	9		
								62	11	5.64
一般国道56号	1047	Uwashima	2.65	1	2.57	4	6	-2		
一般国道56号	11049	Uwashima	2.19	1	2.13	12	15	-3		
一般国道56号	11048	Uwashima	2.16	1	2.10	14	16	-2		
一般国道56号	11050	Uwashima	1.82	1	1.78	19	29	-10		
一般国道56号	1051	Uwashima	1.66	1	1.63	25	37	-12		
吉田宇和島線	66129	Uwashima	1.48	1	1.46	41	45	-4		
一般国道320号	1124	Uwashima	1.48	1	1.46	42	46	-4		
一般国道56号	1049	Uwashima	1.42	1	1.40	43	52	-9		
広見吉田線	6134	Uwashima	1.40	1	1.38	46	53	-7		
広見三間宇和島線	4102	Uwashima	1.29	1	1.28	53	58	-5		
九島循環線	46050	Uwashima	1.14	1	1.13	61	69	-8		
一般国道56号	1048	Uwashima	1.13	1	1.13	62	70	-8		
蒋淵下波線	66189	Uwashima	1.08	1	1.07	63	73	-10		
美砂子郡線	46049	Uwashima	1.03	1	1.03	69	75	-6		
宇和島港線	6123	Uwashima	1.03	1	1.03	70	76	-6		
喜路能登線	46048	Uwashima	1.02	1	1.02	71	77	-6		
美砂子郡線	56148	Uwashima	0.97	1	0.97	75	80	-5		
柿之浦下波線	6188	Uwashima	0.89	1	0.89	79	84	-5		
宇和島城辺線	64085	Uwashima	0.85	1	0.86	81	86	-5		
無月宇和島線	6124	Uwashima	0.76	1	0.77	85	88	-3		
一般国道56号	1050	Uwashima	0.75	1	0.76	87	90	-3		
滑床松野線	66125	Uwashima	0.69	1	0.71	89	95	-6		
一般国道320号	1127	Uwashima	0.68	1	0.70	90	98	-8		
一般国道320号	1123	Uwashima	0.67	1	0.69	92	99	-7		
宇和島下波津島線	44008	Uwashima	0.67	1	0.68	93	100	-7		

宇和島下波津島線	4065	Uwashima	0.56	1	0.58	100	112	-12		
柿之浦下波線	56188	Uwashima	0.52	1	0.54	106	114	-8		
宇和島下波津島線	4064	Uwashima	0.49	1	0.51	107	115	-8		
								-179	28	-6.39
一般国道441号	1152	Hiromi	2.48	3	2.50	6	7	-1		
広見吉田線	6134	Hiromi	2.23	3	2.27	9	13	-4		
一般国道320号	1124	Hiromi	1.96	3	2.01	17	17	0		
小倉三間線	66133	Hiromi	1.74	3	1.80	21	27	-6		
下鍵山松野線	46044	Hiromi	1.65	3	1.72	26	31	-5		
下鍵山松野線	66132	Hiromi	1.62	3	1.69	32	33	-1		
一般国道320号	1126	Hiromi	1.42	3	1.50	45	43	2		
音地清延線	6158	Hiromi	1.33	3	1.42	49	50	-1		
広見三間宇和島線	4102	Hiromi	1.21	3	1.30	56	57	-1		
奈良近永線	66159	Hiromi	1.18	3	1.27	57	59	-2		
一般国道381号	1146	Hiromi	1.07	3	1.17	65	66	-1		
一般国道320号	1125	Hiromi	1.05	3	1.15	66	67	-1		
近永停車場線	46018	Hiromi	0.96	3	1.06	76	74	2		
								-19	13	-1.46
久良城辺線	6143	Misho	2.58	5	2.70	5	4	1		
一般国道56号	1042	Misho	2.44	5	2.57	7	5	2		
一般国道56号	1043	Misho	2.20	5	2.34	11	10	1		
長月城辺線	6142	Misho	1.65	5	1.82	27	23	4		
船越平城線	66163	Misho	1.64	5	1.81	29	25	4		
猿鳴平城線	6140	Misho	0.90	5	1.11	77	71	6		
中浦西海線	66141	Misho	0.73	5	0.95	88	82	6		
								24	7	3.43
一般国道320号	1126	Hiyoshi	2.21	5	2.35	10	9	1		
節安下鍵山線	6136	Hiyoshi	1.79	5	1.95	20	18	2		
下鍵山松野線	46044	Hiyoshi	1.29	5	1.48	52	44	8		
一般国道197号	1094	Hiyoshi	1.15	5	1.35	59	55	4		
一般国道197号	1095	Hiyoshi	0.90	5	1.10	78	72	6		
日向谷高野子線	56135	Hiyoshi	0.48	5	0.71	109	96	13		
								34	6	5.67
下鍵山松野線	66132	Matsuno	1.86	3	1.91	18	19	-1		
一般国道381号	1145	Matsuno	1.60	3	1.67	34	34	0		
目黒松丸線	6160	Matsuno	1.59	3	1.66	35	35	0		

滑床松野線	66125	Matsuno	1.53	3	1.60	38	38	0		
西土佐松野線	64012	Matsuno	1.50	3	1.58	39	40	-1		
十和吉野線	66002	Matsuno	1.49	3	1.57	40	41	-1		
藪ケ市松野線	6003	Matsuno	1.33	3	1.42	50	51	-1		
一般国道381号	1146	Matsuno	1.04	3	1.13	68	68	0		
								-4	8	-0.50
一般国道56号	1046	Tsujima	3.28	3	3.27	1	1	0		
一般国道56号	1047	Tsujima	3.14	3	3.14	2	2	0		
一般国道56号	1045	Tsujima	2.78	3	2.79	3	3	0		
宇和島城辺線	64085	Tsujima	0.86	3	0.96	80	81	-1		
後柿之浦線	46019	Tsujima	0.83	3	0.93	82	83	-1		
宇和島城辺線	64086	Tsujima	0.76	3	0.87	86	85	1		
後柿之浦線	66161	Tsujima	0.68	3	0.80	91	87	4		
後柿之浦線	56161	Tsujima	0.64	3	0.76	96	92	4		
宇和島下波津島線	4066	Tsujima	0.55	3	0.67	103	103	0		
宿毛津島線	64006	Tsujima	0.47	3	0.60	111	109	2		
嵐田之浜岩松線	6138	Tsujima	0.45	3	0.58	112	110	2		
御内下畑地線	66137	Tsujima	0.45	3	0.58	113	111	2		
宿毛津島線	64005	Tsujima	0.34	3	0.47	116	116	0		
御代の川清重線	6162	Tsujima	0.33	3	0.47	117	117	0		
嵐田之浜岩松線	56138	Tsujima	0.29	3	0.42	118	118	0		
								13	15	0.87
高茂岬船越線	66146	Nishiumi	2.28	5	2.41	8	8	0		
城辺高茂岬線	64061	Nishiumi	1.69	5	1.86	23	21	2		
城辺高茂岬線	64060	Nishiumi	1.32	5	1.50	51	42	9		
中浦西海線	66141	Nishiumi	1.25	5	1.44	54	48	6		
船越平城線	66163	Nishiumi	1.16	5	1.35	58	54	4		
								21	5	4.20
								0	118	23.08

New prioritization result, weight of the new criterion =0.10

Road line name	No. Census	Town	Original score	Score of equity balance criterion	New score	Original position	New Position	Position change	No. of project in the town	Average position change
一本松城辺線	6145	Ipponmatsu	2.15	5	2.44	15	12	3		
一般国道56号	1041	Ipponmatsu	1.62	5	1.95	33	27	6		
篠山公園線	66173	Ipponmatsu	1.58	5	1.93	36	28	8		
一般国道56号	1040	Ipponmatsu	1.05	5	1.44	67	52	15		
								32	4	8.00
広見三間宇和島線	4102	Mima	1.36	3	1.53	47	48	-1		
広見吉田線	6134	Mima	1.35	3	1.51	48	49	-1		
宇和三間線	4057	Mima	1.23	3	1.41	55	56	-1		
伊予宮ノ下停車場務田線	66130	Mima	0.64	3	0.88	95	89	6		
大内停車場線	46042	Mima	0.63	3	0.87	97	91	6		
伊予宮ノ下停車場宮ノ下線	46043	Mima	0.55	3	0.80	101	96	5		
西谷吉田線	6131	Mima	0.52	3	0.77	105	102	3		
小倉三間線	66133	Mima	0.48	3	0.74	108	103	5		
音地清延線	6158	Mima	0.45	3	0.70	114	110	4		
								26	9	2.89
一般国道56号	1044	Uchiumi	1.65	5	1.98	28	23	5		
網代鳥越線	66139	Uchiumi	1.42	5	1.78	44	31	13		
								18	2	9.00
吉田宇和島線	66129	Yoshida	1.64	3	1.77	30	32	-2		
一般国道56号	1052	Yoshida	1.56	3	1.71	37	37	0		
一般国道56号	1053	Yoshida	1.15	3	1.33	60	63	-3		
宇和三間線	4057	Yoshida	1.07	3	1.27	64	66	-2		
西谷吉田線	6131	Yoshida	0.64	3	0.88	94	88	6		
舟間伊予吉田停車場線	66157	Yoshida	0.61	3	0.85	98	94	4		
一般国道378号	1137	Yoshida	0.58	3	0.82	99	95	4		
河内立間停車場線	66127	Yoshida	0.55	3	0.80	102	97	5		
奥浦白浦線	6128	Yoshida	0.54	3	0.79	104	99	5		
玉津港線	6126	Yoshida	0.48	3	0.73	110	104	6		
								23	10	2.30
久良城辺線	6143	Johen	2.18	5	2.47	13	11	2		

一本松城辺線	6145	Johen	2.07	5	2.36	16	13	3		
一般国道56号	1042	Johen	1.71	5	2.04	22	19	3		
宇和島城辺線	64086	Johen	1.69	5	2.02	24	21	3		
長月城辺線	6142	Johen	1.63	5	1.97	31	26	5		
船越平城線	66163	Johen	1.01	5	1.41	72	55	17		
城辺高茂岬線	64060	Johen	1.01	5	1.41	73	57	16		
深浦港線	66144	Johen	1.01	5	1.41	74	58	16		
宿毛城辺線	44002	Johen	0.79	5	1.21	83	71	12		
宿毛城辺線	4010	Johen	0.79	5	1.21	84	72	12		
宿毛城辺線	4011	Johen	0.40	5	0.86	115	93	22		
								111	11	10.09
一般国道56号	1047	Uwashima	2.65	1	2.48	4	9	-5		
一般国道56号	11049	Uwashima	2.19	1	2.07	12	16	-4		
一般国道56号	11048	Uwashima	2.16	1	2.05	14	18	-4		
一般国道56号	11050	Uwashima	1.82	1	1.74	19	35	-16		
一般国道56号	1051	Uwashima	1.66	1	1.59	25	44	-19		
吉田宇和島線	66129	Uwashima	1.48	1	1.44	41	53	-12		
一般国道320号	1124	Uwashima	1.48	1	1.43	42	54	-12		
一般国道56号	1049	Uwashima	1.42	1	1.38	43	60	-17		
広見吉田線	6134	Uwashima	1.40	1	1.36	46	62	-16		
広見三間宇和島線	4102	Uwashima	1.29	1	1.26	53	68	-15		
九島循環線	46050	Uwashima	1.14	1	1.12	61	75	-14		
一般国道56号	1048	Uwashima	1.13	1	1.12	62	76	-14		
蒋淵下波線	66189	Uwashima	1.08	1	1.07	63	78	-15		
美砂子郡線	46049	Uwashima	1.03	1	1.03	69	80	-11		
宇和島港線	6123	Uwashima	1.03	1	1.03	70	81	-11		
喜路能登線	46048	Uwashima	1.02	1	1.02	71	82	-11		
美砂子郡線	56148	Uwashima	0.97	1	0.97	75	84	-9		
柿之浦下波線	6188	Uwashima	0.89	1	0.90	79	87	-8		
宇和島城辺線	64085	Uwashima	0.85	1	0.87	81	92	-11		
無月宇和島線	6124	Uwashima	0.76	1	0.78	85	100	-15		
一般国道56号	1050	Uwashima	0.75	1	0.77	87	101	-14		
滑床松野線	66125	Uwashima	0.69	1	0.72	89	106	-17		
一般国道320号	1127	Uwashima	0.68	1	0.72	90	107	-17		
一般国道320号	1123	Uwashima	0.67	1	0.70	92	111	-19		
宇和島下波津島線	44008	Uwashima	0.67	1	0.70	93	112	-19		

宇和島下波津島線	4065	Uwashima	0.56	1	0.60	100	114	-14		
柿之浦下波線	56188	Uwashima	0.52	1	0.57	106	116	-10		
宇和島下波津島線	4064	Uwashima	0.49	1	0.54	107	118	-11		
								-360	28	-12.86
一般国道441号	1152	Hiromi	2.48	3	2.53	6	7	-1		
広見吉田線	6134	Hiromi	2.23	3	2.31	9	14	-5		
一般国道320号	1124	Hiromi	1.96	3	2.06	17	17	0		
小倉三間線	66133	Hiromi	1.74	3	1.86	21	29	-8		
下鍵山松野線	46044	Hiromi	1.65	3	1.78	26	30	-4		
下鍵山松野線	66132	Hiromi	1.62	3	1.76	32	33	-1		
一般国道320号	1126	Hiromi	1.42	3	1.58	45	45	0		
音地清延線	6158	Hiromi	1.33	3	1.50	49	50	-1		
広見三間宇和島線	4102	Hiromi	1.21	3	1.39	56	59	-3		
奈良近永線	66159	Hiromi	1.18	3	1.36	57	61	-4		
一般国道381号	1146	Hiromi	1.07	3	1.26	65	67	-2		
一般国道320号	1125	Hiromi	1.05	3	1.25	66	69	-3		
近永停車場線	46018	Hiromi	0.96	3	1.16	76	73	3		
								-29	13	-2.23
久良城辺線	6143	Misho	2.58	5	2.83	5	3	2		
一般国道56号	1042	Misho	2.44	5	2.70	7	5	2		
一般国道56号	1043	Misho	2.20	5	2.48	11	10	1		
長月城辺線	6142	Misho	1.65	5	1.98	27	22	5		
船越平城線	66163	Misho	1.64	5	1.98	29	24	5		
猿鳴平城線	6140	Misho	0.90	5	1.31	77	64	13		
中浦西海線	66141	Misho	0.73	5	1.16	88	74	14		
								42	7	6.00
一般国道320号	1126	Hiyoshi	2.21	5	2.49	10	8	2		
節安下鍵山線	6136	Hiyoshi	1.79	5	2.11	20	15	5		
下鍵山松野線	46044	Hiyoshi	1.29	5	1.66	52	40	12		
一般国道197号	1094	Hiyoshi	1.15	5	1.54	59	47	12		
一般国道197号	1095	Hiyoshi	0.90	5	1.31	78	65	13		
日向谷高野子線	56135	Hiyoshi	0.48	5	0.93	109	85	24		
								68	6	11.33
下鍵山松野線	66132	Matsuno	1.86	3	1.97	18	25	-7		
一般国道381号	1145	Matsuno	1.60	3	1.74	34	34	0		
目黒松丸線	6160	Matsuno	1.59	3	1.73	35	36	-1		

滑床松野線	66125	Matsuno	1.53	3	1.68	38	39	-1		
西土佐松野線	64012	Matsuno	1.50	3	1.65	39	41	-2		
十和吉野線	66002	Matsuno	1.49	3	1.64	40	42	-2		
藪ケ市松野線	6003	Matsuno	1.33	3	1.50	50	51	-1		
一般国道381号	1146	Matsuno	1.04	3	1.23	68	70	-2		
								-16	8	-2.00
一般国道56号	1046	Tsujima	3.28	3	3.25	1	1	0		
一般国道56号	1047	Tsujima	3.14	3	3.13	2	2	0		
一般国道56号	1045	Tsujima	2.78	3	2.80	3	4	-1		
宇和島城辺線	64085	Tsujima	0.86	3	1.07	80	77	3		
後柿之浦線	46019	Tsujima	0.83	3	1.04	82	79	3		
宇和島城辺線	64086	Tsujima	0.76	3	0.98	86	83	3		
後柿之浦線	66161	Tsujima	0.68	3	0.92	91	86	5		
後柿之浦線	56161	Tsujima	0.64	3	0.87	96	90	6		
宇和島下波津島線	4066	Tsujima	0.55	3	0.79	103	98	5		
宿毛津島線	64006	Tsujima	0.47	3	0.73	111	105	6		
嵐田之浜岩松線	6138	Tsujima	0.45	3	0.71	112	108	4		
御内下畑地線	66137	Tsujima	0.45	3	0.71	113	109	4		
宿毛津島線	64005	Tsujima	0.34	3	0.60	116	113	3		
御代の川清重線	6162	Tsujima	0.33	3	0.60	117	115	2		
嵐田之浜岩松線	56138	Tsujima	0.29	3	0.56	118	117	1		
								44	15	2.93
高茂岬船越線	66146	Nishiumi	2.28	5	2.55	8	6	2		
城辺高茂岬線	64061	Nishiumi	1.69	5	2.03	23	20	3		
城辺高茂岬線	64060	Nishiumi	1.32	5	1.69	51	38	13		
中浦西海線	66141	Nishiumi	1.25	5	1.62	54	43	11		
船越平城線	66163	Nishiumi	1.16	5	1.54	58	46	12		
								41	5	8.20
								0	118	43.66

Road line name	No.of Census	Town	Original score	Original rank	Ranking position by using the weight set of different town															
					Yoshida	mima	hiromi	hiyoshi	Uwajima	Matsuno	Tsujima	Uchiumi	Misho	nishiumi	Jouhen	Ipponmatsu	Average Rnaking	Max	Min	s.d
一般国道56号	1046	Tsujima	3.28	1	5	4	31	1	2	5	3	2	1	12	2	1	5	31	1	5.99
一般国道56号	1047	Tsujima	3.14	2	8	2	10	3	1	4	6	1	2	11	1	2	4	11	1	2.59
一般国道56号	1045	Tsujima	2.78	3	16	11	80	23	8	37	12	21	12	34	21	21	23	80	3	17.43
一般国道56号	1047	Uwashima	2.65	4	1	13	21	5	3	39	13	5	3	4	5	3	9	39	1	8.20
久良城辺線	6143	Misho	2.58	5	12	3	9	8	5	16	7	12	5	19	16	14	10	19	3	5.29
一般国道441号	1152	Hiromi	2.48	6	32	24	3	2	16	2	33	3	10	8	3	4	11	33	2	9.19
一般国道56号	1042	Misho	2.44	7	3	5	63	16	10	57	1	19	7	43	19	19	21	63	1	17.24
高茂岬船越線	66146	Nishiumi	2.28	8	42	21	14	27	21	47	42	25	33	3	29	29	26	47	3	15.35
広見吉田線	6134	Hiromi	2.23	9	30	41	7	29	36	25	29	40	28	30	24	32	28	41	7	14.82
一般国道320号	1126	Hiyoshi	2.21	10	51	57	73	12	52	26	47	10	30	58	10	10	34	73	10	22.95
一般国道56号	1043	Misho	2.20	11	14	12	78	22	14	83	9	30	13	55	31	23	30	83	9	22.93
一般国道56号	11049	Uwashima	2.19	12	2	14	70	51	12	101	16	48	20	27	46	44	36	101	2	26.07
久良城辺線	6143	Johen	2.18	13	11	1	6	7	4	14	5	9	4	9	12	8	8	14	1	3.89
一般国道56号	11048	Uwashima	2.16	14	7	15	52	42	13	38	14	47	18	33	42	33	28	52	7	17.07
一本松城辺線	6145	Ipponmatsu	2.15	15	6	7	2	9	6	3	10	17	6	14	14	12	9	17	2	4.84
一本松城辺線	6145	Johen	2.07	16	10	9	5	11	7	18	11	18	9	18	17	15	13	18	5	6.10
一般国道320号	1124	Hiromi	1.96	17	18	30	24	39	26	33	21	36	27	36	35	27	28	39	17	14.26
下鍵山松野線	66132	Matsuno	1.86	18	93	96	76	21	67	46	97	13	45	76	15	17	52	97	13	34.60
一般国道56号	11050	Uwashima	1.82	19	19	20	56	38	22	41	20	39	21	45	37	31	31	56	19	17.13
節安下鍵山線	6136	Hiyoshi	1.79	20	70	44	8	28	28	8	60	26	49	1	27	26	30	70	1	20.36
小倉三間線	66133	Hiromi	1.74	21	79	85	44	84	80	31	87	86	85	60	80	77	69	87	21	37.55
一般国道56号	1042	Johen	1.71	22	4	6	64	17	11	58	2	20	8	44	20	20	23	64	2	17.58
城辺高茂岬線	64061	Nishiumi	1.69	23	75	49	69	61	57	67	53	43	61	24	55	50	53	75	23	28.01
宇和島城辺線	64086	Johen	1.69	24	57	53	18	33	49	48	52	24	43	13	23	30	36	57	13	20.16
一般国道56号	1051	Uwashima	1.66	25	27	22	101	54	24	105	22	49	36	77	48	46	49	105	22	31.25
下鍵山松野線	46044	Hiromi	1.65	26	95	92	54	87	82	35	106	87	88	67	84	80	76	106	26	40.79
長月城辺線	6142	Misho	1.65	27	28	27	26	25	31	103	27	28	22	39	25	34	34	103	22	22.02
一般国道56号	1044	Uchiumi	1.65	28	13	8	75	19	9	73	8	23	11	35	22	22	27	75	8	20.13
船越平城線	66163	Misho	1.64	29	23	17	96	69	17	61	17	62	24	74	76	53	48	96	17	30.05
吉田宇和島線	66129	Yoshida	1.64	30	21	45	1	4	25	1	39	4	15	5	4	5	15	45	1	12.60
長月城辺線	6142	Johen	1.63	31	29	28	27	26	32	104	28	29	23	40	26	35	35	104	23	22.45
下鍵山松野線	66132	Hiromi	1.62	32	68	71	58	15	54	6	80	8	38	42	8	9	38	80	6	26.11
一般国道56号	1041	Ipponmatsu	1.62	33	9	10	53	24	15	29	4	41	14	50	40	25	27	53	4	16.74
一般国道381号	1145	Matsuno	1.60	34	43	29	62	10	23	66	30	6	16	32	7	6	28	66	6	19.21
目黒松丸線	6160	Matsuno	1.59	35	77	55	47	52	70	69	54	50	60	64	64	71	59	77	35	30.02
篠山公園線	66173	Ipponmatsu	1.58	36	83	46	13	31	33	11	71	27	53	2	30	28	36	83	2	23.52
一般国道56号	1052	Yoshida	1.56	37	22	16	79	36	20	44	15	22	17	68	36	24	34	79	15	21.28
滑床松野線	66125	Matsuno	1.53	38	99	90	35	67	84	74	91	85	83	63	72	82	74	99	35	38.91
西土佐松野線	64012	Matsuno	1.50	39	86	86	66	91	92	80	58	100	92	72	93	90	80	100	39	41.43
十和吉野線	66002	Matsuno	1.49	40	104	73	48	73	79	82	92	71	76	66	70	79	73	104	40	37.86

吉田宇和島線	66129	Uwashima	1.48	41	20	59	4	6	29	7	45	7	19	10	6	7	20	59	4	15.63
一般国道320号	1124	Uwashima	1.48	42	15	31	41	44	30	91	24	44	37	41	39	38	40	91	15	22.78
一般国道56号	1049	Uwashima	1.42	43	36	50	68	18	35	63	44	15	26	65	13	16	38	68	13	22.80
網代鳥越線	66139	Uchiumi	1.42	44	71	47	36	41	44	54	56	33	57	7	41	43	44	71	7	23.82
一般国道320号	1126	Hiromi	1.42	45	52	58	74	13	53	27	48	11	31	59	11	11	38	74	11	23.74
広見吉田線	6134	Uwashima	1.40	46	26	40	17	32	37	81	31	42	34	31	34	40	38	81	17	20.93
広見三間宇和島線	4102	Mima	1.36	47	39	33	106	68	48	107	34	54	48	100	61	56	62	107	33	35.39
広見吉田線	6134	Mima	1.35	48	34	36	19	30	39	79	25	37	29	37	28	36	37	79	19	20.32
音地清延線	6158	Hiromi	1.33	49	92	105	81	102	107	42	96	106	109	98	104	101	92	109	42	47.83
藪ケ市松野線	6003	Matsuno	1.33	50	115	83	94	103	95	98	95	94	106	91	101	99	94	115	50	47.73
城辺高茂岬線	64060	Nishiumi	1.32	51	97	63	45	63	74	77	70	57	68	61	65	75	67	97	45	33.93
下鍵山松野線	46044	Hiyoshi	1.29	52	91	54	39	49	56	19	88	45	63	17	45	47	51	91	17	29.14
広見三間宇和島線	4102	Uwashima	1.29	53	33	38	105	74	46	108	38	65	52	88	67	58	63	108	33	35.56
中浦西海線	66141	Nishiumi	1.25	54	107	77	57	76	83	84	94	75	81	69	79	85	79	107	54	39.83
宇和三間線	4057	Mima	1.23	55	47	43	29	43	47	55	41	61	47	54	47	59	48	61	29	24.17
広見三間宇和島線	4102	Hiromi	1.21	56	35	39	85	60	43	52	37	56	46	86	52	48	53	86	35	28.40
奈良近永線	66159	Hiromi	1.18	57	41	26	86	46	34	15	32	38	39	85	49	45	46	86	15	26.39
船越平城線	66163	Nishiumi	1.16	58	24	18	97	70	18	62	18	63	25	75	77	54	51	97	18	31.22
一般国道197号	1094	Hiyoshi	1.15	59	116	51	108	66	55	76	82	46	70	20	73	52	67	116	20	37.52
一般国道56号	1053	Yoshida	1.15	60	38	23	87	75	27	17	23	55	40	84	78	55	51	87	17	30.28
九島循環線	46050	Uwashima	1.14	61	37	62	43	48	59	70	107	59	65	15	56	66	58	107	15	31.77
一般国道56号	1048	Uwashima	1.13	62	17	95	34	14	60	53	49	14	35	29	9	13	37	95	9	25.31
蒋淵下波線	66189	Uwashima	1.08	63	63	60	71	83	62	75	90	68	82	21	74	63	67	90	21	35.06
宇和三間線	4057	Yoshida	1.07	64	44	42	16	40	40	13	40	52	41	38	43	49	40	64	13	21.46
一般国道381号	1146	Hiromi	1.07	65	45	32	103	57	42	60	35	53	44	94	60	51	57	103	32	31.47
一般国道320号	1125	Hiromi	1.05	66	74	76	104	20	63	49	68	16	42	92	18	18	54	104	16	33.73
一般国道56号	1040	Ipponmatsu	1.05	67	46	25	90	79	38	71	26	81	50	102	86	68	64	102	25	35.74
一般国道381号	1146	Matsuno	1.04	68	48	34	114	72	51	109	36	64	54	106	75	60	69	114	34	38.53
美砂子郡線	46049	Uwashima	1.03	69	60	67	38	45	64	65	98	67	66	22	53	62	60	98	22	31.83
宇和島港線	6123	Uwashima	1.03	70	31	52	98	105	65	110	46	115	84	90	112	110	84	115	31	45.87
喜路能登線	46048	Uwashima	1.02	71	67	70	49	53	66	72	112	69	74	26	59	67	66	112	26	34.93
船越平城線	66163	Johen	1.01	72	25	19	100	78	19	64	19	77	32	78	81	57	55	100	19	33.74
城辺高茂岬線	64060	Johen	1.01	73	101	74	50	80	87	88	75	73	78	79	82	88	79	101	50	39.79
深浦港線	66144	Johen	1.01	74	102	75	51	81	88	89	76	74	79	80	83	89	80	102	51	40.28
美砂子郡線	56148	Uwashima	0.97	75	105	72	40	47	68	68	101	70	73	28	54	65	67	105	28	36.00
近永停車場線	46018	Hiromi	0.96	76	100	87	111	106	106	45	73	98	103	115	110	105	95	115	45	48.99
猿鳴平城線	6140	Misho	0.90	77	98	64	46	64	75	78	69	58	69	62	66	76	69	98	46	35.13
一般国道197号	1095	Hiyoshi	0.90	78	65	35	107	89	50	87	43	93	59	99	98	83	76	107	35	40.74
柿之浦下波線	6188	Uwashima	0.89	79	76	78	99	96	72	95	113	88	100	52	95	86	87	113	52	44.23
宇和島城辺線	64085	Tsujima	0.86	80	56	56	15	35	58	9	50	32	51	25	32	37	41	80	9	24.18
宇和島城辺線	64085	Uwashima	0.85	81	54	108	33	50	77	59	86	66	64	49	44	61	64	108	33	34.37
後柿之浦線	46019	Tsujima	0.83	82	81	37	77	59	41	20	51	31	58	16	50	42	50	82	16	28.46
宿毛城辺線	44002	Johen	0.79	83	111	68	91	99	89	97	72	82	96	89	99	96	90	111	68	45.26
宿毛城辺線	4010	Johen	0.79	84	110	79	83	107	101	99	77	90	102	101	100	102	95	110	77	47.56
無月宇和島線	6124	Uwashima	0.76	85	40	110	20	82	86	56	103	92	86	56	68	84	74	110	20	40.79
宇和島城辺線	64086	Tsujima	0.76	86	50	65	11	37	61	10	55	34	55	23	33	39	43	86	10	25.84

一般国道56号	1050	Uwashima	0.75	87	49	93	110	94	90	111	66	95	87	104	91	87	90	111	49	45.77
中浦西海線	66141	Misho	0.73	88	109	97	61	86	100	92	100	91	89	87	88	97	91	109	61	45.67
滑床松野線	66125	Uwashima	0.69	89	61	112	42	85	97	86	111	104	95	71	87	98	88	112	42	45.40
一般国道320号	1127	Uwashima	0.68	90	53	94	113	111	98	112	64	112	107	105	113	112	99	113	53	50.79
後柿之浦線	66161	Tsujima	0.68	91	66	48	12	34	45	12	57	35	56	6	38	41	42	91	6	26.04
一般国道320号	1123	Uwashima	0.67	92	55	98	116	113	103	116	83	113	110	110	114	114	103	116	55	52.44
宇和島下波津島線	44008	Uwashima	0.67	93	58	113	55	88	104	93	116	105	101	73	89	100	91	116	55	47.09
西谷吉田線	6131	Yoshida	0.64	94	64	99	59	93	99	32	59	102	93	83	94	91	82	102	32	42.97
伊予宮ノ下停車場務	66130	Mima	0.64	95	103	82	115	97	93	114	78	89	94	116	92	92	97	116	78	48.67
後柿之浦線	56161	Tsujima	0.64	96	88	66	88	108	91	43	61	80	91	103	103	95	86	108	43	44.23
大内停車場線	46042	Mima	0.63	97	113	84	102	109	108	102	79	97	108	111	107	107	102	113	79	50.89
舟間伊予吉田停車場	66157	Yoshida	0.61	98	69	103	67	100	94	36	74	101	97	81	96	93	85	103	36	44.23
一般国道378号	1137	Yoshida	0.58	99	72	61	25	55	69	23	65	51	62	46	51	64	57	99	23	31.16
宇和島下波津島線	4065	Uwashima	0.56	100	82	114	82	101	112	115	114	111	111	96	105	113	104	115	82	52.29
伊予宮ノ下停車場宮	46043	Mima	0.55	101	117	100	117	114	117	117	89	107	114	117	117	117	111	117	89	55.46
河内立間停車場線	66127	Yoshida	0.55	102	78	81	92	104	105	96	62	96	98	108	106	104	95	108	62	47.79
宇和島下波津島線	4066	Tsujima	0.55	103	59	101	23	71	81	21	67	84	71	53	63	73	67	103	21	37.16
奥浦白浦線	6128	Yoshida	0.54	104	84	89	32	77	85	34	93	78	77	70	71	81	75	104	32	39.65
西谷吉田線	6131	Mima	0.52	105	87	102	72	98	110	90	63	108	105	97	102	106	96	110	63	48.38
柿之浦下波線	56188	Uwashima	0.52	106	85	115	112	117	115	106	118	117	117	113	116	116	112	118	85	55.77
宇和島下波津島線	4064	Uwashima	0.49	107	62	117	109	115	116	113	109	116	115	114	115	115	109	117	62	55.23
小倉三間線	66133	Mima	0.48	108	106	106	65	95	109	94	99	103	104	93	97	103	99	109	65	49.39
日向谷高野子線	56135	Hiyoshi	0.48	109	112	116	95	116	114	51	117	114	116	109	111	109	107	117	51	54.15
玉津港線	6126	Yoshida	0.48	110	96	104	60	92	96	40	108	99	99	82	90	94	90	110	40	46.51
宿毛津島線	64006	Tsujima	0.47	111	94	107	84	90	102	85	81	83	90	95	85	78	91	111	78	45.55
嵐田之浜岩松線	6138	Tsujima	0.45	112	73	80	22	56	73	22	84	72	72	47	58	70	65	112	22	36.08
御内下畑地線	66137	Tsujima	0.45	113	80	69	28	58	71	24	85	60	67	48	57	69	64	113	24	35.25
音地清延線	6158	Mima	0.45	114	114	109	89	110	113	100	102	110	112	112	108	111	108	114	89	53.70
宿毛城辺線	4011	Johen	0.40	115	118	118	118	118	118	118	115	118	118	118	118	118	118	118	115	58.36
宿毛津島線	64005	Tsujima	0.34	116	89	88	30	62	76	28	104	76	75	51	62	72	71	116	28	39.46
御代の川清重線	6162	Tsujima	0.33	117	90	91	37	65	78	30	105	79	80	57	69	74	75	117	30	40.57
嵐田之浜岩松線	56138	Tsujima	0.29	118	108	111	93	112	111	50	110	109	113	107	109	108	105	118	50	52.95
																				32.47

					Score				Rank							
Road line name	No. of Census	Town	Original score	Original rank	City area	Mountainous area	Flat area	Overall	City area	Mountainous area	Flat area	Overall	Average rank	Min rank	Max rank	sd
一般国道56号	1046	Tsujima	3.28	1	2.73	2.59	2.78	2.68	2	1	1	1	1	1	2	0.47
一般国道56号	1047	Tsujima	3.14	2	2.79	2.56	2.78	2.67	1	2	2	2	2	1	2	0.47
一般国道56号	1045	Tsujima	2.78	3	2.31	1.99	2.02	2.01	8	14	13	14	12	8	14	2.62
一般国道56号	1047	Uwashima	2.65	4	2.65	2.38	2.44	2.40	3	5	3	4	4	3	5	0.94
久良城辺線	6143	Misho	2.58	5	2.48	2.36	2.30	2.34	5	6	5	6	5	5	6	0.47
一般国道441号	1152	Hiromi	2.48	6	2.04	2.13	2.25	2.19	16	11	7	8	11	7	16	3.68
一般国道56号	1042	Misho	2.44	7	2.27	2.20	2.14	2.17	10	8	10	9	9	8	10	0.94
高茂岬船越線	66146	Nishiumi	2.28	8	1.90	1.75	1.73	1.74	21	19	20	21	20	19	21	0.82
広見吉田線	6134	Hiromi	2.23	9	1.42	1.70	1.58	1.65	36	23	32	24	30	23	36	5.44
一般国道320号	1126	Hiyoshi	2.21	10	1.24	1.42	1.60	1.51	52	40	27	33	40	27	52	10.21
一般国道56号	1043	Misho	2.20	11	2.15	1.97	1.93	1.95	14	15	15	15	15	14	15	0.47
一般国道56号	11049	Uwashima	2.19	12	2.19	1.84	1.66	1.75	12	18	21	20	17	12	21	3.74
久良城辺線	6143	Johen	2.18	13	2.60	2.45	2.42	2.44	4	4	4	3	4	4	4	0.00
一般国道56号	11048	Uwashima	2.16	14	2.16	1.94	1.75	1.85	13	16	19	17	16	13	19	2.45
一本松城辺線	6145	Ipponmatsu	2.15	15	2.46	2.45	2.28	2.37	6	3	6	5	5	3	6	1.41
一本松城辺線	6145	Johen	2.07	16	2.38	2.30	2.17	2.24	7	7	8	7	7	7	8	0.47
一般国道320号	1124	Hiromi	1.96	17	1.55	1.73	1.64	1.70	26	20	23	22	23	20	26	2.45
下鍵山松野線	66132	Matsuno	1.86	18	0.99	1.12	1.38	1.25	67	68	47	54	61	47	68	9.67
一般国道56号	11050	Uwashima	1.82	19	1.82	1.71	1.62	1.67	22	22	24	23	23	22	24	0.94
節安下鍵山線	6136	Hiyoshi	1.79	20	1.49	1.61	1.66	1.63	28	26	22	25	25	22	28	2.49
小倉三間線	66133	Hiromi	1.74	21	0.83	1.09	0.98	1.04	80	74	78	77	77	74	80	2.49
一般国道56号	1042	Johen	1.71	22	2.27	2.20	2.14	2.17	11	9	11	10	10	9	11	0.94
城辺高茂岬線	64061	Nishiumi	1.69	23	1.14	1.20	1.31	1.26	57	56	52	53	55	52	57	2.16
宇和島城辺線	64086	Johen	1.69	24	1.27	1.44	1.55	1.50	49	39	33	35	40	33	49	6.60
一般国道56号	1051	Uwashima	1.66	25	1.66	1.39	1.38	1.39	24	45	46	46	38	24	46	10.14
下鍵山松野線	46044	Hiromi	1.65	26	0.81	1.02	0.94	0.98	82	83	84	83	83	82	84	0.82
長月城辺線	6142	Misho	1.65	27	1.48	1.59	1.58	1.59	30	29	30	26	30	29	30	0.47
一般国道56号	1044	Uchiumi	1.65	28	2.27	2.05	2.05	2.05	9	13	12	12	11	9	13	1.70
船越平城線	66163	Misho	1.64	29	1.96	1.53	1.42	1.48	17	33	42	38	31	17	42	10.34
吉田宇和島線	66129	Yoshida	1.64	30	1.65	2.08	2.16	2.12	25	12	9	11	15	9	25	6.94
長月城辺線	6142	Johen	1.63	31	1.48	1.59	1.58	1.59	31	30	31	27	31	30	31	0.47
下鍵山松野線	66132	Hiromi	1.62	32	1.19	1.35	1.60	1.48	54	49	29	40	44	29	54	10.80
一般国道56号	1041	Ipponmatsu	1.62	33	2.13	2.14	1.90	2.02	15	10	16	13	14	10	16	2.62
一般国道381号	1145	Matsuno	1.60	34	1.82	1.67	1.96	1.81	23	24	14	18	20	14	24	4.50
目黒松丸線	6160	Matsuno	1.59	35	0.92	1.13	1.12	1.13	70	64	66	64	67	64	70	2.49
篠山公園線	66173	Ipponmatsu	1.58	36	1.48	1.54	1.61	1.58	33	32	25	29	30	25	33	3.56
一般国道56号	1052	Yoshida	1.56	37	1.91	1.72	1.78	1.76	20	21	18	19	20	18	21	1.25
滑床松野線	66125	Matsuno	1.53	38	0.80	1.04	0.96	1.00	84	82	81	81	82	81	84	1.25
西土佐松野線	64012	Matsuno	1.50	39	0.73	0.99	0.89	0.94	92	86	88	88	89	86	92	2.49
十和吉野線	66002	Matsuno	1.49	40	0.83	1.01	0.98	1.00	79	85	79	82	81	79	85	2.83
吉田宇和島線	66129	Uwashima	1.48	41	1.48	1.86	1.89	1.88	29	17	17	16	21	17	29	5.66
一般国道320号	1124	Uwashima	1.48	42	1.48	1.60	1.50	1.56	32	28	37	32	32	28	37	3.68

一般国道56号	1049	Uwashima	1.42	43	1.42	1.45	1.55	1.49	35	38	34	36	36	34	38	1.70
網代鳥越線	66139	Uchiumi	1.42	44	1.30	1.36	1.46	1.41	44	48	40	45	44	40	48	3.27
一般国道320号	1126	Hiromi	1.42	45	1.24	1.42	1.60	1.51	53	41	28	34	41	28	53	10.21
広見吉田線	6134	Uwashima	1.40	46	1.40	1.62	1.51	1.57	37	25	36	31	33	25	37	5.44
広見三間宇和島線	4102	Mima	1.36	47	1.28	1.18	1.21	1.20	48	61	58	58	56	48	61	5.56
広見吉田線	6134	Mima	1.35	48	1.38	1.60	1.54	1.58	39	27	35	30	34	27	39	4.99
音地清延線	6158	Hiromi	1.33	49	0.63	0.87	0.75	0.82	107	98	104	101	103	98	107	3.74
藪ケ市松野線	6003	Matsuno	1.33	50	0.70	0.78	0.80	0.79	95	105	99	105	100	95	105	4.11
城辺高茂岬線	64060	Nishiumi	1.32	51	0.88	1.05	1.04	1.05	75	79	72	74	75	72	79	2.87
下鍵山松野線	46044	Hiyoshi	1.29	52	1.18	1.27	1.30	1.29	56	52	53	51	54	52	56	1.70
広見三間宇和島線	4102	Uwashima	1.29	53	1.29	1.20	1.17	1.19	46	57	60	59	54	46	60	6.02
中浦西海線	66141	Nishiumi	1.25	54	0.81	0.98	0.95	0.97	83	87	82	84	84	82	87	2.16
宇和三間線	4057	Mima	1.23	55	1.28	1.38	1.29	1.34	47	46	54	50	49	46	54	3.56
広見三間宇和島線	4102	Hiromi	1.21	56	1.31	1.29	1.24	1.27	43	51	55	52	50	43	55	4.99
奈良近永線	66159	Hiromi	1.18	57	1.45	1.38	1.37	1.37	34	47	48	49	43	34	48	6.38
船越平城線	66163	Nishiumi	1.16	58	1.96	1.53	1.42	1.48	18	34	43	39	32	18	43	10.34
一般国道197号	1094	Hiyoshi	1.15	59	1.19	1.05	1.24	1.15	55	78	56	63	63	55	78	10.61
一般国道56号	1053	Yoshida	1.15	60	1.53	1.39	1.35	1.38	27	44	50	48	40	27	50	9.74
九島循環線	46050	Uwashima	1.14	61	1.14	1.24	1.14	1.19	59	55	62	60	59	55	62	2.87
一般国道56号	1048	Uwashima	1.13	62	1.13	1.57	1.61	1.59	60	31	26	28	39	26	60	14.99
蒋淵下波線	66189	Uwashima	1.08	63	1.08	1.11	1.12	1.12	62	70	65	67	66	62	70	3.30
宇和三間線	4057	Yoshida	1.07	64	1.36	1.53	1.39	1.47	40	35	45	41	40	35	45	4.08
一般国道381号	1146	Hiromi	1.07	65	1.32	1.25	1.23	1.24	42	54	57	55	51	42	57	6.48
一般国道320号	1125	Hiromi	1.05	66	1.06	1.09	1.33	1.20	63	73	51	57	62	51	73	8.99
一般国道56号	1040	Ipponmatsu	1.05	67	1.39	1.27	1.18	1.23	38	53	59	56	50	38	59	8.83
一般国道381号	1146	Matsuno	1.04	68	1.24	1.10	1.13	1.11	51	72	63	69	62	51	72	8.60
美砂子郡線	46049	Uwashima	1.03	69	1.03	1.19	1.13	1.16	64	59	64	62	62	59	64	2.36
宇和島港線	6123	Uwashima	1.03	70	1.03	1.01	0.75	0.88	65	84	106	93	85	65	106	16.75
喜路能登線	46048	Uwashima	1.02	71	1.02	1.12	1.08	1.10	66	69	68	71	68	66	69	1.25
船越平城線	66163	Johen	1.01	72	1.92	1.49	1.35	1.42	19	36	49	43	35	19	49	12.28
城辺高茂岬線	64060	Johen	1.01	73	0.76	0.97	0.92	0.95	87	90	86	86	88	86	90	1.70
深浦港線	66144	Johen	1.01	74	0.76	0.97	0.92	0.95	86	89	85	87	87	85	89	1.70
美砂子郡線	56148	Uwashima	0.97	75	0.97	1.13	1.10	1.12	68	65	67	68	67	65	68	1.25
近永停車場線	46018	Hiromi	0.96	76	0.63	0.78	0.75	0.77	106	106	105	106	106	105	106	0.47
猿鳴平城線	6140	Misho	0.90	77	0.88	1.05	1.04	1.05	74	80	73	75	76	73	80	3.09
一般国道197号	1095	Hiyoshi	0.90	78	1.25	1.07	0.99	1.03	50	77	76	79	68	50	77	12.50
柿之浦下波線	6188	Uwashima	0.89	79	0.89	0.89	0.90	0.89	72	96	87	90	85	72	96	9.90
宇和島城辺線	64085	Tsujima	0.86	80	1.14	1.42	1.45	1.44	58	42	41	42	47	41	58	7.79
宇和島城辺線	64085	Uwashima	0.85	81	0.85	1.12	1.06	1.10	77	67	70	72	71	67	77	4.19
後柿之浦線	46019	Tsujima	0.83	82	1.34	1.30	1.47	1.38	41	50	39	47	43	39	50	4.78
宿毛城辺線	44002	Johen	0.79	83	0.75	0.82	0.86	0.84	89	102	92	97	94	89	102	5.56
宿毛城辺線	4010	Johen	0.79	84	0.68	0.81	0.80	0.81	101	103	96	103	100	96	103	2.94
無月宇和島線	6124	Uwashima	0.76	85	0.76	1.12	0.94	1.04	88	66	83	76	79	66	88	9.42
宇和島城辺線	64086	Tsujima	0.76	86	1.11	1.41	1.41	1.42	61	43	44	44	49	43	61	8.26
一般国道56号	1050	Uwashima	0.75	87	0.75	0.84	0.80	0.82	90	101	98	100	96	90	101	4.64
中浦西海線	66141	Misho	0.73	88	0.68	0.89	0.83	0.86	100	95	94	95	96	94	100	2.62

滑床松野線	66125	Uwashima	0.69	89	0.69	0.97	0.80	0.89	97	88	97	91	94	88	97	4.24
一般国道320号	1127	Uwashima	0.68	90	0.68	0.76	0.68	0.72	98	107	109	109	105	98	109	4.78
後柿之浦線	66161	Tsujima	0.68	91	1.30	1.48	1.48	1.49	45	37	38	37	40	37	45	3.56
一般国道320号	1123	Uwashima	0.67	92	0.67	0.67	0.62	0.65	103	114	112	114	110	103	114	4.78
宇和島下波津島線	44008	Uwashima	0.67	93	0.67	0.90	0.76	0.83	104	94	103	99	100	94	104	4.50
西谷吉田線	6131	Yoshida	0.64	94	0.68	1.05	0.87	0.96	99	81	89	85	90	81	99	7.36
伊予宮ノ下停車場務田線	66130	Mima	0.64	95	0.71	0.70	0.75	0.72	93	113	107	108	104	93	113	8.38
後柿之浦線	56161	Tsujima	0.64	96	0.73	0.88	0.87	0.88	91	97	90	94	93	90	97	3.09
大内停車場線	46042	Mima	0.63	97	0.63	0.74	0.74	0.74	108	109	108	107	108	108	109	0.47
舟間伊予吉田停車場線	66157	Yoshida	0.61	98	0.70	0.95	0.86	0.91	94	91	93	89	93	91	94	1.25
一般国道378号	1137	Yoshida	0.58	99	0.96	1.20	1.14	1.18	69	58	61	61	63	58	69	4.64
宇和島下波津島線	4065	Uwashima	0.56	100	0.56	0.73	0.62	0.67	112	110	113	112	112	110	113	1.25
伊予宮ノ下停車場宮ノ下線	46043	Mima	0.55	101	0.47	0.49	0.55	0.52	117	117	116	117	117	116	117	0.47
河内立間停車場線	66127	Yoshida	0.55	102	0.63	0.81	0.78	0.80	105	104	100	104	103	100	105	2.16
宇和島下波津島線	4066	Tsujima	0.55	103	0.83	1.16	1.04	1.11	81	62	74	70	72	62	81	7.85
奥浦白浦線	6128	Yoshida	0.54	104	0.79	1.07	0.96	1.02	85	76	80	80	80	76	85	3.68
西谷吉田線	6131	Mima	0.52	105	0.60	0.90	0.77	0.84	110	93	101	98	101	93	110	6.94
柿之浦下波線	56188	Uwashima	0.52	106	0.52	0.62	0.54	0.58	115	116	117	116	116	115	117	0.82
宇和島下波津島線	4064	Uwashima	0.49	107	0.49	0.64	0.56	0.61	116	115	115	115	115	115	116	0.47
小倉三間線	66133	Mima	0.48	108	0.63	0.86	0.76	0.81	109	99	102	102	103	99	109	4.19
日向谷高野子線	56135	Hiyoshi	0.48	109	0.54	0.71	0.61	0.66	114	112	114	113	113	112	114	0.94
玉津港線	6126	Yoshida	0.48	110	0.69	0.93	0.82	0.88	96	92	95	92	94	92	96	1.70
宿毛津島線	64006	Tsujima	0.47	111	0.68	0.85	0.86	0.86	102	100	91	96	98	91	102	4.78
嵐田之浜岩松線	6138	Tsujima	0.45	112	0.88	1.19	1.06	1.13	73	60	71	65	68	60	73	5.72
御内下畑地線	66137	Tsujima	0.45	113	0.91	1.16	1.08	1.12	71	63	69	66	68	63	71	3.40
音地清延線	6158	Mima	0.45	114	0.55	0.72	0.65	0.69	113	111	111	111	112	111	113	0.94
宿毛城辺線	4011	Johen	0.40	115	0.37	0.40	0.42	0.41	118	118	118	118	118	118	118	0.00
宿毛津島線	64005	Tsujima	0.34	116	0.87	1.11	1.01	1.07	76	71	75	73	74	71	76	2.16
御代の川清重線	6162	Tsujima	0.33	117	0.84	1.08	0.98	1.04	78	75	77	78	77	75	78	1.25
嵐田之浜岩松線	56138	Tsujima	0.29	118	0.59	0.75	0.67	0.72	111	108	110	110	110	108	111	1.25
																4.24