

Overtourism - Challenges in Mountain National Parks



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Question

What similarities do they have between...



Visitors: 4 733 000



Visitors: 1 467 000



Visitors: 4 699 000



Visitors: 1 322 000



Comparison: area / visitors / trails

National Park	Area km2	Number of visitors	Visitors/km2	Hiking trails	Visitors/1 km trail
Stołowe Mts	63.4	1 322 000	20 852	120	11 017
Karkonosze	59.5	2 329 000	39 136	120	19 408
Tatra	211.8	4 699 000	22 185	275	17 087
Pieniny	23.5	973 000	41 404	36	27 028
Krkonošský	385.0	5 763 996	14 971	700	8 234
Harz	247.0	1 746 000	7 069	600	2 910
Saxony Switzerland	93.5	1 712 000	18 310	1 200	1 427
Cevennes	937.0	2 000 000	2 134	5 000	400
Lake District	2 172.0	18 100 000	8 333	3 100	5 839
Snowdonia	2 176.0	4 270 000	1 962	2 395	1 783
Triglavski	880.0	2 000 000	2 273	800	2 500
Plitvicke Lake	296.8	1 450 000	4 885	120	12 083
Great Smoky Mts.	2 110.4	13 297 647	6 301	1 280	10 389
Grand Canyon	4 926.7	4 733 705	961	640	7 396
Zion	539.0	4 623 238	8 577	145	31 884
Yellowstone	8 980.0	4 501 382	501	1 770	2 543
Karkonosze PA's	444.5	8 092 996	18 207	820	9 870

Number of visitors in National Parks

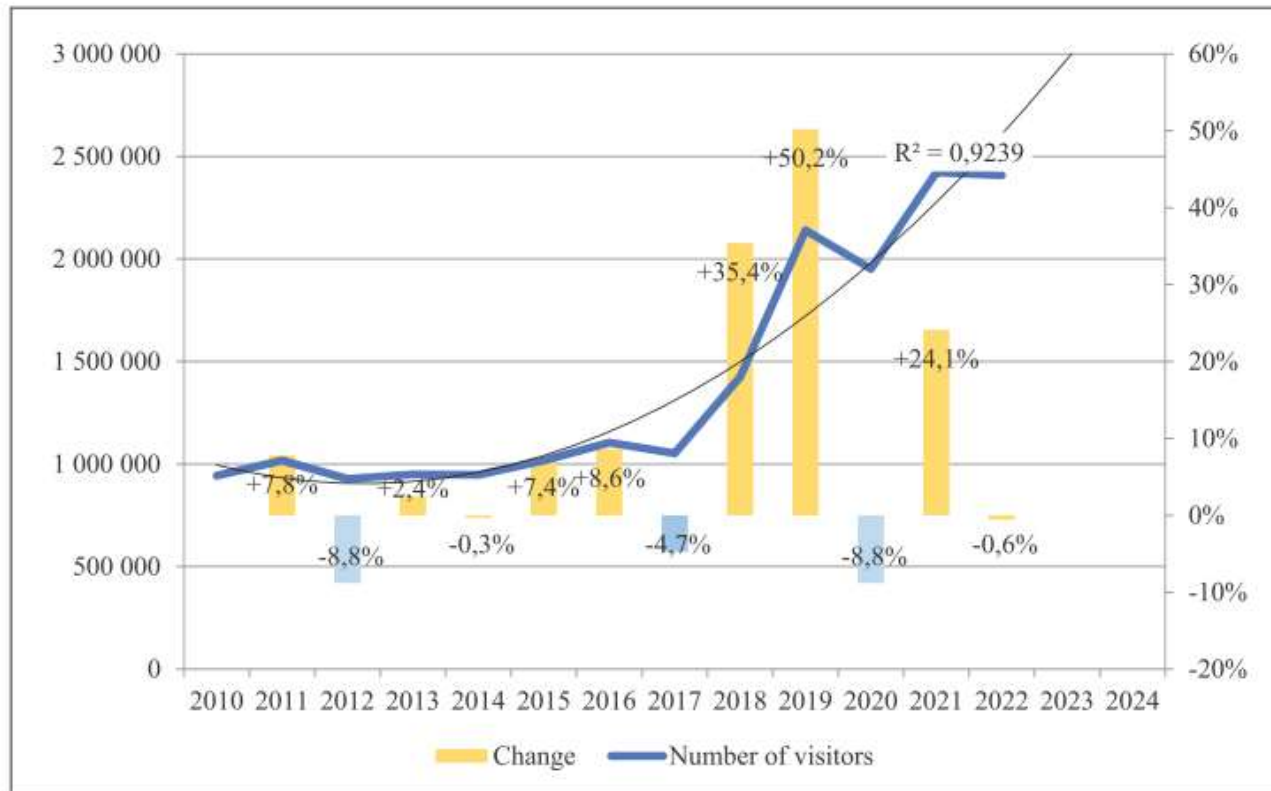


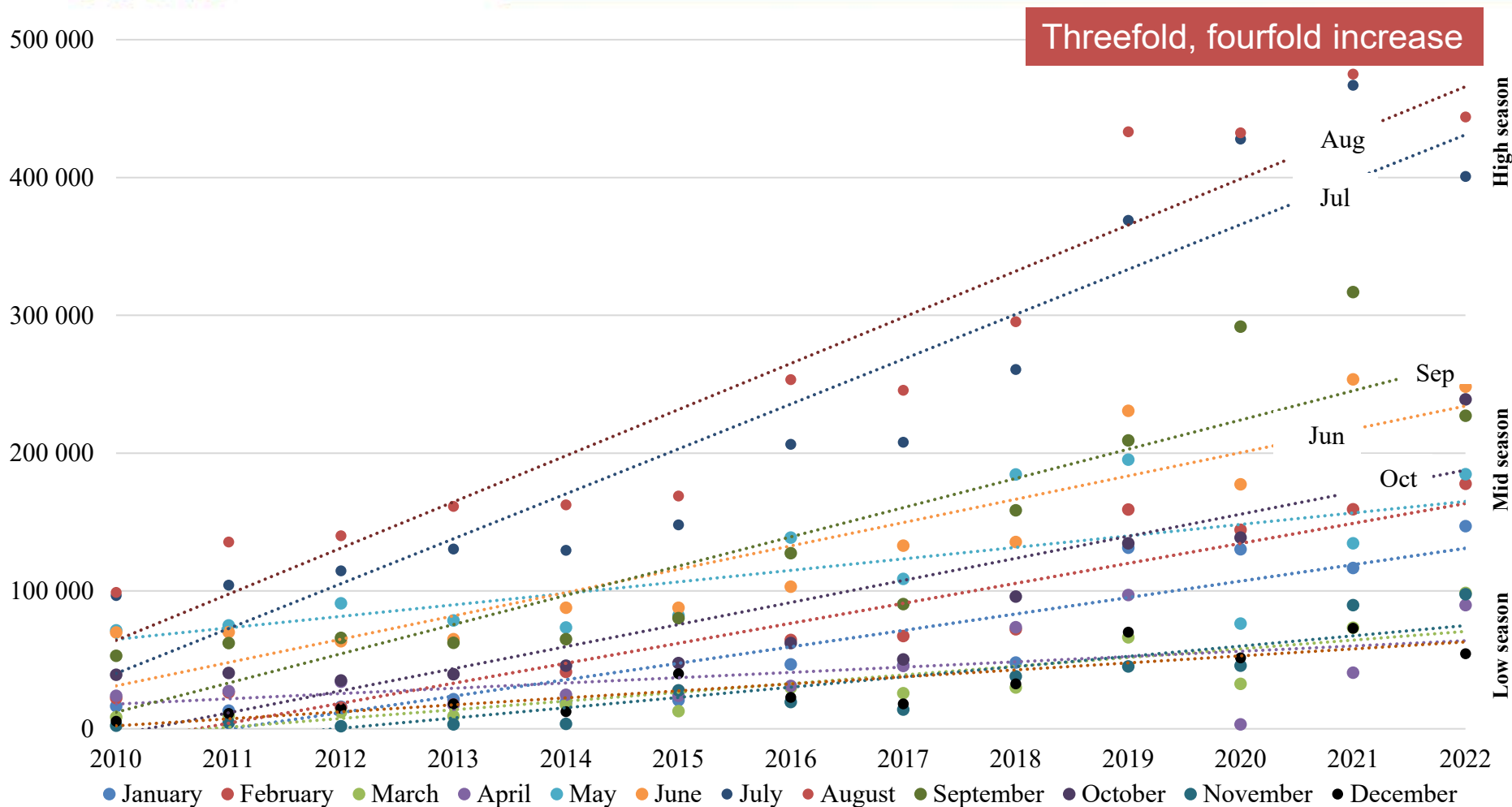
Figure 2. Annual visitors at KNP between 2010-2022.

Source:

Rogowski M., Gryszel P., Kowalska W. 2023, Assessment of seasonality and variability of visitor flow in a national park - a method for regional tourism policy, (Case: Karkonosze National Park, Poland), Folia Turistica, 61, 73-95, <https://doi.org/10.5604/01.3001.0054.2888>



Number of monthly visitors in Karkonosze National Park



Source:

Rogowski M., Gryszel P., Kowalska W. 2023, Assessment of seasonality and variability of visitor flow in a national park - a method for regional tourism policy, (Case: Karkonosze National Park, Poland), Folia Turistica, 61, 73-95, <https://doi.org/10.5604/01.3001.0054.2888>



Number of visitors in Polish national parks – summary / forecast

1. The number of visitors **doubled/tripled in 2010- 2023**
2. **The temporal concentration** of visitors over time is **very high** (Ginni Index: 0.86-0.92; [0-1])
 - July - August; $\approx 1/3$ of yearly visitors
 - May - September; $\approx 2/3$ of yearly visitors
 - November - March; $\approx 1/5$ % of yearly visitors -> **doubled/tripled**

The largest increase in visitors -> off-season

Forecast

- The Low season **will disappear**
- **A decrease in seasonality** due a **strong increase** the numer of visitors in the off-season
- New records in daily/monthly/annual visitors, despite only slight increases in visitor number during the high season

->INCREASE IN OVERTOURISM

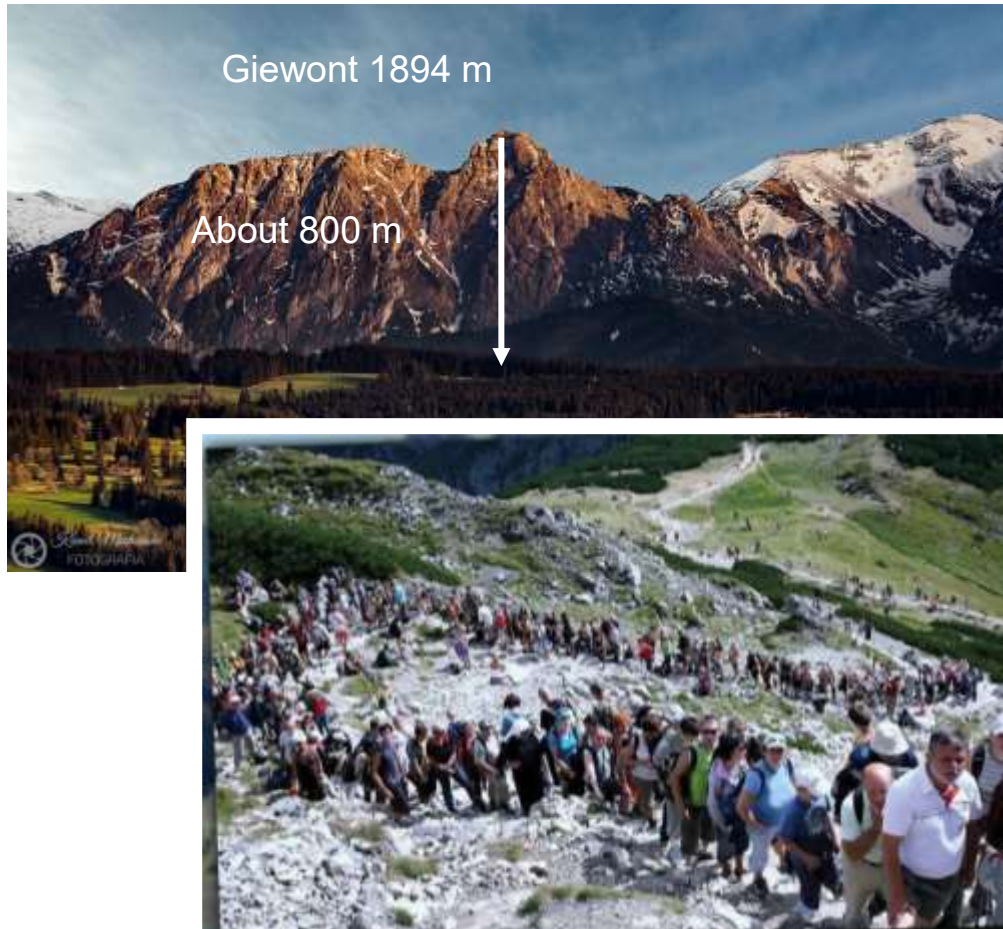
Source:

Rogowski M., Zawilińska B., Hibner J. 2025, Managing tourism pressure: Exploring tourist traffic patterns and seasonality in mountain national parks to alleviate overtourism effects, Journal of Environmental Management, 373, 123430, <https://doi.org/10.1016/j.jenvman.2024.123430>



Overtourism in PNAs - biggest challenge in post-Covid-19 period

Tatra Mts. NP





Overtourism in PNAs - biggest challenge in post-Covid-19 period

Karkonosze NP



12 000 visitors on Śnieżka per day



Night hike to Śnieżka summit on New Years Eve



Where are you going? What do you want to do? Event calendar



Nature

The Krkonoše Mountains are among the most visited European national parks.

May 16, 2023

Giant Mountains national park visit Vrchlabí Krkonoše National Park
museum valley peat bog nature trail Krkonoše National Park Administration
ice age analysis Mole Benecko Iznok Lazne

The current analysis of mobile operator data shows that, after a decline due to the Covid-19 pandemic and related measures in 2022, visitor numbers to the Giant Mountains returned to an ever-increasing trajectory and reached a new record in 2023. In 2023, the Giant Mountains recorded a total of 12,111,212 visits, approximately 250,000 more than in 2018. The Giant Mountains National Park itself recorded 5,763,996 visits in 2023, almost a million more than in 2018.

Overtourism in PNAs - biggest challenge in post-Covid-19 period

Stołowe Mts. NP



Traffic jam at the public road inside the National Park



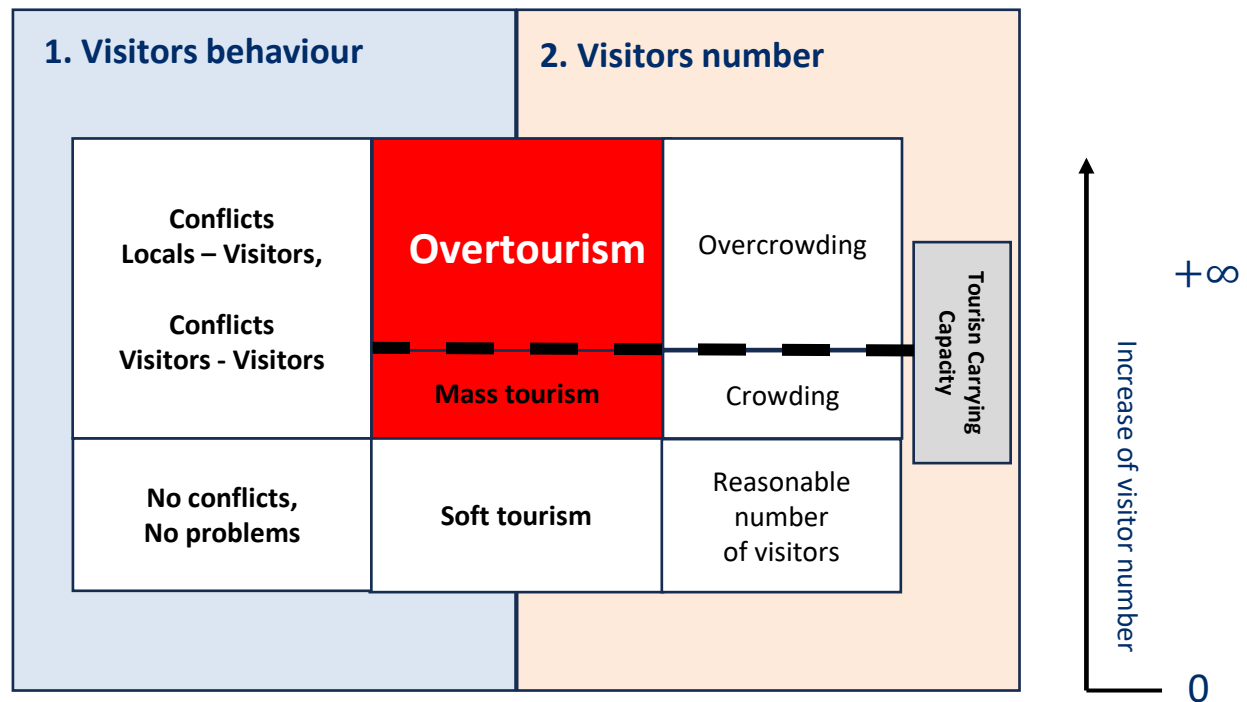


Overtourism in PNAs - biggest challenge in post-Covid-19 period

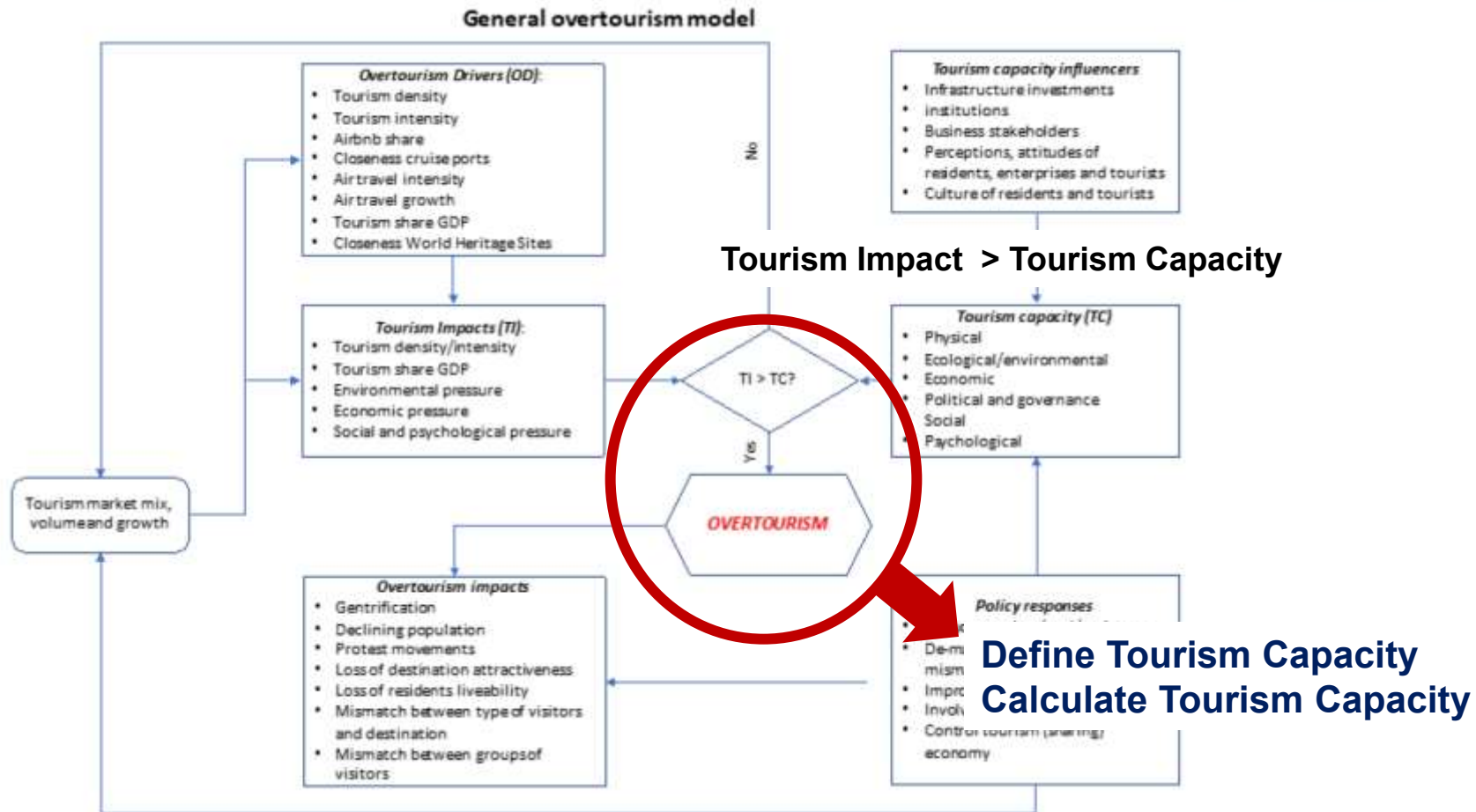
Visitor Monitoring System

The long-term or permanent observation ... of the effects and development of a ... measure (Birkmann 2005: 668)

Visitors description



Overtourism in PNAs - biggest challenge in post-Covid-19 period



Source:

Peeters, P., Gössling, S., Klijs, J., Milano, C., Novelli, M., Dijkmans, C., Eijgelaar, E., Hartman, S., Heslinga, J., Isaac, R., Mitas, O., Moretti, S., Nawijn, J., Papp, B. and Postma, A., 2018, Research for TRAN Committee - Overtourism: impact and possible policy responses, European Parliament, Policy Department for Structural and Cohesion Policies, Brussels

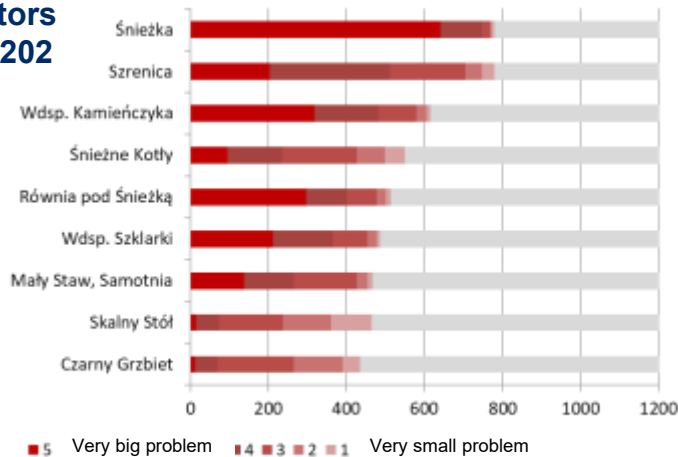


Overtourism in Karkonosze NP. - diagnosis

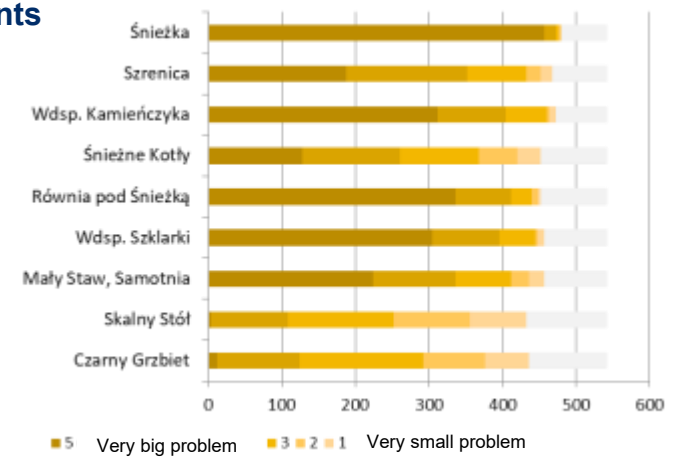
Survey research

Assessment of **the problem of overtourism** in the locations indicated by respondents in scale 5 (very big problem)
- 1 (very small problem); 0 (no problem)

Visitors N=1202



Residents N=524



	Mean	SD
Śnieżka	4,76	0,54
Szrenica	3,78	1,24
Kamieńczyk Waterfall	4,22	0,87
Śnieżne Kotły	3,28	1,89
Równia pod Śnieżką	4,27	0,78
Szklarka Waterfall	4,09	0,89
Mały Staw, Samotnia	3,75	1,12
Skalny Stół	2,47	1,30
Czarny Grzbiet	2,69	1,67

	Mean	SD
Śnieżka	4,93	0,09
Szrenica	4,04	1,08
Kamieńczyk Waterfall	4,47	0,66
Śnieżne Kotły	3,60	1,60
Równia pod Śnieżką	4,62	0,43
Szklarka Waterfall	4,49	0,66
Mały Staw, Samotnia	4,09	1,11
Skalny Stół	2,67	1,06
Czarny Grzbiet	2,84	1,58

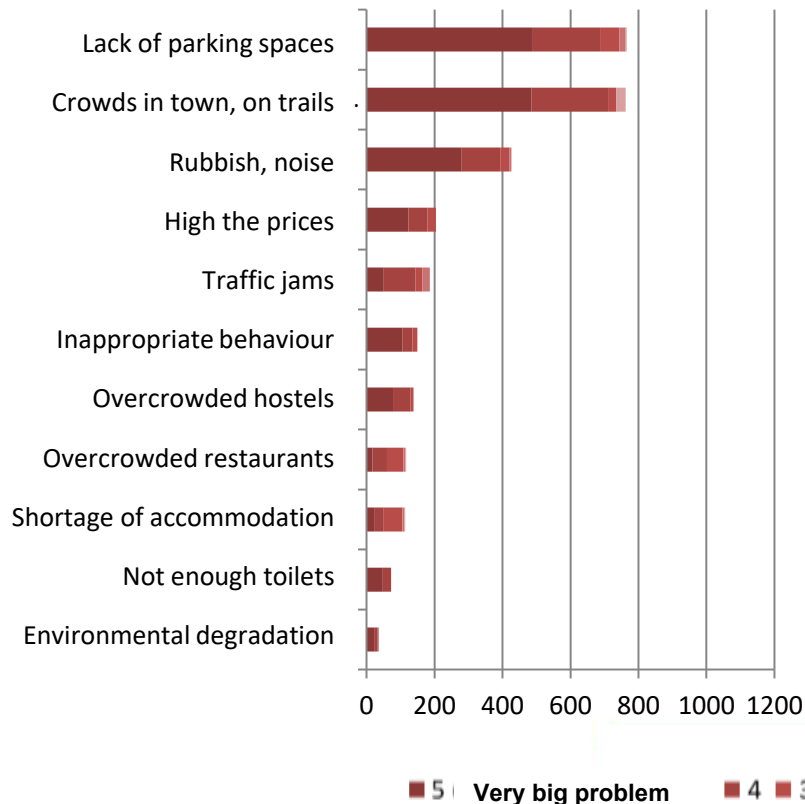


Overtourism in Karkonosze NP. - diagnosis

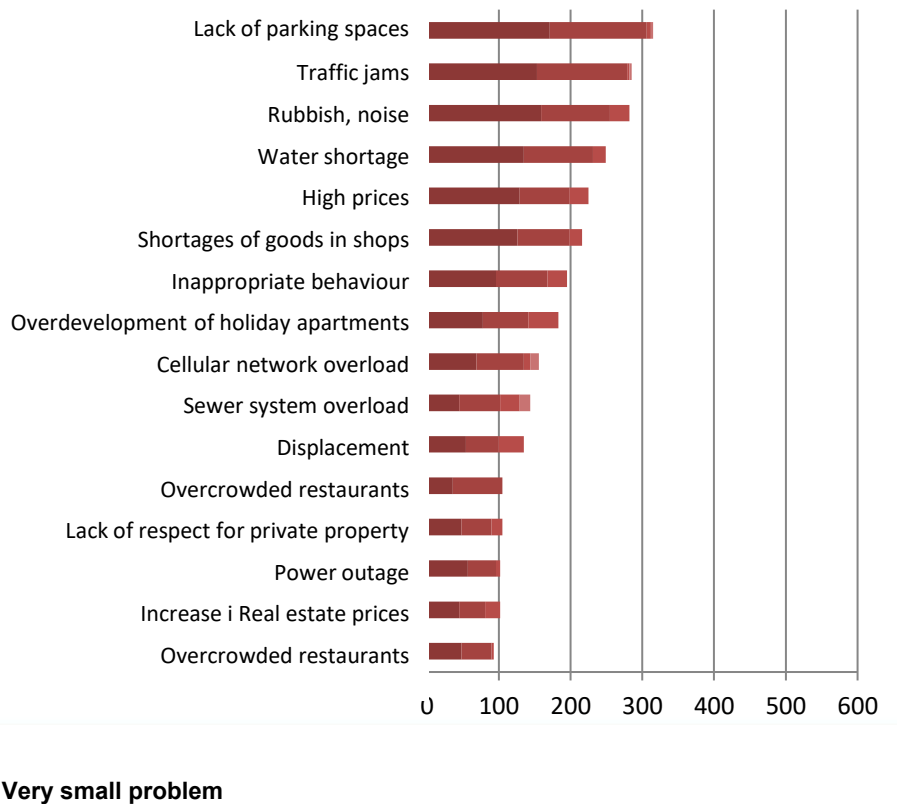
Survey research

Assessment of **the problem cause by overtourism** in scale 5 (very big problem) - 1 (very small problem); 0 (no problem)

Visitors N=1202



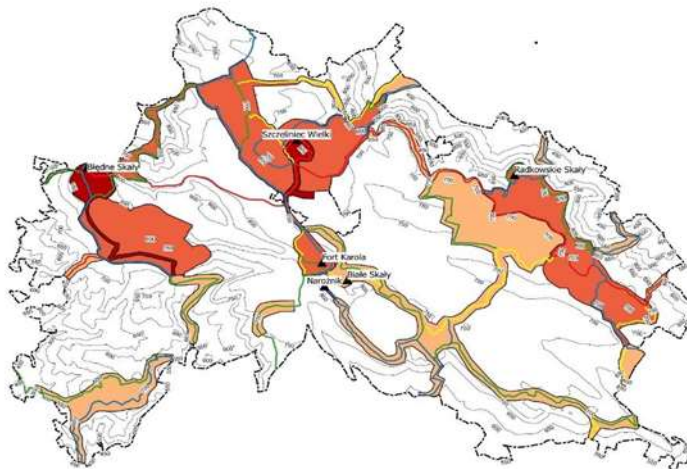
Residents N=524



Overtourism - solutions

Park zoning and designated use areas

- High visitor flow
- Medium visitor flow
- Low visitor flow



Increase fees in general, or during peak times





Overtourism - solutions

Establish a reservation system



Plitvice Lakes National Park e-Ticket system

TICKETS

Welcome to e ticket system of Plitvice Lakes National Park

Please select the desired date and then time of visit to Plitvice Lakes National Park. The system will display the available tickets depending on the entered date and time of the visit.

Tickets can also be purchased on spot, at the entrances of the Plitvice Lakes National Park, on the day of your visit. Check availability via link.

tel: +385 (0)53 751 928 e-mail: support@znp-plitvicka-jezera.hr

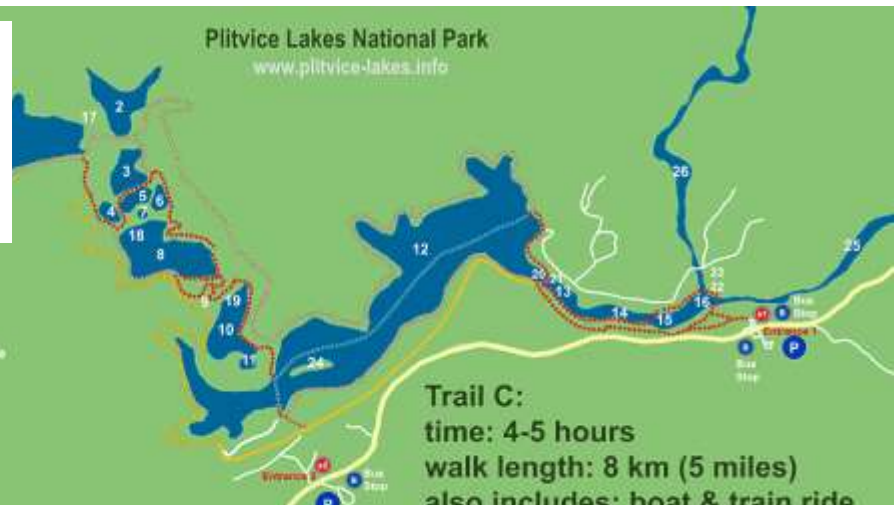
Date of arrival:
31. May 2023.

Time:
09:00

ENTRANCE 1 193

ENTRANCE 2 254

- Upper Lakes:
- 1. Prošćansko
 - 2. Čiglavac
 - 3. Okrugljak
 - 4. Batinevac
 - 5. Veliko jezero
 - 6. Malo jezero
 - 7. Vir
 - 8. Galovac
 - 9. Milno jezero
 - 10. Gradinsko
 - 11. Brgat
 - 12. Kozjak
- Lower Lakes:
- 13. Milanovac
 - 14. Gavanovac
- Waterfalls:
- 17. Labudovački slap
 - 18. Galovački Buk
 - 19. Veliki Pršćavac
 - 20. Stupovi Milke Trnine
 - 21. Milanovački Slap
 - 22. Bastavci
 - 23. Veliki Slap
- Islet:
- 24. Stefanijin otok
- Rivers:
- 25. Krupa



Source:

Pechlaner H., Innerhofer E., Erschbamer G., 2020, Overtourism: Tourism Management and Solutions (Contemporary Geographies of Leisure, Tourism and Mobility), Routledge

Overtourism - solutions

Use apps and social media to inform visitors about crowding levels



Overtourism - solutions

Allow only certain types of vehicles
for designated parking lots within the parks



Free transportation to reduce traffic jams within the
parks



Overtourism - solutions

Enhance visitor experience by hiring more employees

More NP. Staff responsible for managing tourist traffic and providing educational services, as well as volunteers



Encourage visits to lesser-known national parks



#weekendwithoutŚnieżka



Overtourism - solutions in Polish NP's

Drawieński NP



KUP	KOMENTARZ
Spiwy kajakowe Rzeką Drawa - online Bwakowanie - online Wędrowanie - online	Proszę zaznaczyć podstawową kategorię
Rzeka Drawa - turystyka wodna 01.07-31.08	
Liczba osób Dostępna ilość w oznaczonych dniach 01-3p 749 Imię i nazwisko właściciela Data początku: 2024-07-01 - Data końca: 2024-07-01 Cena: 10 zł	Liczba osób uprawiających turystykę wodną na rzeki Drawie w ciągu jednego dnia nie może przekraczać 750 osób. Cena zakupu zostanie powiększona o 5% na koszty operatora płatności. Proszę wybrać ilość osób Dostępna ilość w oznaczonych dniach

Entry limits -

On-line tickets

30 kayaks / hour



Overtourism - solutions in Polish NP's

Tatra NP

Tu kupisz on-line:

Wybór Koszt: 1

Parkuj Skryty wstęp



Najbliższy termin dojazdu:
SAMOCHOÓD OSOBOWY do 5 m długości - parkingi przy szlaku do Morskiego Oka

- ☐ Termin rezerwacji: wybierzesz w kolejnym kroku
- ☐ Parkownia Białczanka - Łysa Polana
- ☒ Bezpłatne anulowanie do godz. 12:00 dnia poprzedzającego termin realizacji
- ☒ Możliwość zmiany terminu do godz. 12:00 dnia poprzedzającego termin realizacji

od 36 zł / dzień

[BOKA](#)

WAŻNE INFORMACJE !!! 1. KUP W CZĘŚCIE. ZAPŁAĆ MNIEJ - kup bilet minimum 3 dni przed przyjazdem... [WZIAM](#)



 Tatrzński Park Narodowy

**WJAZD NA PARKINGI
W REJONIE MORSKIEGO OKA**

Z E-BILETEM → **ZAPŁAĆ W CZĘŚCIE
KUP ON-LINE
ZAPŁAĆ MNIEJ**

tpn.pl/zwiedzaj/e-bilety

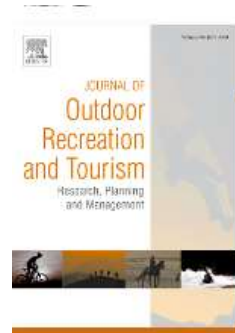
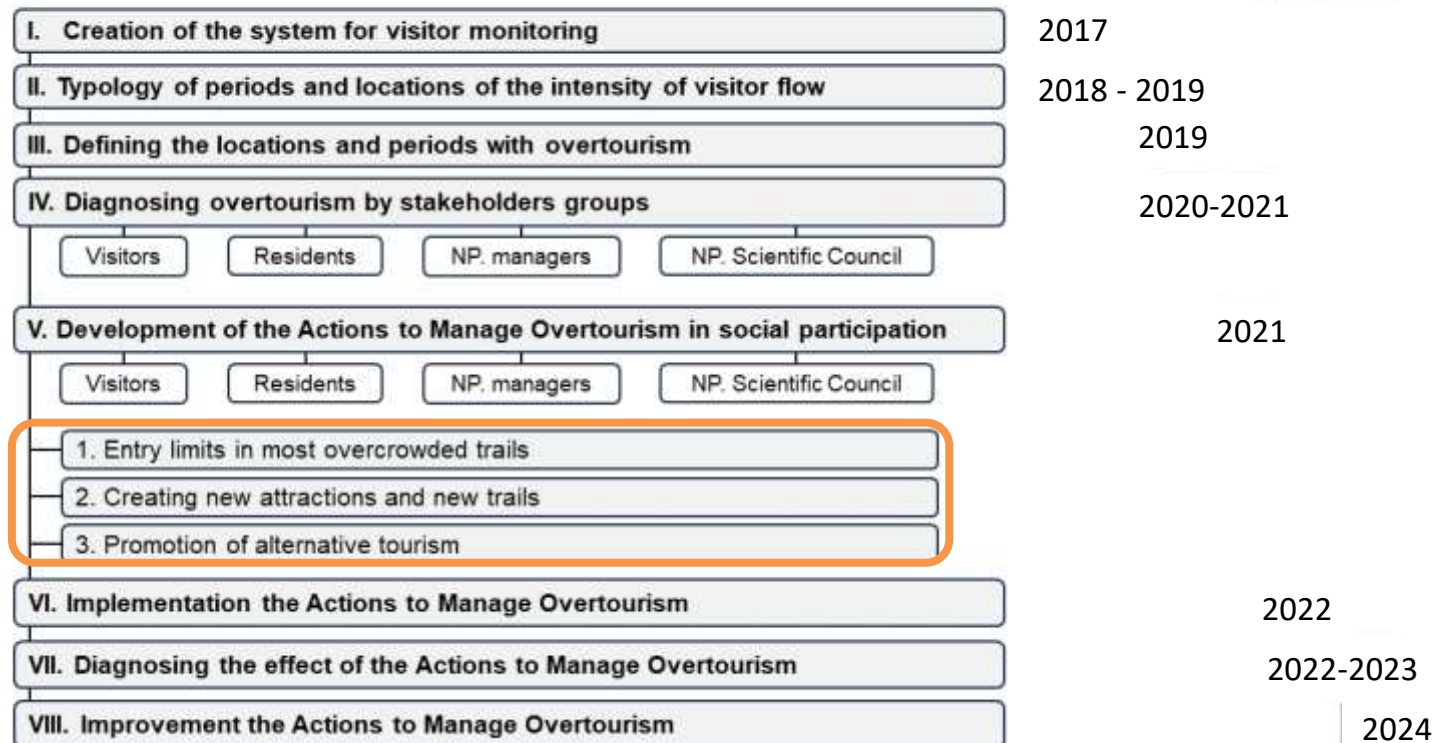
→  →  → 

On-line tickets:

440 cars/day

Method of Overtourism Optimisation

Method of Overtourism Optimisation for Protected Natural Areas



Source:

Rogowski M. A 2025, method for overtourism optimisation for protected areas, Poland, Journal of Outdoor Recreation and Tourism, 49, 100859, <https://doi.org/10.1016/j.jort.2025.100859>



Method of Overtourism Optimisation



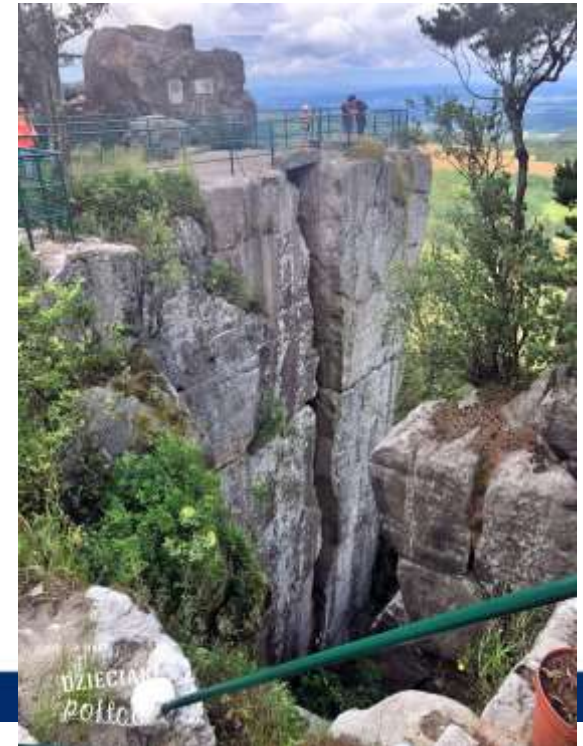
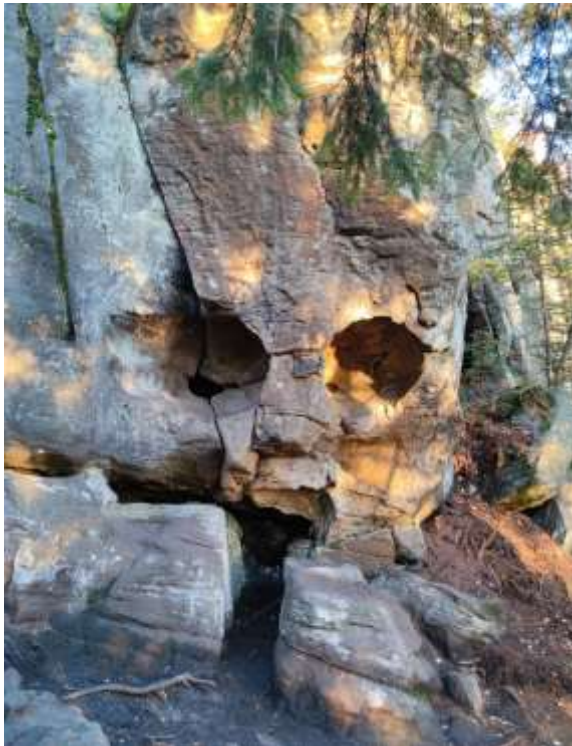
Study area:

Stołowe Mts. National Park (SMNP)

Represent the sandstone „table” mountains

63,4 km²; 1,3 mln visitors;

Szczeliniec Wielki (922 m.)

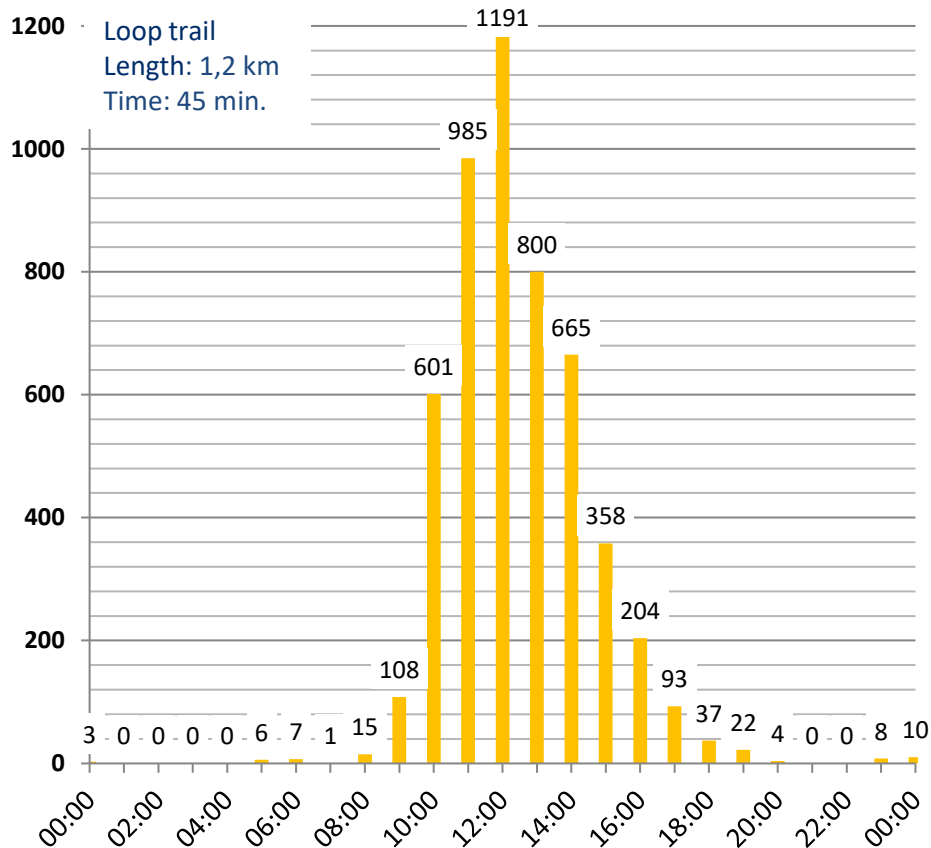


Most overcrowded trails (50% share of visitors in National Park) :

Szczeliniec Wielki
(high-season)

Distance:
1 m. or 2 sec.

Loop trail
Length: 1,2 km
Time: 45 min.

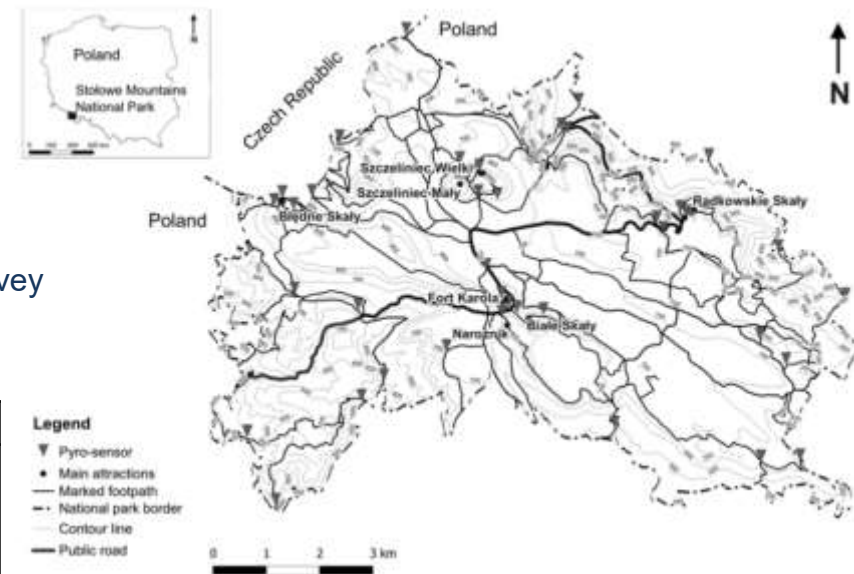


I. Creation of the system for visitor monitoring

To obtain data on the **number of visitors** in **SMNP** and in **most overcrowded spots** and also about **visitor's behavior**

Monitoring System of Tourist Traffic (MSTT)

1. Hourly measuring of visitors -> pyroelectric sensors
Where? When?
2. Behaviour of visitors -> PAPI, CAWI questionnaires survey
Opinions/Problem/Solutions

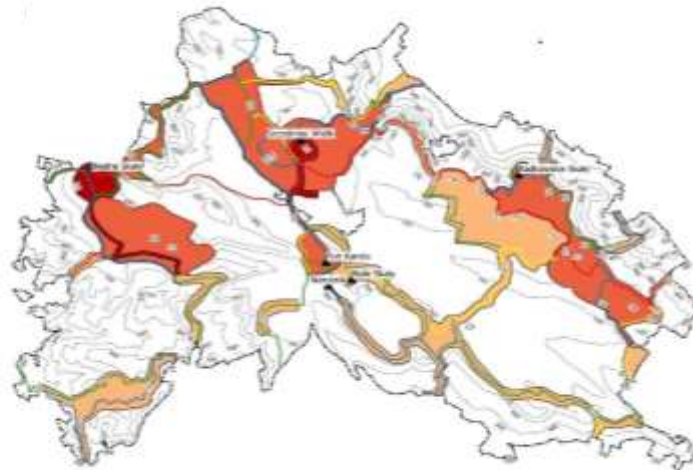


The data via Eco-counters	The data via survey questionnaires
Number of visitors in PNA and most popular spots aggregated into annual, monthly, weekly, daily and hourly periods	Socio-demographics of visitors (sex, age, origin)
Estimated level of spots popularity in overcrowded places	Motivation and visitors behavior
Estimated periods of overcrowding	Characteristics of stay (ways of reaching the national park, purpose of visit, visit duration, frequency of visits, visited attractions, use of lodging and catering facilities and their location)
	Assessment of the problems caused by overcrowding

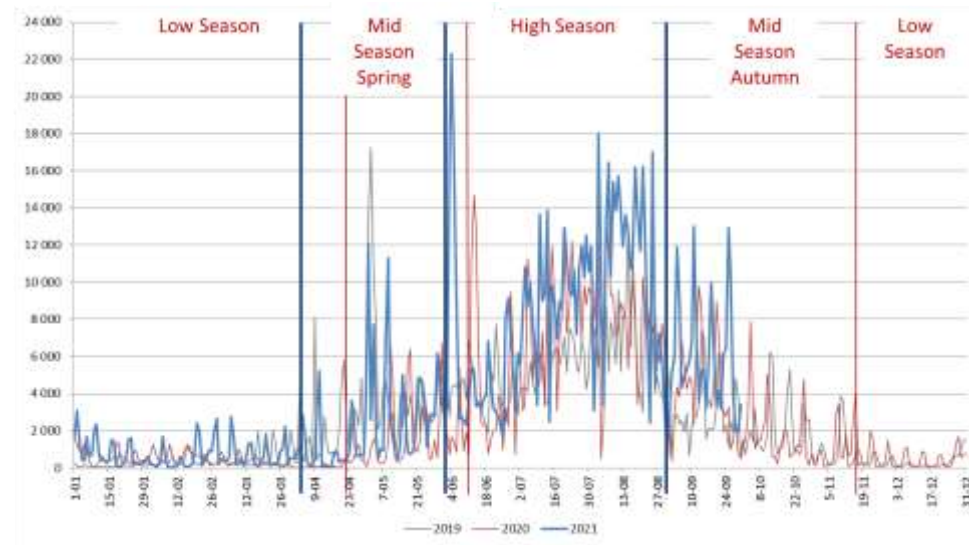
II. Typology of the periods and locations of visitor flow intensity

Locations of **high, medium and low visitor flow**

- High visitor flow
- Medium visitor flow
- Low visitor flow



Periods with high, medium and low visitor flow:
Low Season, Mid-Seasons, High Season



Method of Overtourism Optimisation

III. Defined the locations and periods with overtourism

Covert observations of overcrowding in problematic locations and periods.

- was diagnosed in spatio-temporal terms, and the resulting problems were defined



Method of Overtourism Optimisation

III. Defined the locations and periods with overtourism

Most overcrowded **spots**

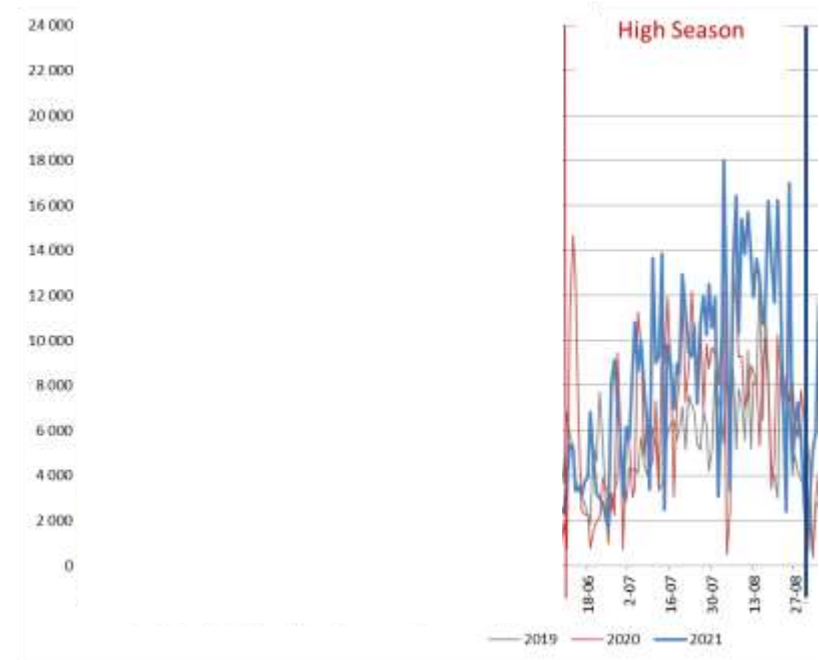
Szczeliniec Wielki

 High visitor flow



Błędné Skály

Most overcrowded **periods**





Method of Overtourism Optimisation

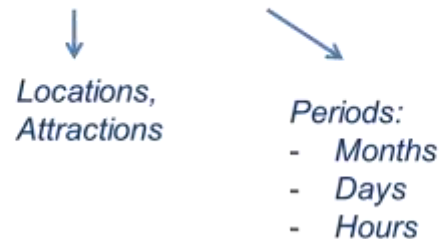
IV. Diagnosing overtourism by stakeholders groups

PAPI
CAWI



Questions in the survey:

WHERE and WHEN is overcrowding



Whats problems...



These problems were assessed

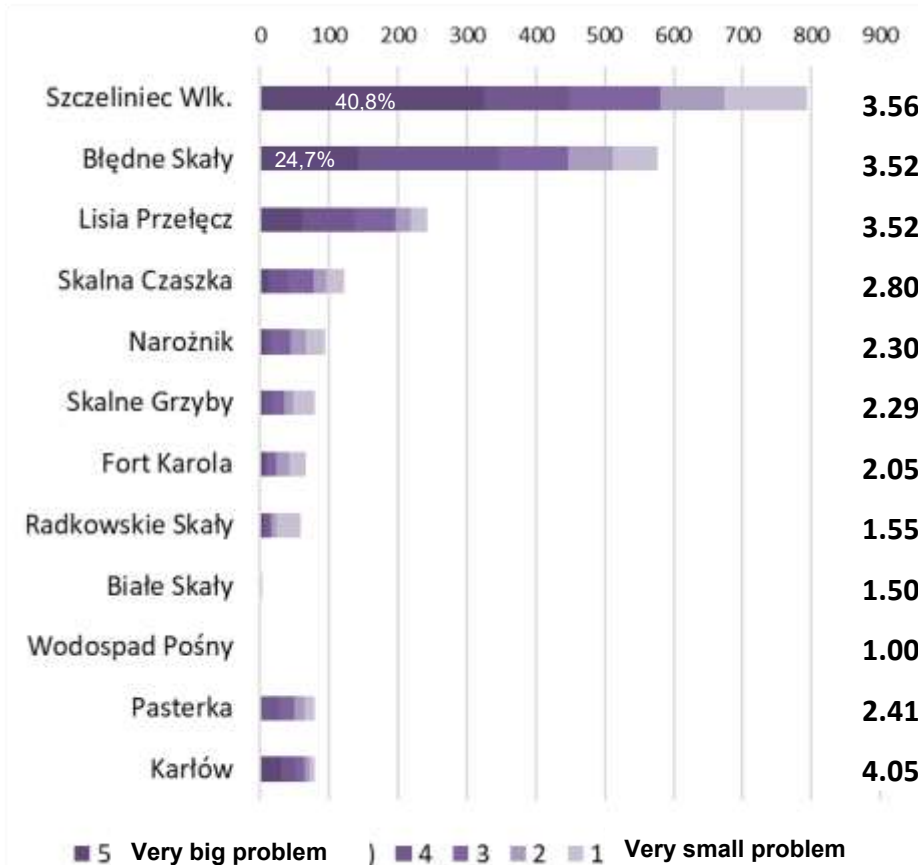
on a scale from 5 (very arduous) to 1 (little arduous)

and **proposals for their solution** were collected

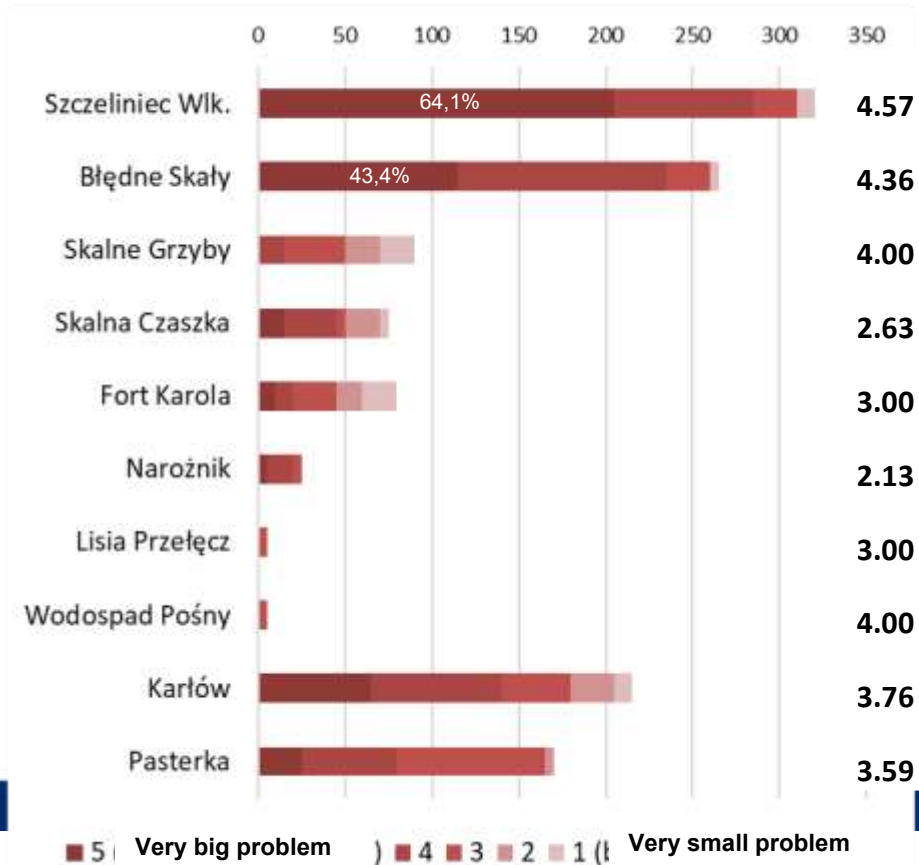
IV. Diagnosing overtourism by stakeholders groups

Where is overcrowding?

Visitors



Locals

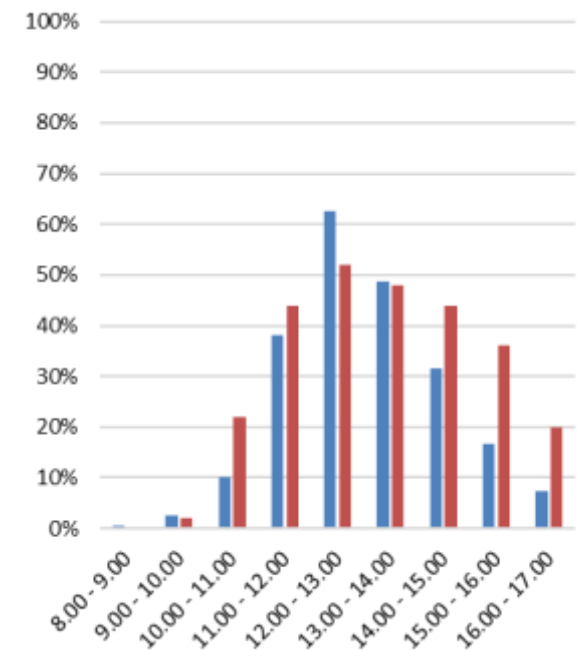
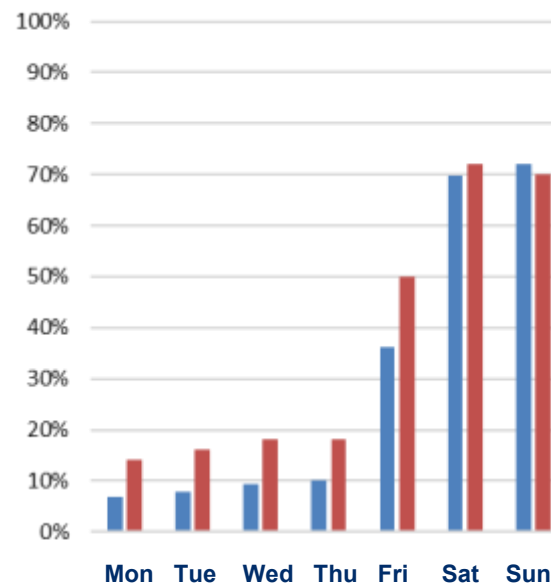
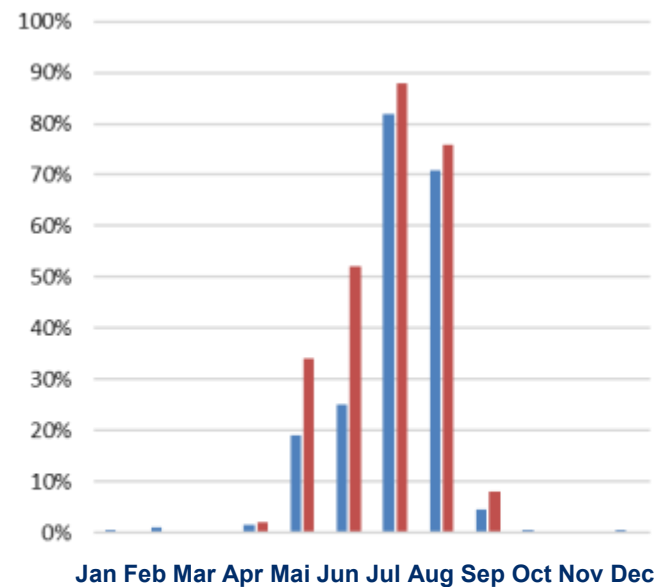




Method of Overtourism Optimisation

IV. Diagnosing overtourism by stakeholders groups

When is overcrowding?



Visitors

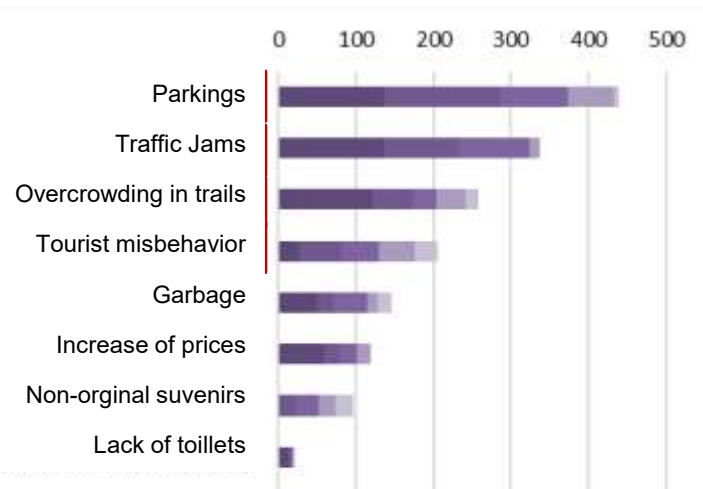


Locals

IV. Diagnosing overtourism by stakeholders groups

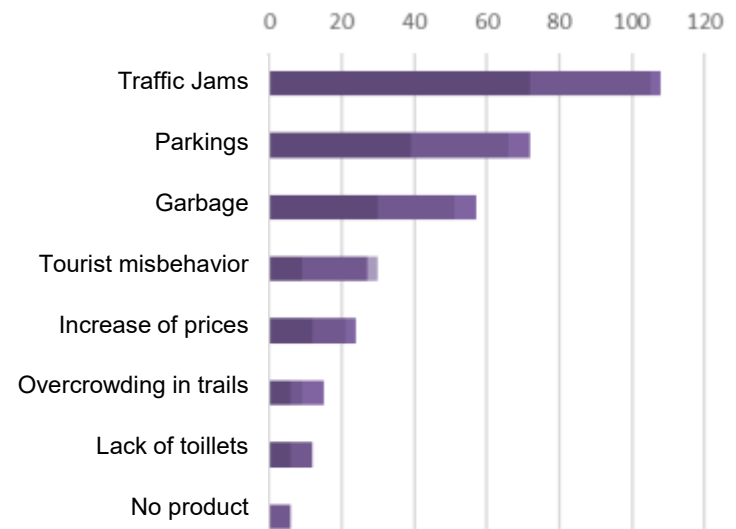
What's problems?

Visitors



5 Very big problem

Locals



1 Very small problem

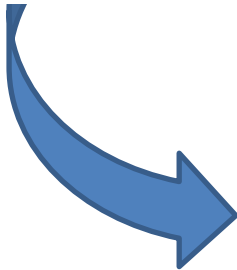


Method of Overtourism Optimisation

V. Development of the actions taken to manage overtourism in social participation

The actions taken to manage overtourism in SMNP

1. Entry limits in most overcrowded spots
2. New attractions/new trails
3. Alternative tourism – cultural tourism



Reduce of number of visitors at a time (in hour)

Disperse of visitor flow to other places -> outside the NP.

Encourage to visit in alternative locations and activity

Method of Overtourism Optimisation

V. Development of the actions taken to manage overtourism in social participation

1. Entry limits in most overcrowded spots

Specifying Tourism carrying capacity (TCC) of the most overcrowded trails



Method of Overtourism Optimisation

The conditions of analysis the TCC

The TCC of the trails took into account the nature, tourist infrastructure and satisfaction of visitors

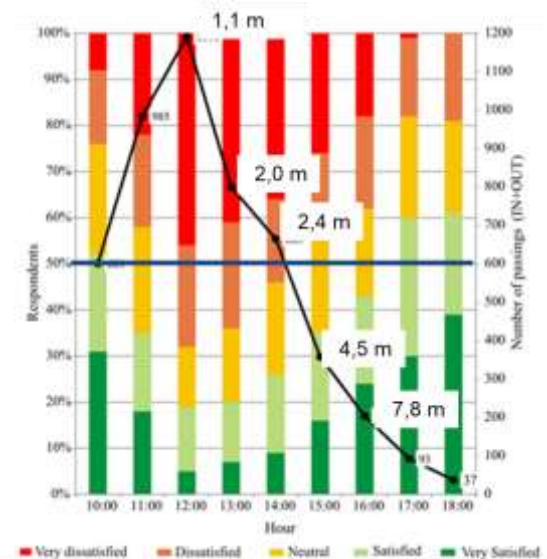
Landforms - narrow, winding rock mazes, determining trail path, tortuosity, width, and limiting visibility.

Landcover - valuable natural coniferous and subalpine spruce forests

Infrastructure - narrow wooden walkways and railings within the rock maze, guiding and easing tourist movement



Visitors - satisfaction level based on the volume of tourist traffic at the attraction



V. Development of the actions taken to manage overtourism in social participation

1. Entry limits in most overcrowded spots

Specifying Tourism carrying capacity (TCC) of the most overcrowded trails

Charcteristic	Szczeliniec Wielki	Błędne Skały
Average width of trail	1 meter	
The optimal distance between tourists	4 metres	
Tourism carrying capacity (TCC)	300 persons	150 meters
Passing time	45 minutes	30 minutes
Hourly tourism carrying capacity (HTCC)	400 persons	300 persons





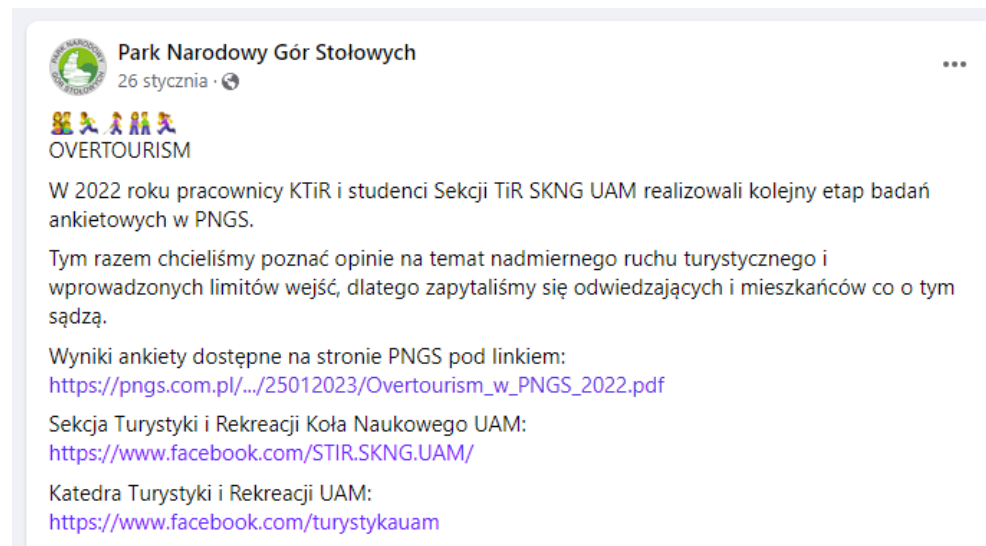
Method of Overtourism Optimisation

V. Development of the actions taken to manage overtourism in social participation

1. Entry limits in most overcrowded spots

The results of research on overtourism were provided to the visitors and residents through at the **meeting, official web page, FB page**, also informing about the proposal of entry limits, expecting comments and opinions.

The comments aimed at the final verification of the planned entry limits.





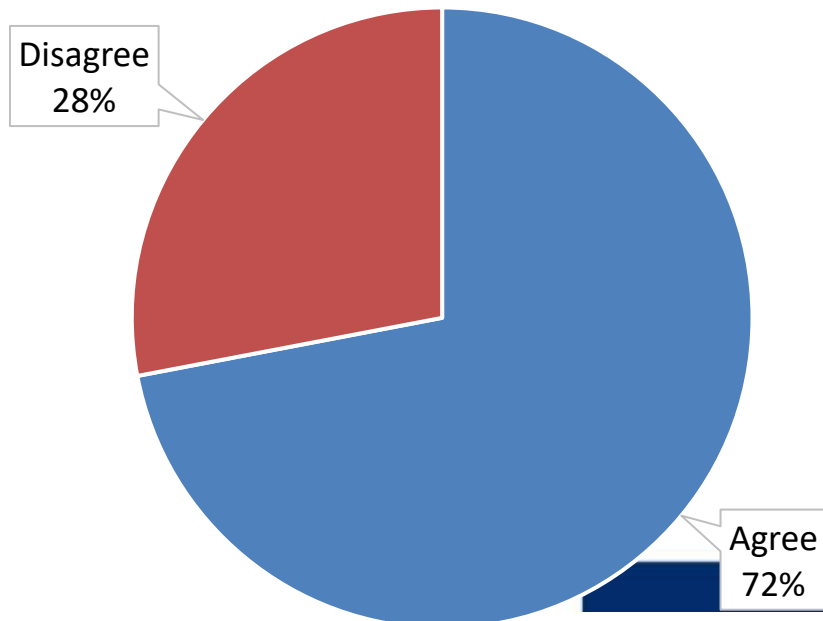
Method of Overtourism Optimisation

V. Development of the actions taken to manage overtourism in social participation

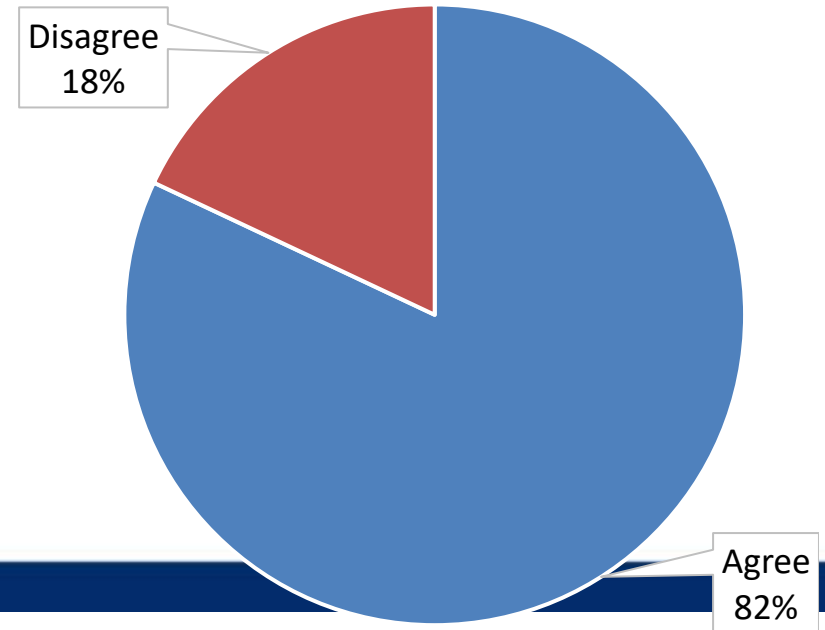
1. Entry limits in most overcrowded spots

Question: Do you agree with implementation of entry limits in Szczeliniec Wielki 400 pers/h ?

Visitors
N: 1012



Locals
N: 623



V. Development of the actions taken to manage overtourism in social participation

2. New attractions/new trails

New viewing tower outside the NP

Legenda

Liczba wejść (IN) w 2018 r.

- < 1 000
- 1 000 - 10 000
- 10 000 - 100 000
- 100 000 - 200 000
- > 200 000

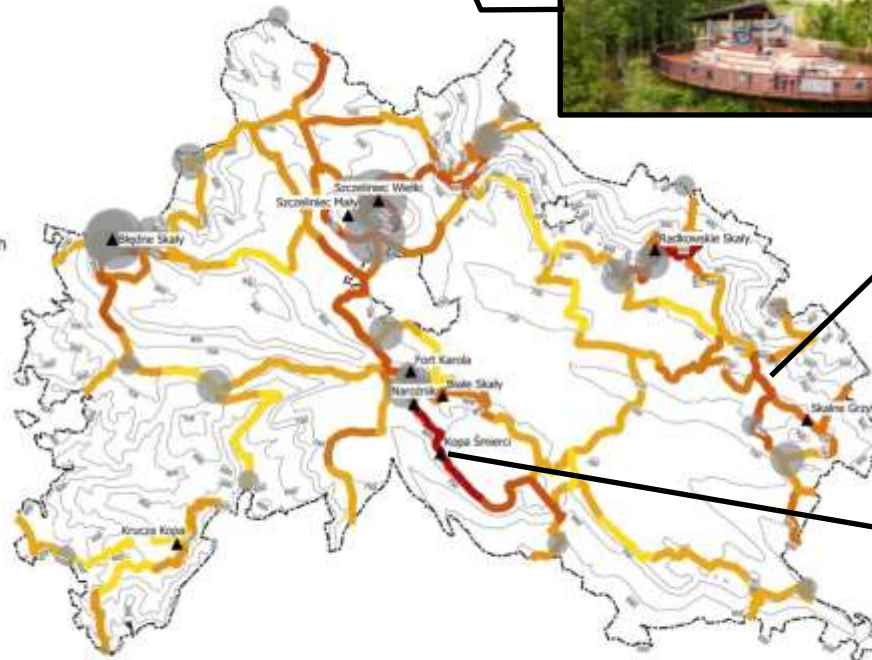
Klasy atrakcyjności szlaków pieszych

- 1 - mało atrakcyjny
- 2 - umiarkowanie atrakcyjny
- 3 - atrakcyjny
- 4 - wybitnie atrakcyjny

▲ Główne atrakcje

--- Granica parku narodowego

Warstwie (co 50 metrów)



New spot



Method of Overtourism Optimisation

VI. Implementation the Actions to Manage Overtourism (2022)

Entry limits:

- 400 tickets / hour in Szczeliniec Wielki
- 350 tickets/ hour in Błędne Skały (form 2023)

Live overview
of remaining tickets

Choose Details

Admission to the tourist route Szczeliniec Wielki, Reduced ticket

Admission date: 10.06.2025, hour ---

1 x 7 zł

Delete selected services

Applies to: Admission to the tourist route Szczeliniec Wielki Reduced ticket x 1

Select admission date

June 2025

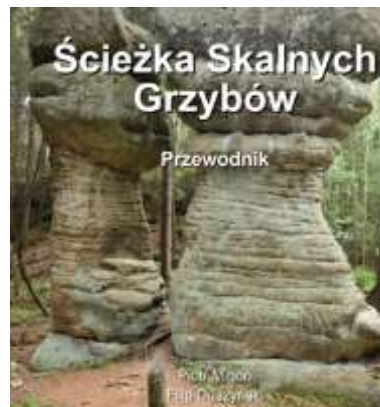
MO	TU	WE	TH	FR	SA	SU
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

Time	Remaining tickets
10:00	140 pcs.
11:00	339 pcs.
12:00	337 pcs.
13:00	38 pcs.

New spot



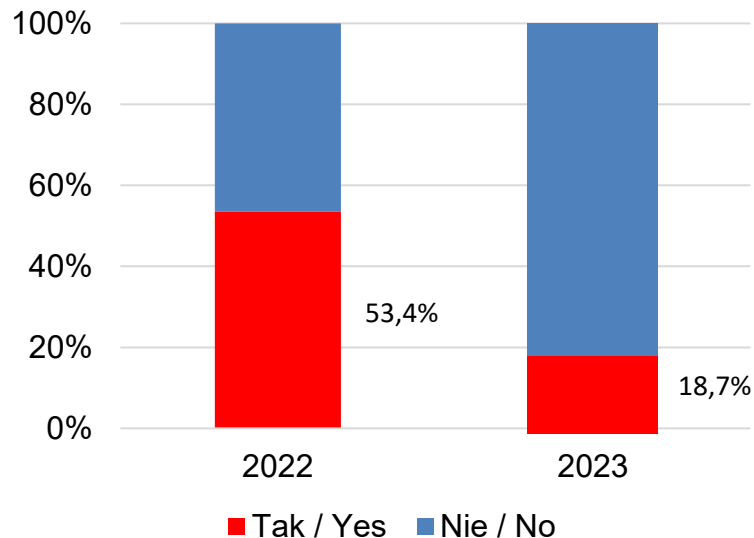
New trail



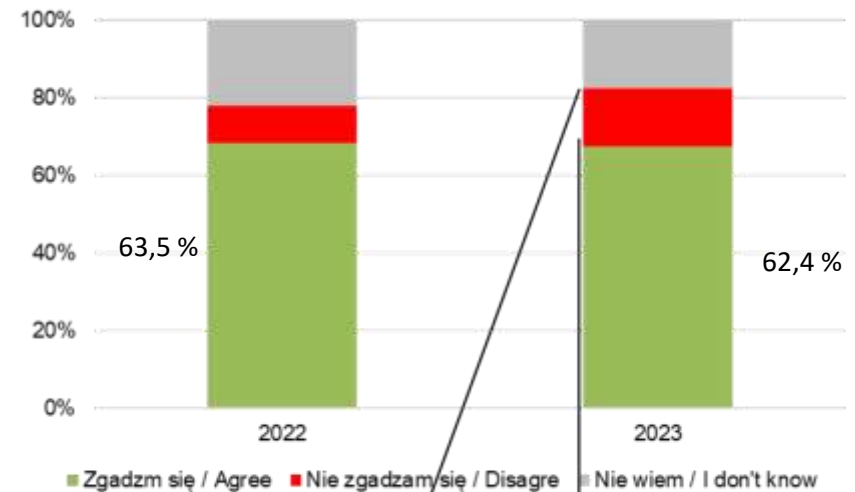
VII. Diagnosing the effect of the Actions to Manage Overtourism

PAPI, CAWI survey (2022, 2023)

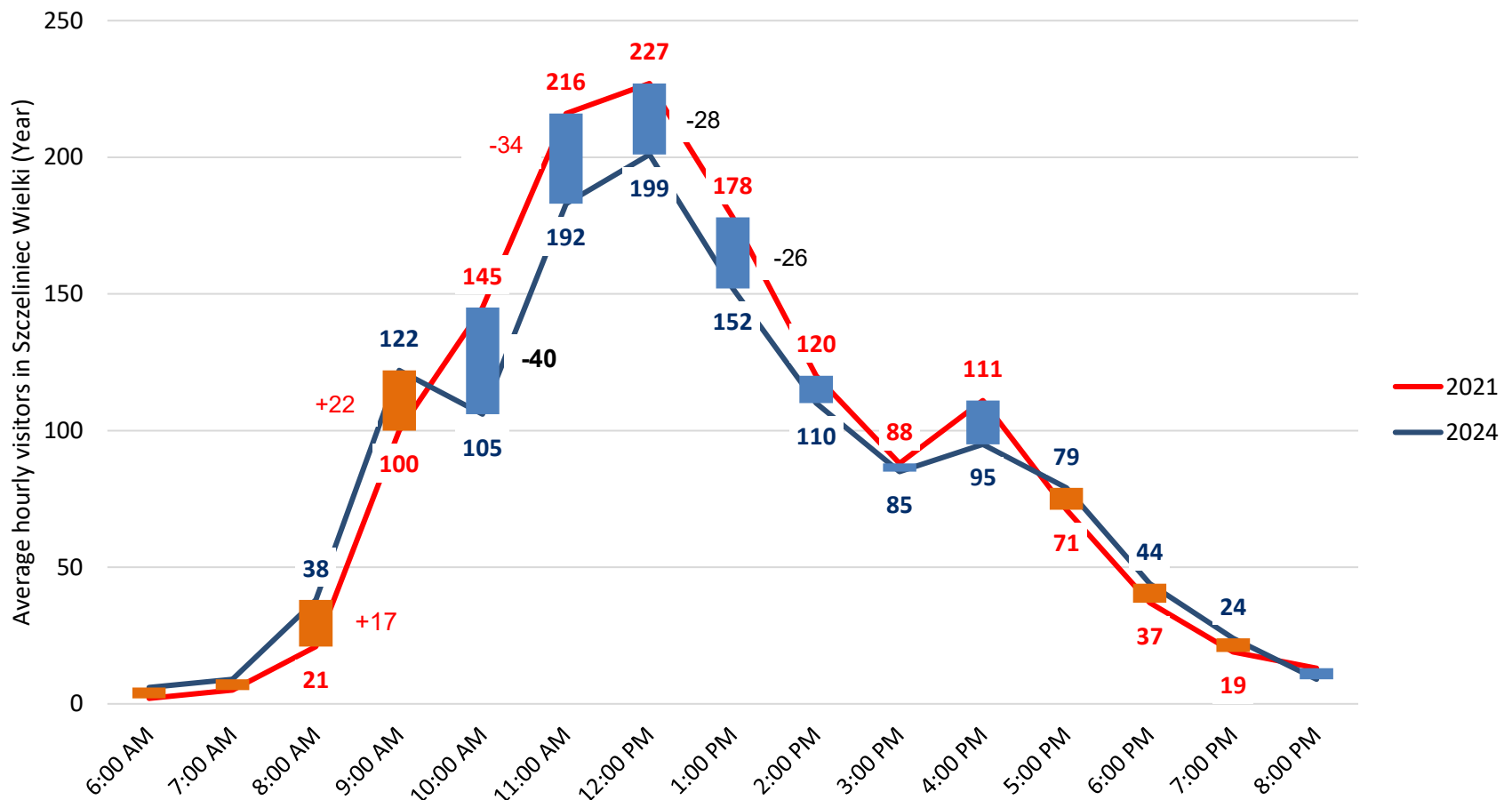
Did You feel dissatisfaction during your visit in Szczeliniec Wielki caused to many visitors?



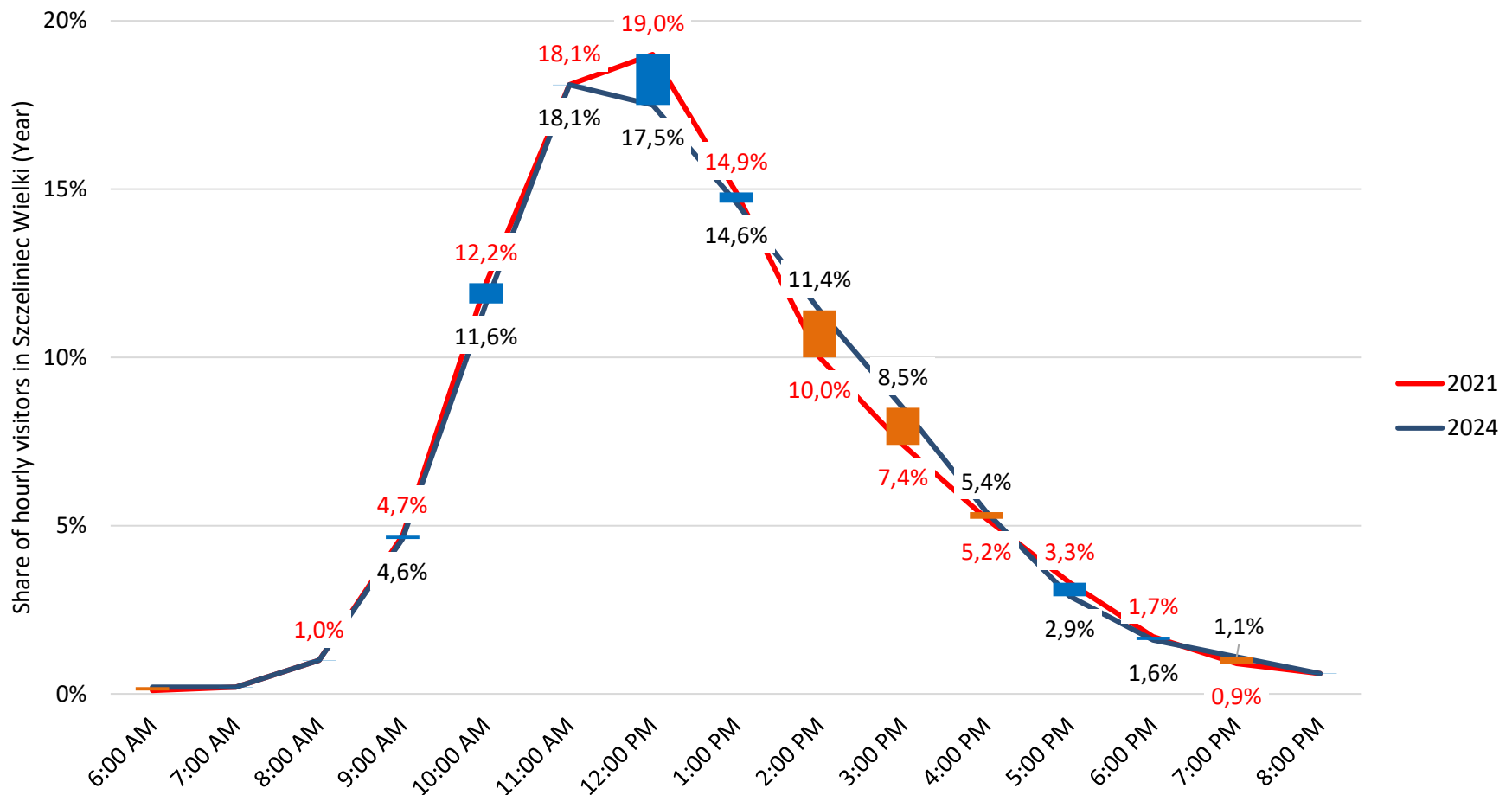
Did You agree with entry limits?



VII. Diagnosing the effect of the Actions to Manage Overtourism



VII. Diagnosing the effect of the Actions to Manage Overtourism





Method of Overtourism Optimisation

VII. Diagnosing the effect of the Actions to Manage Overtourism

Visitor flow in Stołowe Mts. National Park

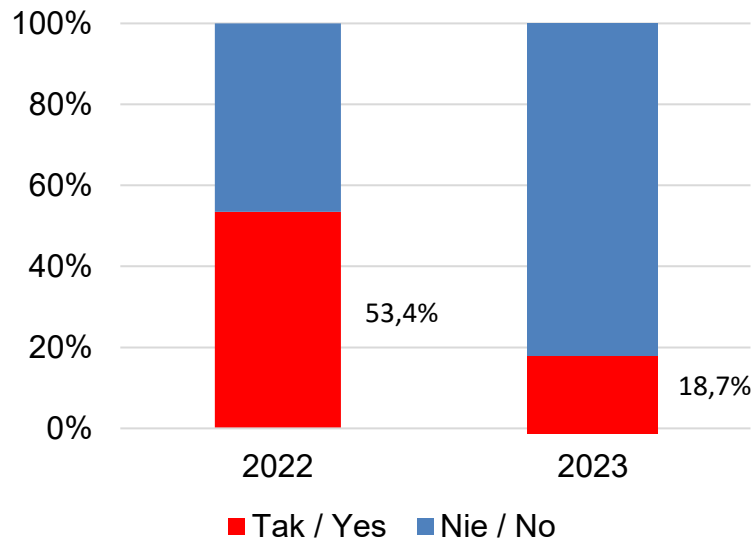
	2017	2018	2019	2020	2021	The AMO in operation		
						2022	2023	2024
Visitors in the SMNP	871 344	1 063 23	919 276	915 608	1 270 716	1 302 632	1 322 396	1 296 300
Visitors in Szczeliniec Wielki/ Share	283 214 / 32,5%	321 267 / 30,3%	308 351 / 33,5%	263 488 / 28,8%	342 030 / 26,9%	334 865 / 25,7%	349 519 / 26,2%	331 664 / 25,6%
Visitors in Błędne Skały/ Share	229 687 / 26,4%	302 267 / 28,4%	286 262 / 31,1%	251 181 / 27,4%	324 830 / 25,8%	305 232 / 23,4%	301 461 / 22,8%	281 484 / 21,7%
Sum of shares	58,9 %	58,7%	61,9%	56,2%	52,7%	49,1%	49,0%	47,3 %

- Increase the number of visitors in NP
- Decrease the share of visitors in Szczeliniec Wielki and Błędne Skały -> **dispersal of visitor flow**

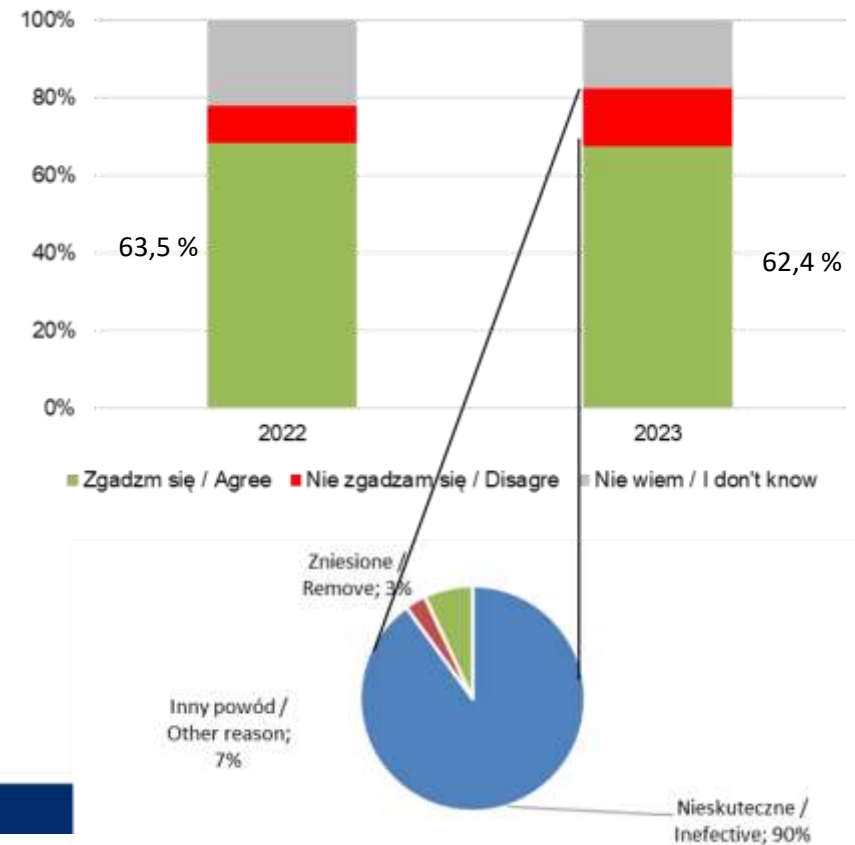
VII. Diagnosing the effect of the Actions to Manage Overtourism

PAPI, CAWI survey (2022, 2023)

Did You feel dissatisfaction during your visit in Szczeliniec Wielki caused to many visitors?



Did You agree with entry limits?





Thank you for your attention

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