# Predicting Swiss Tourists' preventive behaviour during COVID-19

*The International Conference on Tourism and Business*

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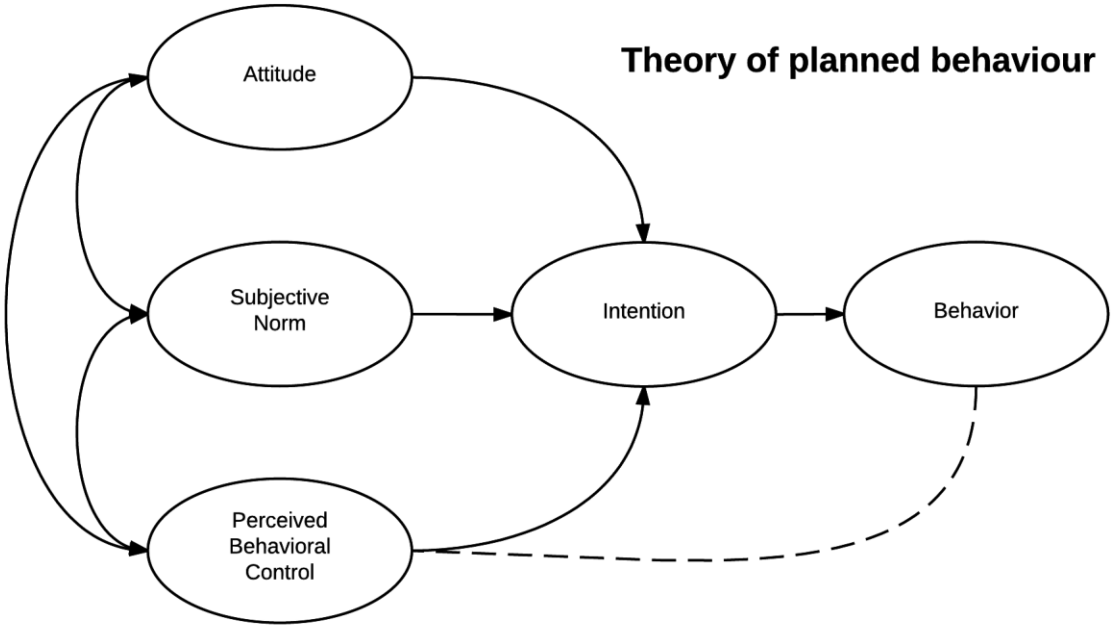
# Research Questions

1) How can a social psychological model be formulated to explain intentions to use NPIs in the domain of touristic travel?
2) Which social psychological factors influence behavioural intentions to implement NPIs while traveling and travel intentions?
3) How can the social-psychological factors be addressed by pointers of interventions to increase the acceptance of NPIs while traveling?

# Theory of Planned Behavior (Ajzen, 1991)




**H1**: Attitudes towards implementing NPIs while travelling has a positive effect on intentions to implement NPIs while travelling.

**H2**: Perceived subjective norms regarding implementation of NPIs while travelling has a positive effect on intentions to implement NPIs while travelling.

**H3**: Perceived behavioural control of implementing NPIs while travelling has a positive effect on intentions to implement NPIs while travelling

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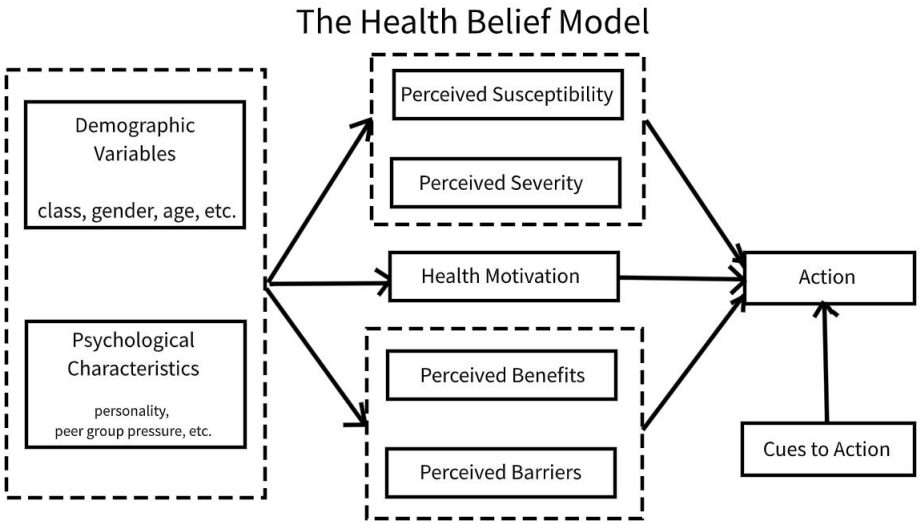
# Health Belief Model (Rosenstock, 1979)




**H4**: Perceived susceptibility of contracting COVID-19 while travelling has a positive effect on intentions to implement NPIs while travelling.

**H5**: Perceived severity of a disease progression with COVID-19 has a positive effect on intentions to implement NPIs while travelling.

**H6**: Perceived benefits of NPIs in reducing the spread of COVID-19 while travelling has a positive effect on intentions to implement NPIs while travelling.

**H7**: Perceived barriers of implementing NPIs while travelling has a negative effect on intentions to implement NPIs while travelling.

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# Value-Expactancy Model (Fishbein & Ajzen, 1975)

$$A_B = \sum b_i \, e_i$$

$A_B = Attitudes\ toward\ the\ behavior$

$b_i = strength\ of\ the\ belief\ that\ the\ behaviour\ will\ lead\ to\ outcome\ i$

$e_i = evaluation\ of\ outcome\ i$

**H8**: Perceived susceptibility of contracting COVID-19 while travelling has a positive effect on attitudes towards implementing NPIs while travelling.

**H9**: Perceives severity of a disease progression with COVID-19 has a positive effect on attitudes towards implementing NPIs while travelling.

**H10**: Perceived benefits of NPIs in reducing the spread of COVID-19 has a positive effect on attitudes towards implementing NPIs while travelling.

**H11**: Perceived barriers of implementing NPIs while travelling has a negative effect on attitudes towards implementing NPIs while travelling.

# Domain-Specific Risk-Taking scale (DOSPERT; Blais & Weber, 2006)

## A Appendix

### A.1 Domain-Specific Risk-Taking (Adult) Scale — RT scale

For each of the following statements, please indicate the likelihood that you would engage in the described activity or behavior if you were to find yourself in that situation. Provide a rating from *Extremely Unlikely* to *Extremely Likely*, using the following scale: [Scales are shown in Table A.]

1. Admitting that your tastes are different from those of a friend. (S)
2. Going camping in the wilderness. (R)
3. Betting a day's income at the horse races. (F)
4. Investing 10% of your annual income in a moderate growth mutual fund. (F)
5. Drinking heavily at a social function. (H/S)
6. Taking some questionable deductions on your income tax return. (E)
7. Disagreeing with an authority figure on a major issue. (S)
8. Betting a day's income at a high-stake poker game. (F)
9. Having an affair with a married man/woman. (E)
10. Passing off somebody else's work as your own. (E)
11. Going down a ski run that is beyond your ability. (R)
12. Investing 5% of your annual income in a very speculative stock. (F)

**H12**: Risk-taking attitudes in the domain of recreation and leisure has a negative effect on intentions to implement NPIs while travelling.

**H13**: Risk-taking attitudes in the domain of recreation and leisure has a negative effect on attitudes towards implementing NPIs while travelling.

# Sampling Procedure

Random stratified sample of the **Swiss Federal Statistical Office** (**FSO**) according to the stratification characteristics language, region, and gender.

**Field time: March 9, 2021 – April 30. 2021**

**Table 1. S**ample response rate

| | n | % |
|---|---|---|
| Gross sample | 4,530 | 100 |
| Non-sampling relevant losses (moved, deceased, wrong address, etc.) | 164 | 4 |
| Net *sample* | 4,366 | 100 |
| Response online | 390 | 9 |
| Response by pen and paper | 1,293 | 30 |
| Response total | 1,683 | 39 |

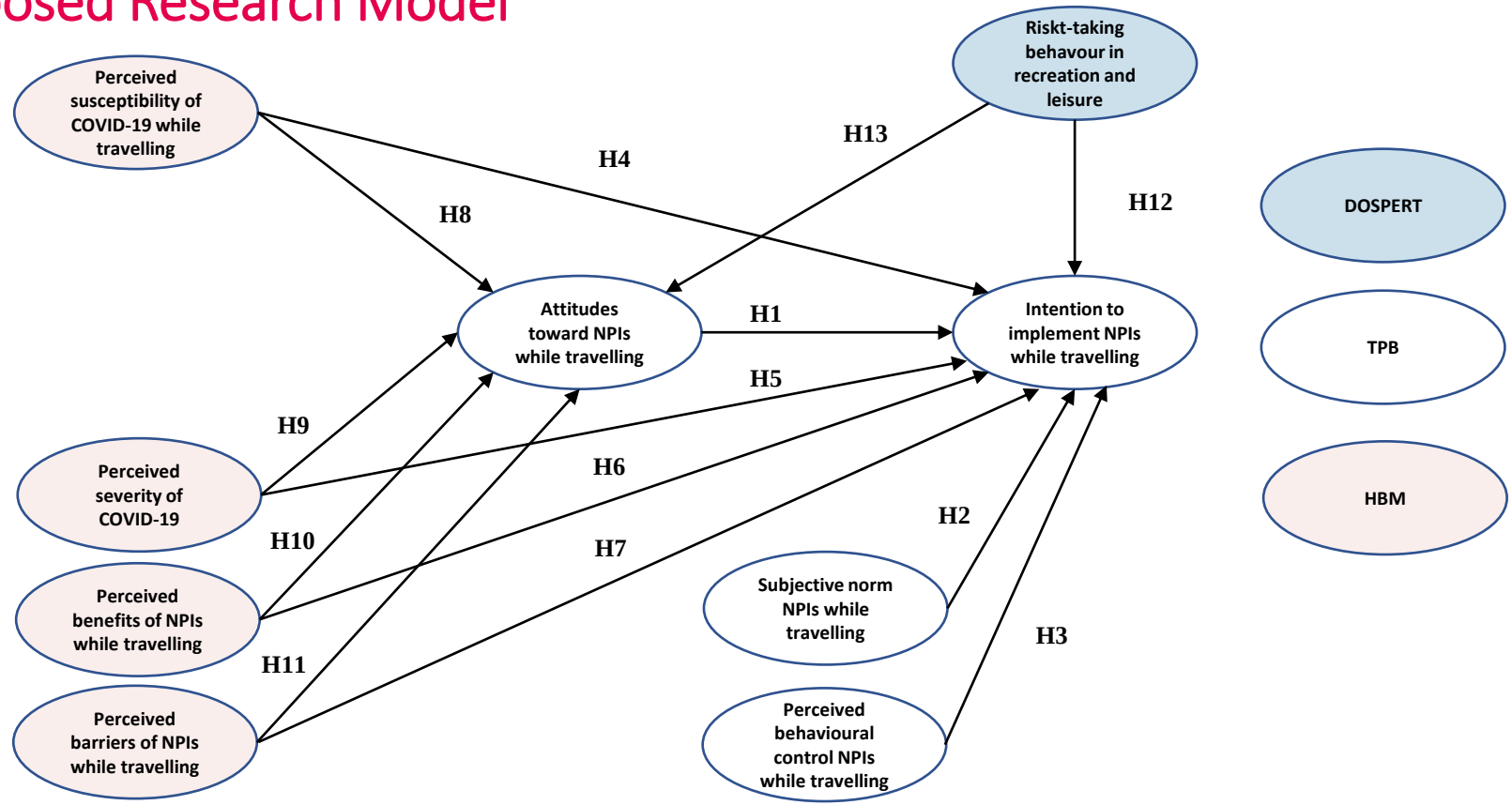
*Source:* own survey data

**Table 2.** Response rate differentiated by stratification characteristics

| | | sample [%] | Swiss census [%] |
|---|---|---|---|
| **Language** | **Gender** | | |
| German | male | 33 | 36 |
| | female | 35 | 36 |
| French | male | 12 | 12 |
| | female | 15 | 21 |
| Italian | male | 2 | 2 |
| | female | 3 | 2 |
| **Age Groups (years)** | 18-30 | 11 | 19 |
| | 31-55 | 38 | 44 |
| | 56-65 | 21 | 16 |
| | 65+ | 28 | 21 |
| **Education** | Compulsory and vocational training | 47 | 46 |
| | Grammar school | 8 | 9 |
| | Higher education | 20 | 15 |
| | Tertiary education | 25 | 30 |

*Source:* own data compared with FSO census for 2021

# Proposed Research Model



# Results: Measurement Model

| Constructs | Example item | No. items | α | CR | AVE |
|---|---|---|---|---|---|
| **1** Risk-taking-behaviour | Would you stay in a tent out in the wild, far removed from any town or campsite? (1 = *very unlikely* to 5 = *very likely*) | 3 | 0.751 | 0.756 | 0.507 |
| **2** Susceptibility COVID-19 | It's likely that I will be exposed to the coronavirus when travelling at this time. (1 = *do not agree at all* to 5 = *agree entirely*) | 3 | 0.924 | 0.924 | 0.802 |
| **3** Severity COVID-19 | Getting infected with the coronavirus would have severe consequences for my physical health. (1 = *do not agree at all* to 5 = *agree entirely*) | 3 | 0.871 | 0.872 | 0.695 |
| **4** Benefits NPIs | The protective measures reduce the risk of infection when people travel. (1 = *do not agree at all* to 5 = *agree entirely*) | 3 | 0.868 | 0.870 | 0.691 |
| **5** Barriers NPIs | For me, the effort of applying protective measures when travelling is greater than the benefits. (1 = *do not agree at all* to 5 = *agree entirely*) | 3 | 0.786 | 0.818 | 0.609 |
| **6** Attitudes NPIs | I find applying the protective measures against the coronavirus when travelling (e.g., wearing masks, quarantining when entering a country, distancing, etc.) to be … (1 = *bad/etc.* to 5 = *good/etc.*) | 3 | 0.938 | 0.941 | 0.839 |
| **7** Subjective norm NPIs | Most people who are important to me support the idea of applying protective measures when travelling. (1 = *does not apply at all* to 5 = *applies entirely*) | 3 | 0.941 | 0.943 | 0.845 |
| **8** Behavioural control NPIs | It's easy for me to apply protective measures when travelling. (1 = *does not apply at all* to 5 = *applies entirely*) | 3 | 0.812 | 0.814 | 0.593 |
| **9** Behavioural Intentions NPIs | I firmly intend to apply protective measures on my next trip, even though they are voluntary. (1 = *does not apply at all* to 5 = *applies entirely*) | 3 | 0.966 | 0.966 | 0.877 |

*Note: α = Cronbach's alpha, CR = Composite reliablity, AVE = Average variance extracted.*

# Results: Discriminant Validity (Fornell-Larcker Criterion)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|---|
| **1** Risk-taking-behaviour | **0.712** | | | | | | | | |
| **2** Susceptibility COVID-19 | -0.260 | **0.896** | | | | | | | |
| **3** Severity COVID-19 | -0.359 | 0.506 | **0.834** | | | | | | |
| **4** Benefits NPIs | -0.154 | 0.058 | 0.222 | **0.831** | | | | | |
| **5** Barriers NPIs | 0.056 | 0.000 | -0.057 | -0.327 | **0.781** | | | | |
| **6** Attitudes NPIs | -0.290 | 0.433 | 0.445 | 0.395 | -0.336 | **0.916** | | | |
| **7** Subjective norm NPIs | -0.201 | 0.340 | 0.355 | 0.339 | -0.274 | 0.652 | **0.919** | | |
| **8** Behavioural control NPIs | -0.154 | 0.257 | 0.214 | 0.370 | -0.266 | 0.558 | 0.544 | **0.770** | |
| **9** Behavioural Intention NPIs | -0.302 | 0.381 | 0.436 | 0.279 | -0.253 | 0.626 | 0.542 | 0.492 | **0.937** |

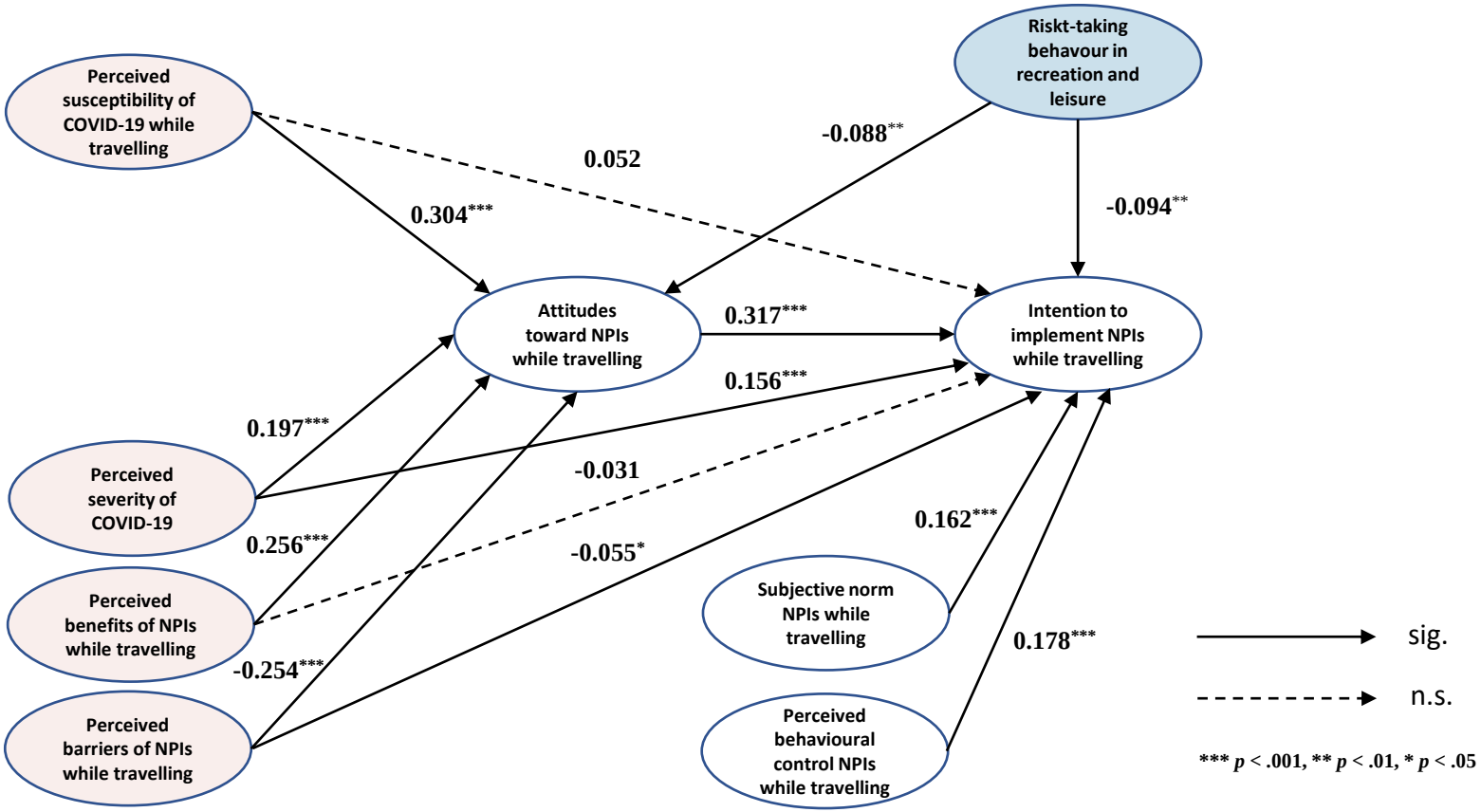
*Note*. AVE = average variance extracted. The off-diagonal elements are the factor correlations, and the diagonal elements are the squared root of AVE (bold).

# Results: Estimates predicting Intentions and Attitudes

| Paths coefficients | Standardized Coefficient | Hypothesis Supported |
|---|---|---|
| *Estimates predicting intentions* | | |
| Hypothesis 1: Attitudes NPIs → Behavioural Intention NPIs | 0.317*** | Yes |
| Hypothesis 2: Subjective norm NPIs → Behavioural Intention NPIs | 0.162*** | Yes |
| Hypothesis 3: Behavioural control NPIs → Behavioural Intention NPIs | 0.178*** | Yes |
| Hypothesis 4: Susceptibility COVID-19 → Behavioural Intention NPIs | 0.052 | No |
| Hypothesis 5: Severity COVID-19 → Behavioural Intention NPIs | 0.156*** | Yes |
| Hypothesis 6: Benefits NPIs → Behavioural Intention NPIs | -0.031 | No |
| Hypothesis 7: Barriers NPIs → Behavioural Intention NPIs | -0.055* | Yes |
| Hypothesis 12: Risk-taking behaviour → Behavioural Intention NPIs | -0.088** | Yes |
| *Estimates predicting attitudes* | | |
| Hypothesis 8: Susceptibility COVID-19 → Attitudes NPIs | 0.304*** | Yes |
| Hypothesis 9: Severity COVID-19 → Attitudes NPIs | 0.197*** | Yes |
| Hypothesis 10: Benefits NPIs → Attitudes NPIs | 0.256*** | Yes |
| Hypothesis 11: Barriers NPIs → Attitudes NPIs | -0.254*** | Yes |
| Hypothesis 13: Risk-taking-behaviour → Attitudes NPIs | -0.094** | Yes |

*Note.* * $p < .05$, ** $p < .01$, *** $p < .001$.

$\chi^2 = 1145.130$, df = 316, $p < 0.001$, RMSEA = 0.044, CFI = 0.971, TLI = 0.965, SRMR = 0.059



# Results: Total and indirect Effects

| Constructs | Total effect | Indirect effect | Hypothesis supported |
|---|---|---|---|
| Hypothesis 14: Susceptibility COVID-19 | 0.148*** | 0.096*** | Yes |
| Hypothesis 15: Severity COVID-19 | 0.218*** | 0.063*** | Yes |
| Hypothesis 16: Benefits NPIs | 0.050 | 0.081*** | Yes |
| Hypothesis 17: Barriers NPIs | -0.136*** | -0.081*** | Yes |
| Hypothesis 18: Risk-taking-behaviour | -0.118*** | -0.030** | Yes |

*Note.* * $p < .05$, ** $p < .01$, *** $p < .001$.

# Conclusions and Limitations

## Conclusions

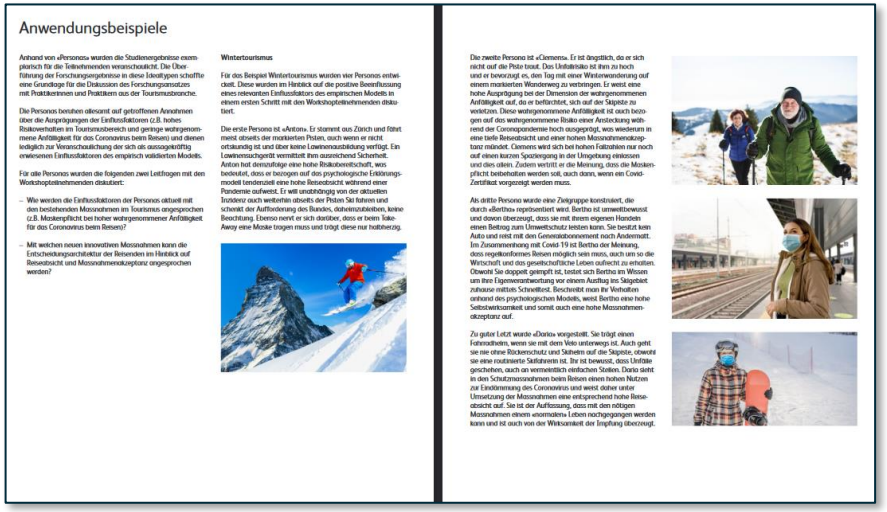
- Attitudes are the strongest predictor of behavioural intentions.
- Perceived susceptibility and perceived benefits are the strongest predictors of attitudes.
- Perceived susceptibility and perceived benefits are fully mediated through attitudes

## Limitations

- Cross-sectional study
- Behaviour was not measured

# Pointers to Interventions

«The first stage involves the development and evaluation of a psychosocial model of the putative determinants of a particular health behavior. This may be a hybrid model that draws constructs from existing theories and models, and it may also integrate constructs from related areas of scholarship. The second stage involves translation of the psychosocial model into a multicomponent intervention to encourage behavior adoption. Here, each model construct is transformed into a component of the intervention and becomes a candidate mechanism by which the intervention may bring about behavior change." (Aiken, 2011, p. 612)



Anwendungsbeispiele

Anhand von «Personas» wurden die Studienergebnisse exemplarisch für die Teilnehmenden veranschaulicht. Die Überführung der Forschungsergebnisse in diese Idealtypen schaffte eine Grundlage für die Diskussion des Forschungsansatzes mit Praktikerinnen und Praktikern aus der Tourismusbranche.

Die Personas beruhen allesamt auf getroffenen Annahmen über die Ausprägungen der Einflussfaktoren (z.B. hohes Risikovermeiden im Tourismusbereich und geringe wahrgenommene Anfälligkeit für das Coronavirus beim Reisen) und dienen lediglich zur Veranschaulichung der sich als aussagekräftig erwiesenen Einflussfaktoren des empirisch validierten Modells.

Für alle Personas wurden die folgenden zwei Leitfragen mit den Workshopteilnehmenden diskutiert:

- Wie werden die Einflussfaktoren der Personas aktuell mit den bestehenden Massnahmen im Tourismus angesprochen (z.B. Maskenpflicht bei hoher wahrgenommener Anfälligkeit für das Coronavirus beim Reisen)?
- Mit welchen neuen innovativen Massnahmen kann die Entscheidungsarchitektur der Reisenden im Hinblick auf Reiseabsicht und Massnahmenakzeptanz angesprochen werden?

Wintertourismus

Für das Beispiel Wintertourismus wurden vier Personas entwickelt. Diese wurden im Hinblick auf die positive Beeinflussung eines relevanten Einflussfaktors des empirischen Modells in einem ersten Schritt mit den Workshopteilnehmenden diskutiert.

Die erste Persona ist «Anton». Er stammt aus Zürich und fährt meist abseits der markierten Pisten, auch wenn er nicht ortskundig ist und über keine Lawinenausbildung verfügt. Ein Lawinensuchgerät vermittelt ihm ausreichend Sicherheit. Anton hat demzufolge eine hohe Risikobereitschaft, was bedeutet, dass er bezogen auf das psychologische Erklärungsmodell tendenziell eine hohe Reiseabsicht während einer Pandemie aufweist. Er will unabhängig von der aktuellen Inzidenz auch weiterhin abseits der Piste Ski fahren und schenkt der Aufforderung des Bundes, daheimzubleiben, keine Beachtung. Ebenso nervt er sich darüber, dass er beim Take-Away eine Maske tragen muss und trägt diese nur halbherzig.



Die zweite Persona ist «Clemens». Er ist ängstlich, da er sich nicht auf die Piste traut. Das Unfallrisiko ist ihm zu hoch und er bevorzugt es, den Tag mit einer Winterwanderung auf einem markierten Wanderweg zu verbringen. Er weist eine hohe Ausprägung bei der Dimension der wahrgenommenen Anfälligkeit auf, da er befürchtet, sich auf der Skipiste zu verletzen. Diese wahrgenommene Anfälligkeit ist auch bezogen auf das wahrgenommene Risiko einer Ansteckung während der Coronopandemie hoch ausgeprägt, was wiederum in eine tiefe Reiseabsicht und einer hohen Massnahmenakzeptanz mündet. Clemens wird sich bei hohen Fallzahlen nur noch auf einen kurzen Spaziergang in der Umgebung einlassen und dies allein. Zudem vertritt er die Meinung, dass die Maskenpflicht beibehalten werden soll, auch dann, wenn ein Covid-Zertifikat vorgezeigt werden muss.



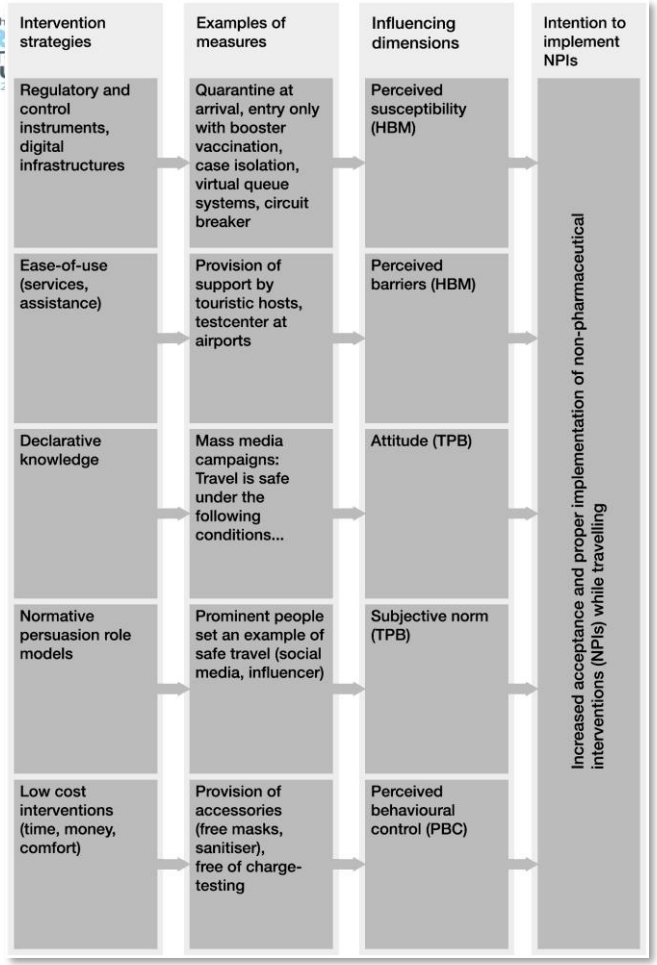
Als dritte Persona wurde eine Zielgruppe konstruiert, die durch «Bertha» repräsentiert wird. Bertha ist umweltbewusst und davon überzeugt, dass sie mit ihrem eigenen Handeln einen Beitrag zum Umweltschutz leisten kann. Sie besitzt kein Auto und reist mit dem Generalabonnement nach Andermatt. Im Zusammenhang mit Covid-19 ist Bertha der Meinung, dass regelkonformes Reisen möglich sein muss, auch um so die Wirtschaft und das gesellschaftliche Leben aufrecht zu erhalten. Obwohl Sie doppelt geimpft ist, testet sich Bertha im Wissen um ihre Eigenverantwortung vor einem Ausflug ins Skigebiet zuhause mittels Schnelltest. Beschreibt man ihr Verhalten anhand des psychologischen Modells, weist Bertha eine hohe Selbstwirksamkeit und somit auch eine hohe Massnahmenakzeptanz auf.



Zu guter Letzt wurde «Dario» vorgestellt. Sie trägt einen Fahrradhelm, wenn sie mit dem Velo unterwegs ist. Auch geht sie nie ohne Rückenschutz und Skihelm auf die Skipiste, obwohl sie eine routinierte Skifahrerin ist. Ihr ist bewusst, dass Unfälle geschehen, auch an vermeintlich einfachen Stellen. Dario steht in den Schutzmassnahmen beim Reisen einen hohen Nutzen zur Eindämmung des Coronovirus und weist daher unter Umsetzung der Massnahmen eine entsprechend hohe Reiseabsicht auf. Sie ist der Auffassung, dass mit den nötigen Massnahmen einem «normalen» Leben nachgegangen werden kann und ist auch von der Wirksamkeit der Impfung überzeugt.



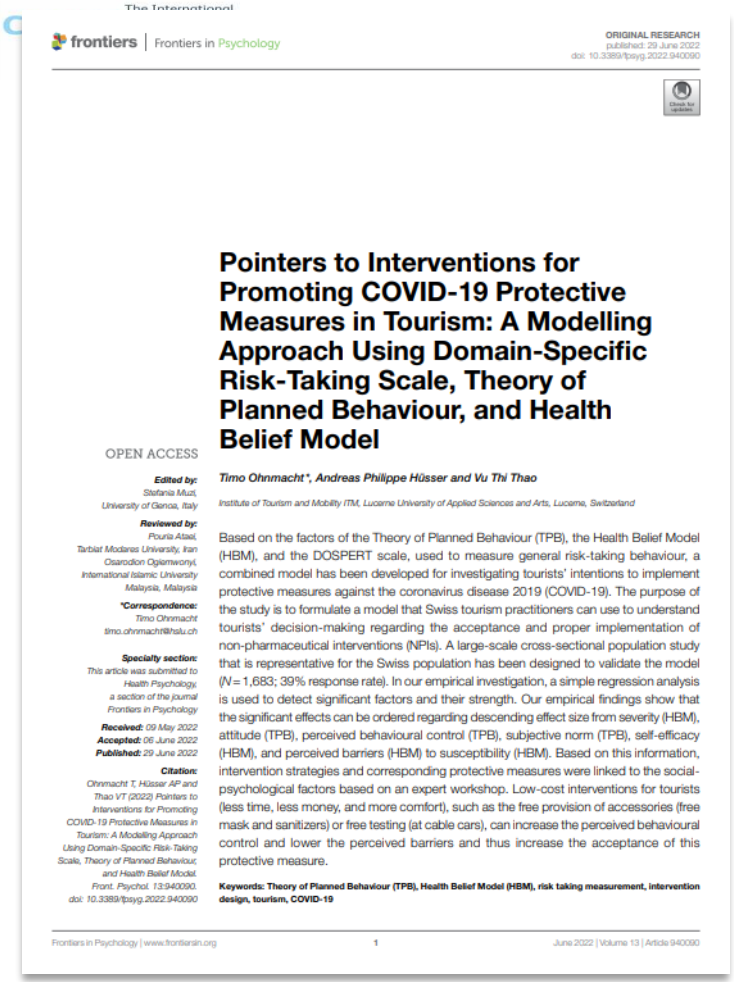
Source: Oberholzer et al. (2022)




Source: Ohnmacht et al. (2022)

# Pointers to Interventions

Ohnmacht, T., Hüsser, A. P., & Vu, T. T. (2022). Pointers to interventions for COVID-19 protective measures in tourism: A modelling appraoch using domain-specific risk-taking scale, theory of planned behaviour, and health belief model. *Frontiers in Psychology, 13*, Article 940090. https://doi.org/10.3389/fpsyg.2022.940090



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## Pointers to Interventions for Promoting COVID-19 Protective Measures in Tourism: A Modelling Approach Using Domain-Specific Risk-Taking Scale, Theory of Planned Behaviour, and Health Belief Model

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Based on the factors of the Theory of Planned Behaviour (TPB), the Health Belief Model (HBM), and the DOSPERT scale, used to measure general risk-taking behaviour, a combined model has been developed for investigating tourists' intentions to implement protective measures against the coronavirus disease 2019 (COVID-19). The purpose of the study is to formulate a model that Swiss tourism practitioners can use to understand tourists' decision-making regarding the acceptance and proper implementation of non-pharmaceutical interventions (NPIs). A large-scale cross-sectional population study that is representative for the Swiss population has been designed to validate the model ($N = 1,683$; 39% response rate). In our empirical investigation, a simple regression analysis is used to detect significant factors and their strength. Our empirical findings show that the significant effects can be ordered regarding descending effect size from severity (HBM), attitude (TPB), perceived behavioural control (TPB), subjective norm (TPB), self-efficacy (HBM), and perceived barriers (HBM) to susceptibility (HBM). Based on this information, intervention strategies and corresponding protective measures were linked to the social-psychological factors based on an expert workshop. Low-cost interventions for tourists (less time, less money, and more comfort), such as the free provision of accessories (free mask and sanitizers) or free testing (at cable cars), can increase the perceived behavioural control and lower the perceived barriers and thus increase the acceptance of this protective measure.

**Keywords: Theory of Planned Behaviour (TPB), Health Belief Model (HBM), risk taking measurement, intervention design, tourism, COVID-19**

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