

Analysis Report

This report is structured as follows.

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SAMPLE REPORT - Rafael Data Analysis Portfolio

Sample Characteristics

The sample consisted of dive instructors working primarily in various counties of Florida, with the majority (75.3%) located in Monroe County. The respondents included both full-time (60.2%) and part-time or seasonal (39.8%) instructors, signifying a diverse employment status within the diving instruction field. The tenure of these instructors at their current dive operator/shop showed a significant leaning towards longer employment, with 86% reporting working for more than one year.

The affiliations to dive agencies among the instructors were predominantly with PADI (84.9%), though representation from NAUI (18.3%), SDI (20.4%), SSI (31.2%), and other agencies was noted. In terms of motivation for becoming a diving instructor, sharing a passion for diving (84.9%) and teaching new skills (61.3%) were highly reported, indicating strong intrinsic motivations linked to the profession's nature. A substantial majority (94.3%) reported that their associated dive operations offer conservation-focused experiences, aligning with the instructors' own engagement in conservation-oriented SCUBA diving experiences (83%).

The preference for teaching conservation-related courses over other options was evident, with 60.2% favoring coral conservation over enriched air nitrox courses, 84.1% preferring marine debris removal over search and recovery, 69.3% selecting sea turtle conservation over drift diver courses, and a significant 93.2% choosing shark conservation over boat diver courses. This preference reflects a professional inclination towards environmental stewardship. Most instructors anticipate higher career satisfaction when involved in conservation-oriented experiences (86.4%).

Personal engagement in conservation activities outside of work varied, with 37.5% participating occasionally and 38.6% frequently or very frequently, highlighting a commitment to conservation that extends beyond their professional roles.

Demographically, the sample was predominantly male (59.1%) and white (93.0%), with a smaller representation of females (38.6%) and Latino or Hispanic individuals (5.8%). The lack of diversity in terms of racial categories such as Asian, Black, Indigenous, Aboriginal, or First Nations, and Middle Eastern, which all reported 0%, could indicate a need for broader outreach and inclusivity within the diving instructor community in Florida. The proportions can be found in the table below.

		Count	%
Which Florida County do you primarily work in?	Martin	3	3.2
	Palm Beach	11	11.8
	Broward	5	5.4
	Miami-Dade	4	4.3
	Monroe	70	75.3
Which of the following best describes you?	I work full-time as a dive instructor in Florida	56	60.2
	I work part-time or seasonally as a dive instructor in Florida	37	39.8
How long have you been working as an instructor for your current dive operator/shop in Florida?	Less than 1 year	13	14.0
	1 year or more	80	86.0
	NAUI	17	18.3
What dive agencies do you teach under? (select all that apply) - Selected Choice NAUI	PADI	79	84.9
	SDI	19	20.4
	SEI	0	0.0
	SSI	29	31.2
	Other	9	9.7
	To contribute to marine conservation	53	57.0
	To share my passion for diving	79	84.9
Why did you decide to become a SCUBA diving instructor? (select all that apply) - Selected Choice To contribute to marine conservation	To teach others new skills	57	61.3
	To be part of the diving community	55	59.1
	Other reason(s)	20	21.5
	Yes	83	94.3
Does the dive operation/shop you are currently associated with offer any conservation focused SCUBA diving experiences? (such as marine debris removals, coral conservation experiences, ecology courses, lionfish removals, etc.)	No	5	5.7
	Unsure	0	0.0
	Yes	73	83.0
Have you ever taught any conservation-oriented SCUBA diving experiences (such as marine debris removals, coral conservation experiences, ecology courses, lionfish removals, etc.)?	No	15	17.0
	Coral conservation	60	64.5
	Invasive species removal	51	54.8
	Marine animal conservation	40	43.0
	Marine debris removals	69	74.2
Please select the conservation-oriented SCUBA diving experiences you take part in teaching (select all that apply): - Selected Choice Coral conservation	Other	7	7.5
	Higher satisfaction WITH conservation-oriented experiences	76	86.4
	Higher satisfaction WITHOUT conservation-oriented experiences	0	0.0
	No difference in satisfaction	12	13.6
	Coral conservation	53	60.2
If given the opportunity, which course would you prefer to teach? (Pick one in each of the following) - Coral conservation course or Enriched air nitrox course	Enriched air nitrox	35	39.8
	Search and recovery	14	15.9
If given the opportunity, which course would you prefer to teach? (Pick one in each of the following) - Search and recovery course or Marine debris removal course	Marine debris removal	74	84.1
	Sea turtle conservation	61	69.3

		Count	%
If given the opportunity, which course would you prefer to teach? (Pick one in each of the following) - Sea turtle conservation course or Drift diver course	Drift diver course	27	30.7
If given the opportunity, which course would you prefer to teach? (Pick one in each of the following) - Boat diver course or Shark conservation course	Boat diver	6	6.8
	Shark conservation	82	93.2
How often do you take part in conservation-oriented experiences outside of your work in your own time? (Such as a beach cleanup or volunteering at local nature preserves)	Never	1	1.1
	Rarely	20	22.7
	Occasionally	33	37.5
	Frequently	19	21.6
	Very Frequently	15	17.0
What is your sex assigned at birth?	Male	52	59.1
	Female	34	38.6
	Intersex	0	0.0
	Prefer not to say	2	2.3
	Asian	0	0.0
	Black	0	0.0
	Indigenous, Aboriginal, or First Nations	0	0.0
When thinking about physical attributes usually ascribed to race, which of the following general labels describe how you would describe yourself racially (mark all that apply): - Selected Choice	Latino or Hispanic	5	5.8
Asian	Middle Eastern	0	0.0
	White	80	93.0
	Other, please specify:	1	1.2

Descriptive Statistics

The table below presents the mean scores, standard errors and standard deviations for all numeric variables included in the dataset. The average age of the sample was 41.6 years.

	Mean	Standard Error of Mean	Standard Deviation
How much are you interested in marine conservation?	4.495	0.068	0.653
Do you feel motivated to actively participate in marine conservation?	4.409	0.075	0.726
How important is it for you to promote marine conservation and ocean stewardship among divers through your work?	4.613	0.063	0.608
To what extent do you feel environmentally responsible to protect your "office" meaning the marine environment?	4.656	0.062	0.599
How important is marine conservation to you in relation to your occupation as a diving instructor?	4.602	0.069	0.662
People located in the County I work in rely on a healthy coral reef for resources, income, and recreational activities.	4.763	0.062	0.597
The coral bleaching events and impacts from climate change will affect my job security within the diving industry in the future.	4.462	0.086	0.828
Importance- Having freedom to act independently, which involves having a say in significant decision-making processes	4.304	0.080	0.767
Importance- Having positive working relationships with your colleagues and/or staff	4.685	0.060	0.573
Importance- Having positive relationships and quality interactions with your students	4.685	0.056	0.533
Importance- Overall compensation including pay, various financial or non-financial perks	4.098	0.101	0.973

	Mean	Standard Error of Mean	Standard Deviation
Importance- Quality of resources including people, facilities, and/or materials available that are needed to be successful in your job	4.424	0.075	0.715
Importance- Receiving respect from others through your work (students, their families, the community, etc.)	4.077	0.103	0.980
Importance- Having your work be rewarding, the notion that the world is a better place because of your work	4.239	0.099	0.954
Importance- Having a positive work-life balance	4.272	0.092	0.878
Importance- Having support from your supervisors and managers	4.391	0.074	0.710
Importance- Having the local community appreciate the work you accomplish	3.652	0.122	1.171
Satisfaction - My freedom to act independently, which involves having a say in significant decision-making processes	3.967	0.113	1.075
Satisfaction - My relationships with colleagues and/or staff at the dive operation	4.144	0.105	1.001
Satisfaction - My relationships and the quality of interactions I have with my students	4.533	0.071	0.674
Satisfaction - My overall compensation at the dive operation including pay, various financial or non-financial perks	2.833	0.122	1.154
Satisfaction - The quality of resources available to me at the dive operation including people, facilities, and/or materials I need to be successful in my job	3.700	0.121	1.146
Satisfaction - The respect I receive from others through my work as a dive instructor (students, their families, the community, etc.)	4.122	0.091	0.859
Satisfaction - Feeling that my work is rewarding, the notion that the world is a better place because of my work as an instructor	4.056	0.091	0.866
Satisfaction - My work-life balance as a dive instructor	3.389	0.127	1.206
Satisfaction - The support I receive from my dive operation's supervisors and managers	3.633	0.135	1.285
Satisfaction - The way the local community appreciates the work I accomplish	3.533	0.099	0.939
Do you feel more personally fulfilled in your role as a diving instructor if/when you have the opportunity to educate students about marine conservation?	4.284	0.082	0.772
Teaching about marine conservation has:	4.452	0.073	0.625
What is your age in years?	41.593	1.669	15.479

Importance vs Satisfaction

The analysis focused on understanding the relationships between importance and satisfaction at work with respect to several attributes. First, a paired-samples t test was conducted. A paired t-test is a statistical method used to compare two related samples, such as the same group of individuals measured before and after an intervention, or, as in this case, the importance and satisfaction levels regarding the same job components. The test checks whether the mean difference between paired observations is statistically different from zero. To interpret the paired t-test results, one looks at the t-value and the significance level (p-value). A p-value less than 0.05 typically indicates a statistically significant difference between the pairs. The results are shown in the table below.

Paired Samples Test

		Paired Differences			t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean			
Pair 1	1. Decision-Making Autonomy Importance and Satisfaction	0.322	1.069	0.113	2.860	89	0.005
Pair 2	2. Colleague Relations Importance and Satisfaction	0.544	1.029	0.109	5.017	89	0.000
Pair 3	3. Student Relations Importance and Satisfaction	0.156	0.702	0.074	2.103	89	0.038
Pair 4	4. Compensation Level Importance and Satisfaction	1.256	1.719	0.181	6.927	89	0.000
Pair 5	5. Resource Quality Importance and Satisfaction	0.722	1.281	0.135	5.348	89	0.000
Pair 6	6. Respect Received Importance and Satisfaction	-0.044	1.005	0.106	-0.420	89	0.676
Pair 7	7. Work Rewarding Feel Importance and Satisfaction	0.178	0.990	0.104	1.704	89	0.092
Pair 8	8. Work-Life Balance Importance and Satisfaction	0.878	1.483	0.156	5.616	89	0.000
Pair 9	9. Supervisor Support Importance and Satisfaction	0.767	1.484	0.156	4.900	89	0.000
Pair 10	10. Community Appreciation Importance and Satisfaction	0.111	1.328	0.140	0.794	89	0.429

For Pair 1, Decision-Making Autonomy Importance and Satisfaction, the mean difference is 0.322 with a standard deviation of 1.069. The t-value is 2.860, and with 89 degrees of freedom, the p-value is 0.005, suggesting that the importance and satisfaction levels for decision-making autonomy are significantly different, with importance rating higher than satisfaction.

Pair 2, Colleague Relations Importance and Satisfaction, shows a mean difference of 0.544, a standard deviation of 1.029, a t-value of 5.017, and a p-value of less than 0.001, indicating a significant disparity where the importance of colleague relations is rated higher than satisfaction.

In Pair 3, Student Relations Importance and Satisfaction, the mean difference is 0.156, the standard deviation is 0.702, the t-value is 2.103, and the p-value is 0.038. This suggests a significant but smaller difference between the importance and satisfaction concerning student relations.

For Pair 4, Compensation Level Importance and Satisfaction, there is a large mean difference of 1.256, with a standard deviation of 1.719. The t-value is high at 6.927, and the p-value is less than 0.001, denoting a substantial and significant difference, with compensation importance far exceeding satisfaction.

Pair 5, Resource Quality Importance and Satisfaction, also presents a significant mean difference of 0.722 with a t-value of 5.348 and a p-value less than 0.001, indicating that the importance of resource quality is rated significantly higher than the satisfaction with it.

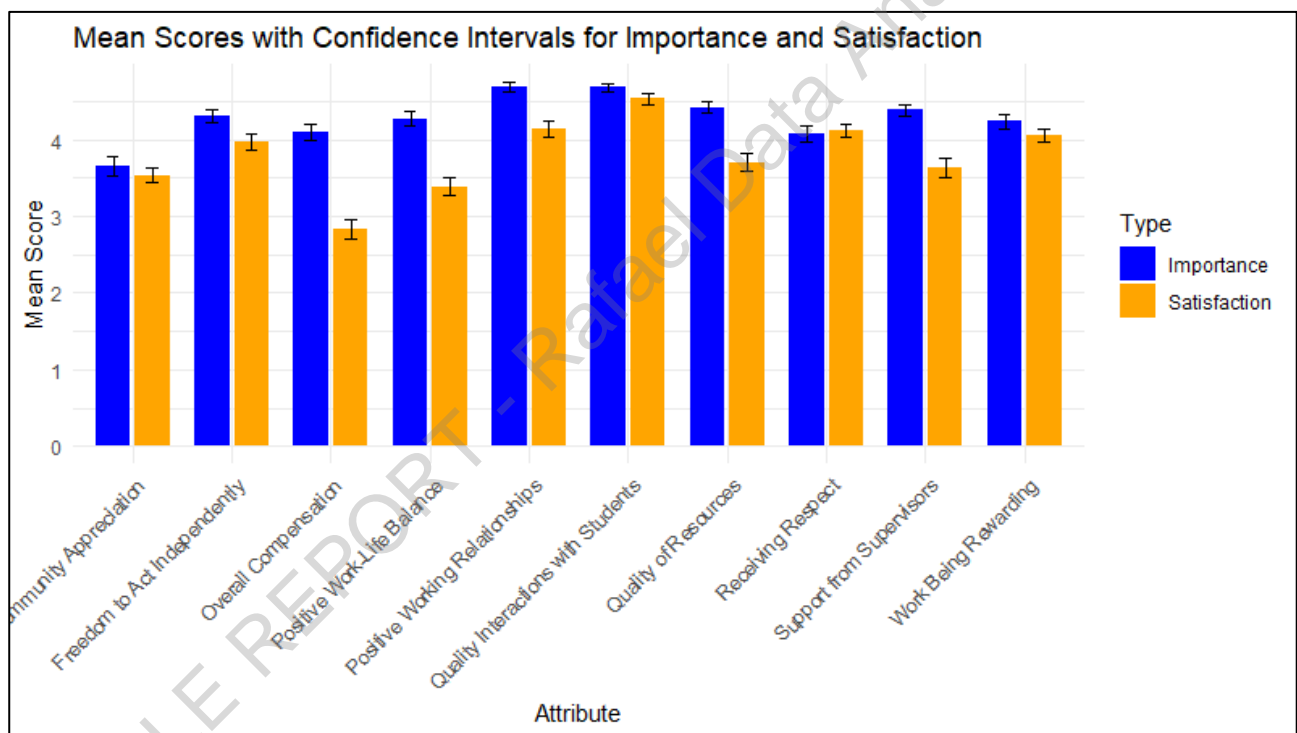
Conversely, Pair 6, Respect Received Importance and Satisfaction, shows an insignificant mean difference of -0.044 with a t-value of -0.420 and a p-value of 0.676, suggesting no significant difference between the importance and satisfaction of respect received.

Pair 7, Work Rewarding Feel Importance and Satisfaction, has a mean difference of 0.178 with a t-value of 1.704 and a p-value of 0.092, which is above the 0.05 threshold for significance, indicating no significant difference.

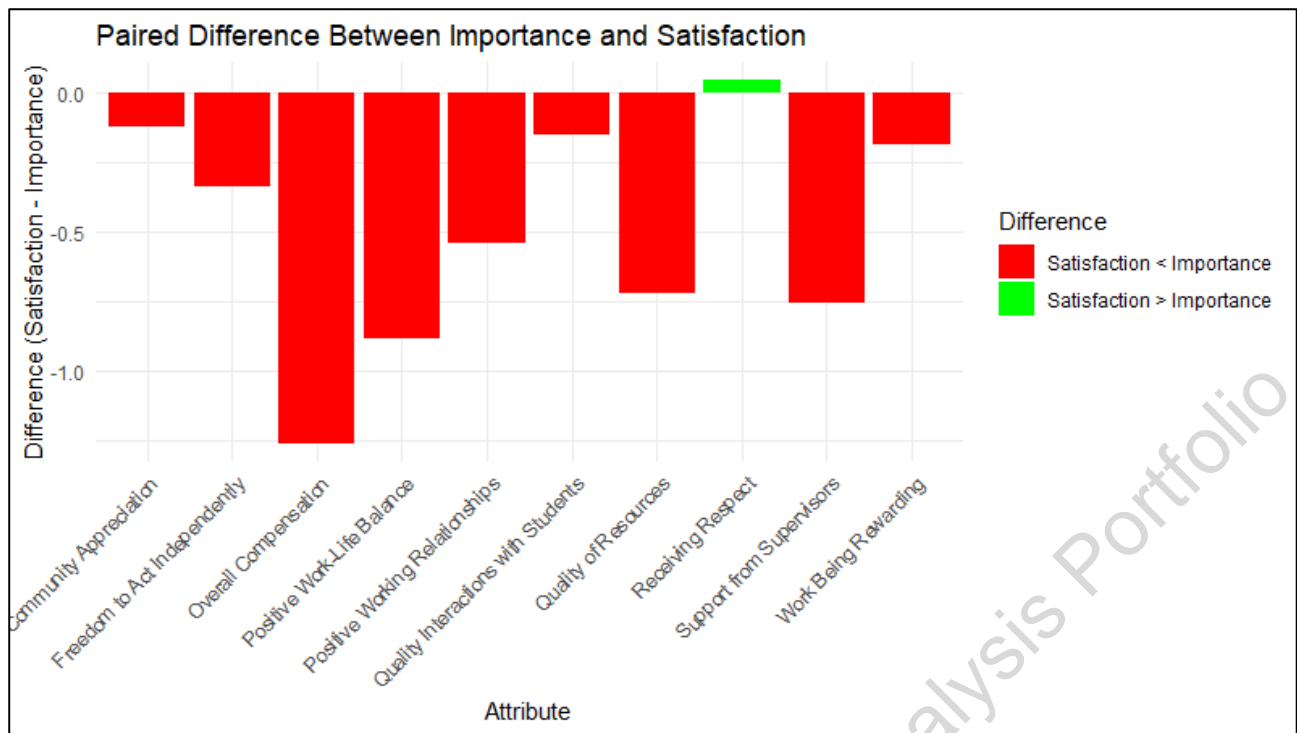
Pair 8 and Pair 9, Work-Life Balance, and Supervisor Support Importance and Satisfaction respectively, both show significant mean differences (0.878 and 0.767) with p-values of less than 0.001, suggesting important discrepancies where importance ratings surpass satisfaction.

Lastly, Pair 10, Community Appreciation Importance and Satisfaction, exhibits a mean difference of 0.111 with a t-value of 0.794 and a p-value of 0.429, indicating no significant difference between the two measures.

The bar plot below exhibits a comparison between the importance and satisfaction scores across various job components. The error bars represent the confidence intervals, providing an indication of the variability and reliability of the mean scores. In most components, importance scores are higher than satisfaction scores, as shown by the higher bars for 'Importance' (blue) compared to 'Satisfaction' (orange), with 'Quality of Resources' and 'Overall Compensation' displaying the most substantial gaps.

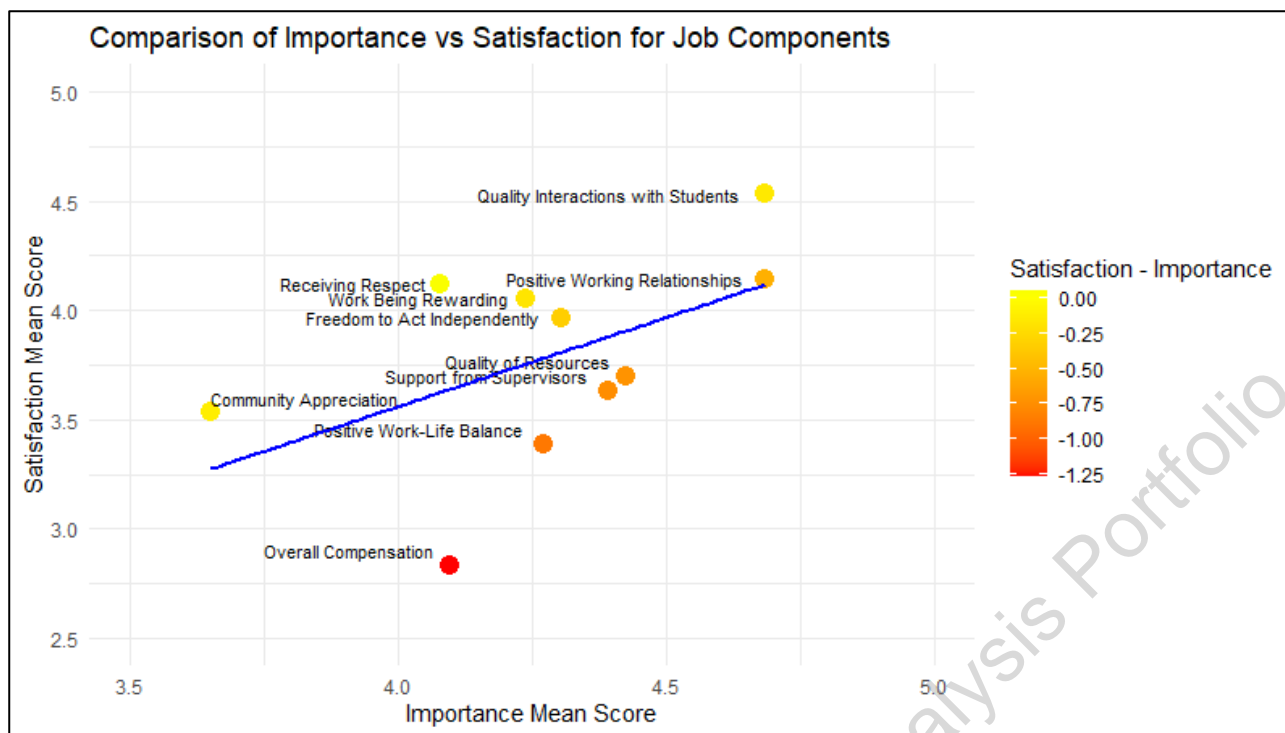


The difference plot, shown below, directly illustrates these differences by showing the magnitude of the gaps between the importance and satisfaction scores for each attribute. The positive green bars indicate areas where the satisfaction score is higher than the importance score, and the negative red bars indicate where importance exceeds satisfaction.



The third graph, shown below, places each job attribute on a graph based on average importance and satisfaction scores. The linear fit line, representing the trend in the relationship between these variables, slopes upwards, indicating a positive correlation: as the perceived importance of job components increases, the level of satisfaction tends to increase as well. Nonetheless, most data points rest below the linear fit line, signifying that the importance attributed by dive instructors is generally higher than their corresponding levels of satisfaction across most attributes.

The 'Overall Compensation' point, marked by a distinctive red color, is located substantially below the fit line, denoting the most pronounced gap between high importance and comparatively lower satisfaction. Other attributes such as 'Positive Work-Life Balance', 'Quality of Resources', and 'Support from Supervisors' also appear below the fit line, suggesting smaller yet still significant discrepancies where improvements could enhance job satisfaction. In contrast, 'Community Appreciation' and 'Receiving Respect' hover near the fit line, implying these are areas where satisfaction more closely matches the importance attributed by the instructors, signaling a more balanced perception.



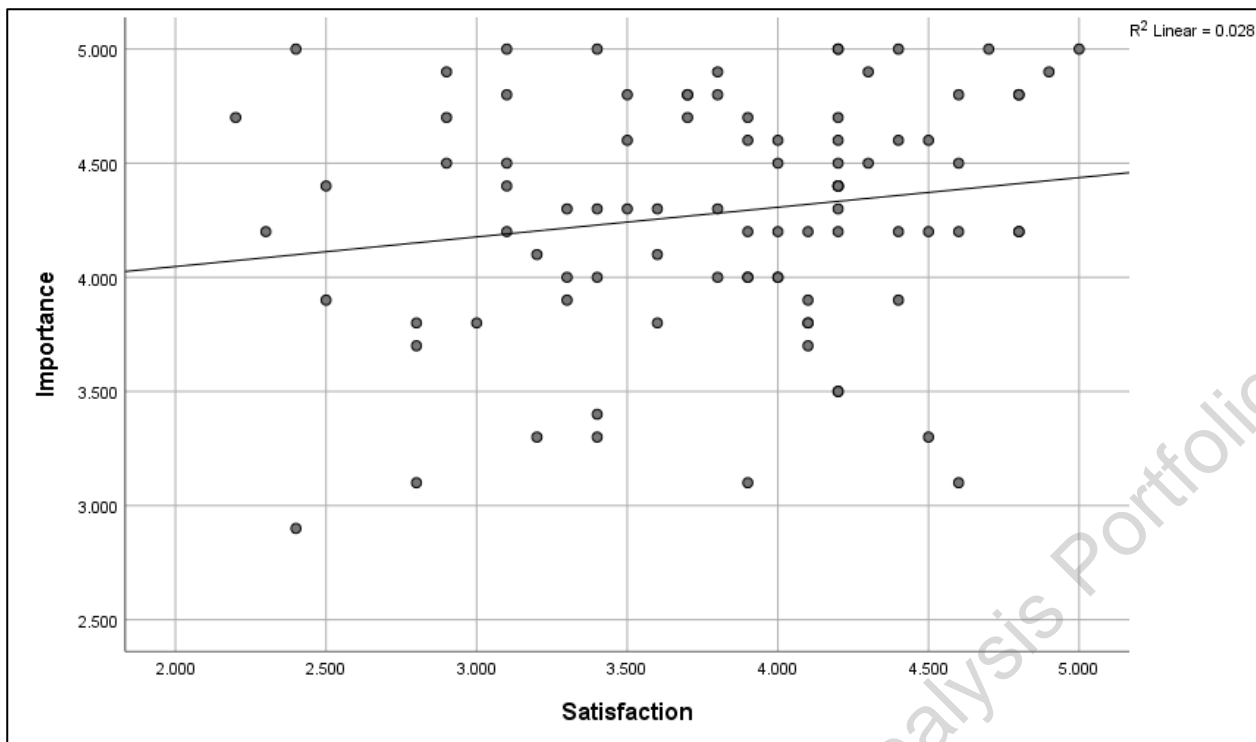
In order to test for total scores of importance and satisfaction, averages of all items respective to these concepts were calculated and used in further analysis. In order to be able to treat these scores as scores that represent the whole concepts of satisfaction and importance, their reliability was tested using Cronbach's Alpha.

Cronbach's alpha is a measure of internal consistency, often used as an estimate of the reliability of a psychometric test for a sample of examinees. It gauges how closely related a set of items are as a group. Essentially, it's a measure of scale reliability or how well each item in a set (such as a survey or test) measures the same underlying concept. The value of Cronbach's alpha ranges from 0 to 1, with higher values indicating a more reliable scale. Generally, a Cronbach's alpha of 0.7 or above is considered acceptable, 0.8 or above is good, and 0.9 or above is excellent.

For the 'Satisfaction' scale, Cronbach's alpha is 0.843, and the alpha based on standardized items is 0.844, with 10 items in the scale. These high values indicate that the satisfaction scale has very good internal consistency among its items.

For the 'Importance' scale, Cronbach's alpha is 0.811, and the alpha based on standardized items is 0.829, also with 10 items. These values suggest that the importance scale also has good internal consistency.

The scatterplot below plots all individuals of the dataset with respect to their satisfaction and importance values. The fit line indicates a positive correlation between them.



Regression Model

Backward regression analysis was performed to evaluate what are factors that significantly influence overall satisfaction. Backward regression analysis is a type of hierarchical regression where all variables are entered into the equation first and then the least significant variable is removed step by step. This process continues until only variables with a significant contribution to the prediction of the dependent variable remain.

In this backward regression analysis, satisfaction is the dependent variable and several predictors have been tested. The significance of each model is assessed using the F-statistic and its associated p-value in the ANOVA table.

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.514	8	0.689	1.614	.134 ^b
	Residual	33.736	79	0.427		
	Total	39.250	87			
2	Regression	5.511	7	0.787	1.867	.086 ^c
	Residual	33.739	80	0.422		
	Total	39.250	87			
3	Regression	5.360	6	0.893	2.135	.058 ^d
	Residual	33.890	81	0.418		
	Total	39.250	87			
4	Regression	5.093	5	1.019	2.445	.041 ^e
	Residual	34.157	82	0.417		
	Total	39.250	87			
5	Regression	4.817	4	1.204	2.903	.027 ^f
	Residual	34.433	83	0.415		
	Total	39.250	87			

6	Regression	4.030	3	1.343	3.204	.027 ^s
	Residual	35.220	84	0.419		
	Total	39.250	87			

The analysis began with a full model (Model 1) that included 8 predictors. The F-statistic for this model was 1.614, with a p-value of .134, indicating that the model as a whole was not statistically significant at the typical .05 alpha level.

With each subsequent model, predictors that contributed the least to explaining the variance in satisfaction were removed one by one, which can be observed as the degrees of freedom for regression (df) decrease across the models.

By Model 4, the regression model became statistically significant ($p = .041$) after removing three predictors. This implies that the remaining five predictors together significantly predict satisfaction. In Model 5, with one more predictor removed, the significance improved ($p = .027$), and by Model 6, only three predictors remained, maintaining a significance level of $p = .027$.

In the final model (Model 6), 'Importance', 'How do you anticipate your long-term career satisfaction might differ depending on if you are able to take part in conservation-oriented dive experiences?', and 'How long have you been working as an instructor for your current dive operator/shop in Florida?' were the predictors left. The Beta coefficients in this model indicate the direction and strength of the relationship with satisfaction. A positive Beta suggests a predictor is positively associated with satisfaction, while a negative Beta suggests a negative association. The following table presents the coefficients of all models that were tested.

Model	Beta	t	Sig.	Collinearity Statistics	
				Tolerance	VIF
1 (Constant)		1.938	0.056		
Importance	0.158	1.410	0.163	0.865	1.157
How much are you interested in marine conservation?	0.069	0.566	0.573	0.731	1.369
People located in the County I work in rely on a healthy coral reef for resources, income, and recreational activities.	0.130	1.169	0.246	0.876	1.142
Have you ever taught any conservation-oriented SCUBA diving experiences (such as marine debris removals, coral conservation experiences, ecology courses, lionfish removals, etc.)?	0.076	0.705	0.483	0.937	1.067
How do you anticipate your long-term career satisfaction might differ depending on if you are able to take part in conservation-oriented dive experiences?	0.255	2.060	0.043	0.711	1.406
How long have you been working as an instructor for your current dive operator/shop in Florida? More than one year	-0.211	-1.946	0.055	0.927	1.078
What dive agencies do you teach under? (select all that apply) - Selected Choice PADI	-0.090	-0.839	0.404	0.952	1.050
Why did you decide to become a SCUBA diving instructor? (select all that apply) - Selected Choice To contribute to marine conservation	0.009	0.085	0.933	0.903	1.107
2 (Constant)		1.951	0.055		
Importance	0.158	1.419	0.160	0.865	1.157
How much are you interested in marine conservation?	0.071	0.598	0.551	0.761	1.314

Model	Beta	t	Sig.	Collinearity Statistics	
				Tolerance	VIF
People located in the County I work in rely on a healthy coral reef for resources, income, and recreational activities.	0.130	1.173	0.244	0.878	1.139
Have you ever taught any conservation-oriented SCUBA diving experiences (such as marine debris removals, coral conservation experiences, ecology courses, lionfish removals, etc.)?	0.077	0.723	0.472	0.948	1.055
How do you anticipate your long-term career satisfaction might differ depending on if you are able to take part in conservation-oriented dive experiences?	0.254	2.073	0.041	0.717	1.395
How long have you been working as an instructor for your current dive operator/shop in Florida? More than one year	-0.211	-1.965	0.053	0.930	1.075
What dive agencies do you teach under? (select all that apply) - Selected Choice PADI	-0.089	-0.841	0.403	0.954	1.048
3 (Constant)		2.750	0.007		
Importance	0.160	1.446	0.152	0.866	1.155
People located in the County I work in rely on a healthy coral reef for resources, income, and recreational activities.	0.133	1.209	0.230	0.880	1.136
Have you ever taught any conservation-oriented SCUBA diving experiences (such as marine debris removals, coral conservation experiences, ecology courses, lionfish removals, etc.)?	0.084	0.799	0.427	0.960	1.041
How do you anticipate your long-term career satisfaction might differ depending on if you are able to take part in conservation-oriented dive experiences?	0.220	2.032	0.045	0.907	1.102
How long have you been working as an instructor for your current dive operator/shop in Florida? More than one year	-0.206	-1.931	0.057	0.936	1.068
What dive agencies do you teach under? (select all that apply) - Selected Choice PADI	-0.090	-0.848	0.399	0.954	1.048
4 (Constant)		2.865	0.005		
Importance	0.159	1.437	0.155	0.866	1.155
People located in the County I work in rely on a healthy coral reef for resources, income, and recreational activities.	0.137	1.249	0.215	0.882	1.134
How do you anticipate your long-term career satisfaction might differ depending on if you are able to take part in conservation-oriented dive experiences?	0.227	2.103	0.039	0.913	1.096
How long have you been working as an instructor for your current dive operator/shop in Florida? More than one year	-0.193	-1.833	0.070	0.960	1.042
What dive agencies do you teach under? (select all that apply) - Selected Choice PADI	-0.086	-0.813	0.418	0.956	1.046
5 (Constant)		2.753	0.007		
Importance	0.157	1.423	0.158	0.866	1.154
People located in the County I work in rely on a healthy coral reef for resources, income, and recreational activities.	0.149	1.378	0.172	0.899	1.112
How do you anticipate your long-term career satisfaction might differ depending on if you are able to take part in conservation-oriented dive experiences?	0.238	2.229	0.029	0.928	1.078
How long have you been working as an instructor for your current dive operator/shop in Florida? More than one year	-0.204	-1.959	0.053	0.976	1.024
6 (Constant)		4.136	0.000		
Importance	0.201	1.892	0.062	0.945	1.058
How do you anticipate your long-term career satisfaction might differ depending on if you are able to take part in conservation-oriented dive experiences?	0.227	2.125	0.037	0.932	1.073

Model	Beta	t	Sig.	Collinearity Statistics	
				Tolerance	VIF
How long have you been working as an instructor for your current dive operator/shop in Florida? More than one year	-0.195	-1.870	0.065	0.980	1.021

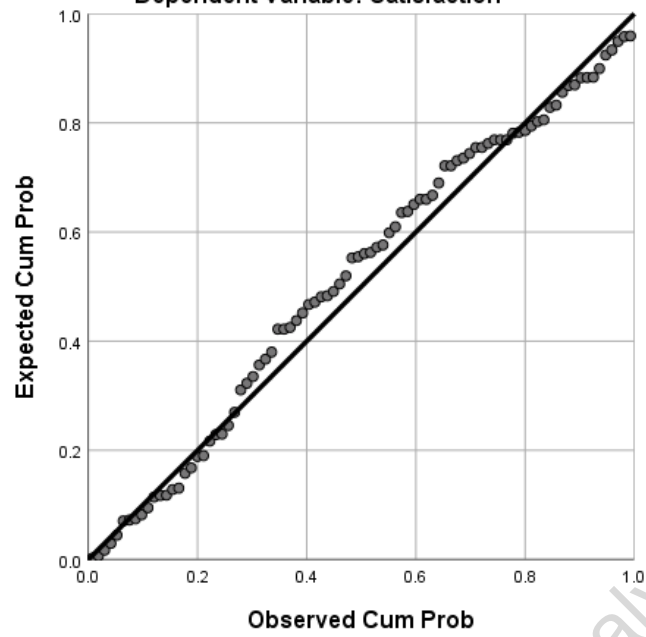
In the final model (Model 6), 'Importance' has a positive Beta (0.201), indicating that as the importance score increases, so does satisfaction. Conversely, 'How long have you been working as an instructor for your current dive operator/shop in Florida? More than one year' has a negative Beta (-0.195), suggesting that longer employment is associated with lower satisfaction scores, according to this model.

The 'How do you anticipate your long-term career satisfaction might differ depending on if you are able to take part in conservation-oriented dive experiences?' variable has a positive Beta (0.227), which suggests that those who believe their career satisfaction would be higher if they could participate in conservation-oriented activities tend to report higher satisfaction currently.

The collinearity statistics, Tolerance and VIF (Variance Inflation Factor), indicate that multicollinearity was not a problem for the final model, as all VIF values are well below the common threshold of 10. The figure below suggests that model residuals are normally distributed (dots are roughly following a diagonal line), which indicate no violations of model assumptions and that the model can be safely interpreted.

Normal P-P Plot of Regression Standardized Residual

Dependent Variable: Satisfaction



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