

Colony losses in Austria - a two years survey



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Adam Smith

Homo oeconomicus

Altruismus (Selbstlosigkeit)

Harmonie der Interessen

Arbeitsteilung als
Schlüssel zum
ökonomischen Wachstum



Colony losses in Austria

• Questionnaire

Umfrage des Institutes für Zoologie zu Bienenvolksverlusten 2008/2009

AG Bienen Universitätsplatz 2, A-8010 Graz
Erwerbsimkertagung Graz, 22.2.2009



1. Meine Völker stehen in den Bezirken: Steyer-Land (Postleitzahl: 4463)
2. Im Herbst 2008 habe ich 49 Völker eingewintert (Zahl angeben).
3. Im Frühjahr 2009 lebten noch 49 Völker.
4. Letzte Nachschau im Herbst: Septemb., letzte Nachschau im Frühjahr: Ende März
5. Monat der letzten Zucker Einfütterung: Juni Juli August
 Septemb. Oktober November
 Dezember Gar nicht
6. Was wurde eingefüttert? Zuckerlösung (z.B. Zuckerlösung, Apinvert, Hefeteig, Stärkesirup, Maisstärke, Honig, Feedbee, Apifonda, Cerestar, Hefeteig etc.)
7. Bitte ankreuzen was für die eingegangenen Völker zutrifft:
 Futter war vorhanden Kein Futter
 Königin vorhanden Keine Königin 1 Volk
 Brut war vorhanden keine Brut vorhanden
 Bienen waren vorhanden keine Bienen vorhanden
 Monat des Verlustes: _____ Viele tote Bienen im Volk
 Verlust durch Varroa Schwache Völker, Eigenfehler
 unbekannt _____
8. Ich habe im Jahr 2008 folgende Behandlungen durchgeführt (bitte Produkte angeben)
1x Oxalsäure, 1x Ameisensäure, Apistan, Thymol, 1x Api Life Var,
 Bienenwohl, Amitraz, Fumagillin, _____
9. Meine Bienen waren im Zeitraum 2008/2009 durch Folgendes besonders belastet:
 Bin Wanderimker Mangelhafte Varroabehandlung Spritzmittel
 starker Varroabefall Krankheiten, anderes: / / /
10. Die Verluste führe ich auf folgende Ursache zurück:
/ / /
11. Bienenverluste im Frühjahr oder Sommer: Ich habe im Monat / 2008
/ Völker von _____ Völkern verloren.
12. Die Imkerei ist mein Hauptberuf ja: Nebenerwerb: Hobby
ACA-Züchter u. Prüfer

Vielen Dank für Ihre anonyme Teilnahme, mit imkerlichem Gruß, Karl Crailsheim.
Ich bitte Sie pro Jahr nur einen unserer Fragebogen auszufüllen!

Colony losses in Austria

- **2007/08:**

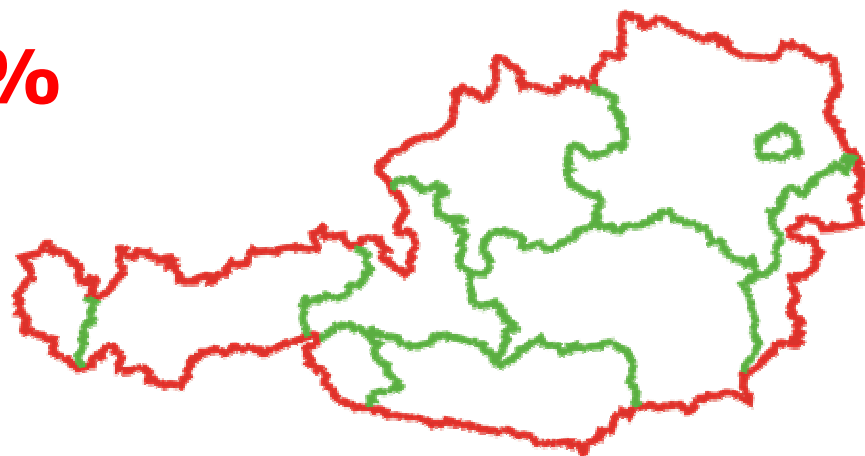
- **374 beekeepers = 1.7%**
- **16,217 colonies = 5.8%**

vanEngelsdorp et al., 2008:

- **331 beekeepers**
- **474,336 colonies**

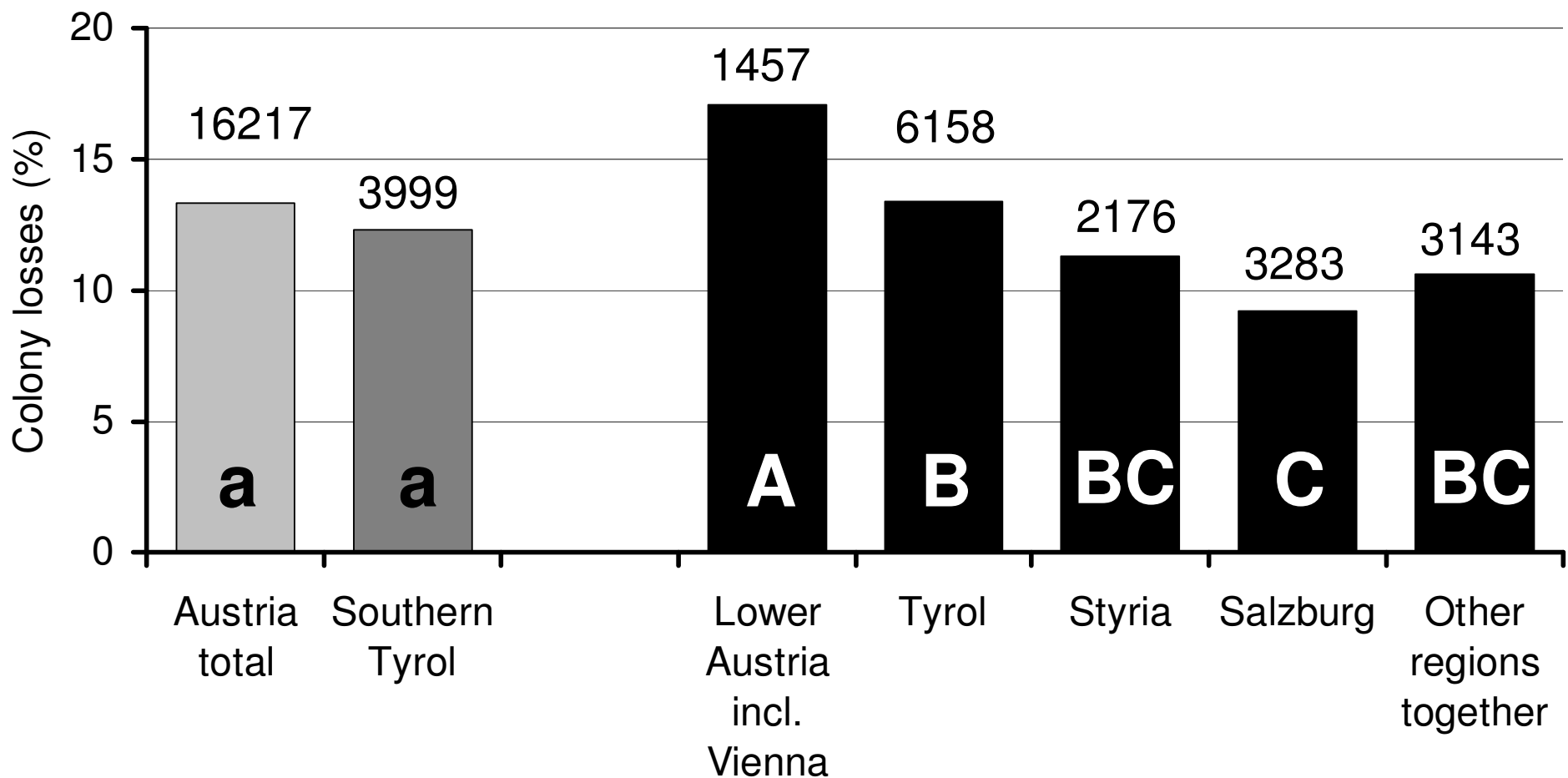
- **2008/09:**

- **575 beekeepers = 2.6%**
- **18,141 colonies = 6.5%**



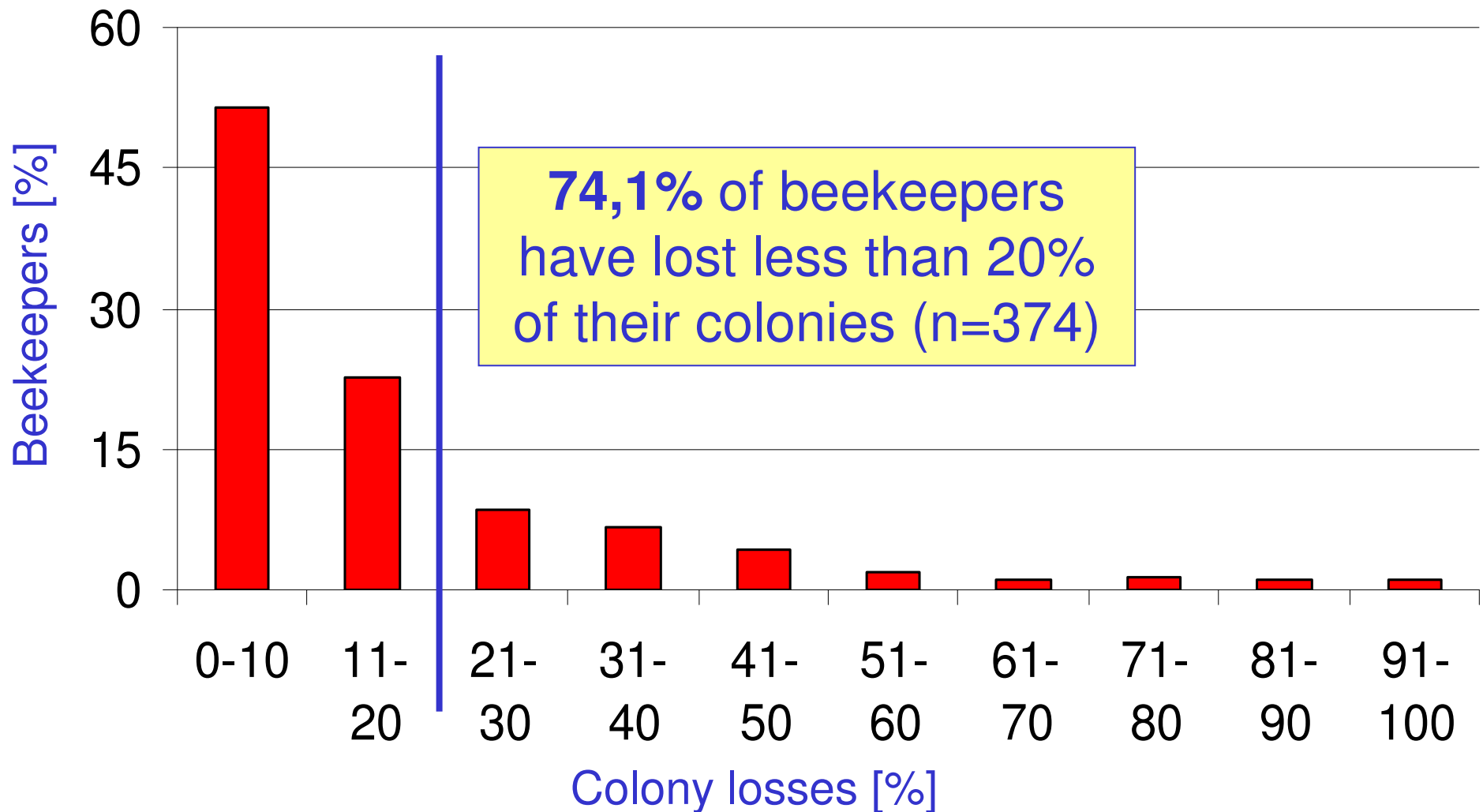
Colony losses in Austria

- **2007/08: total loss** chi² test



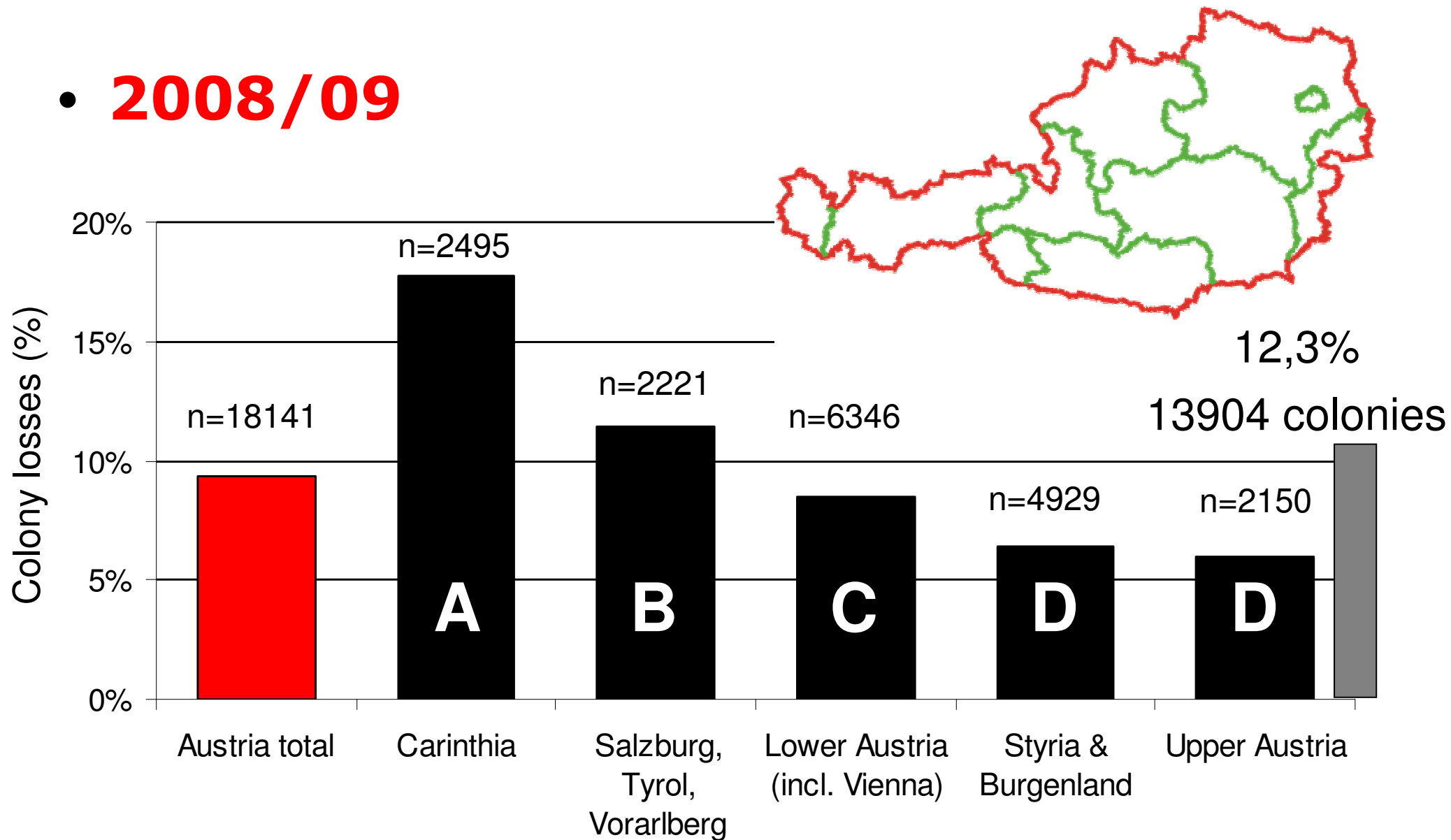
Colony losses in Austria

- 2007/08:**



Colony losses in Austria

- 2008/09**



Colony losses in Austria

- 2008/09**

Region	Operations (n)	Colonies in autumn (n)	Total loss	Median loss	Operations with losses > 20 %
Austria total	575	18141	9.3%	5.6%	19.7%
Lower Austria (incl. Vienna)	188	6346	8.5%	4.9%	17.6%
Styria & Burgenland	135	4929	6.5%	3.5%	14.0%
Carinthia	90	2495	17.8%	13.0%	35.6%
Upper Austria	85	2150	6.0%	3.1%	8.2%
Salzburg, Tyrol, Vorarlberg	77	2221	11.4%	7.1%	28.6%

Colony losses in Austria

- Respondents were asked to identify why they thought their colonies died

	2007/08	2008/09
<i>Varroa</i>	31.7%	20.5%
Queen loss	13.1%	23.7%
Starvation	9.4%	14.4%
Hive managment	6.3%	13.6%

Colony losses in Austria

- **Both years:**
- **Operations reporting high *Varroa* infections experienced high over-winter mortality**

Colony losses in Austria

- 2007/08: *Varroa* as reason for losses:**

	Varroa	low Varroa	
Total loss	20,5%	9,1%	p<0,001 (Chi ² test)
Median loss	17,4%	5,0%	p<0,001 (Mann-Whitney)
Colonies Operations	6834 155	12694 314	

Colony losses in Austria

- 2008/09: *Varroa* as reason for losses:**

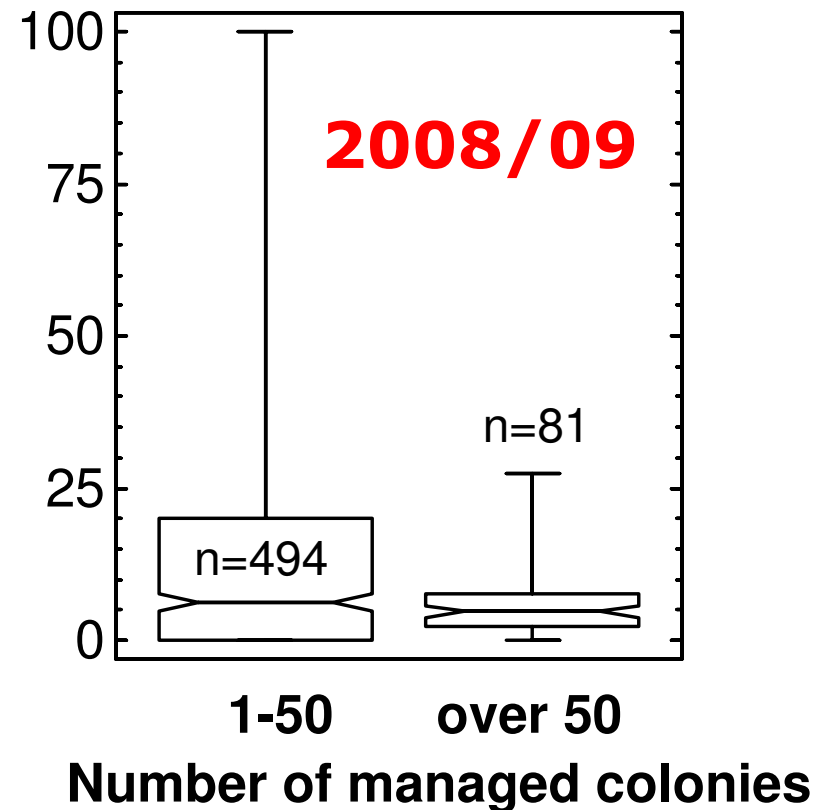
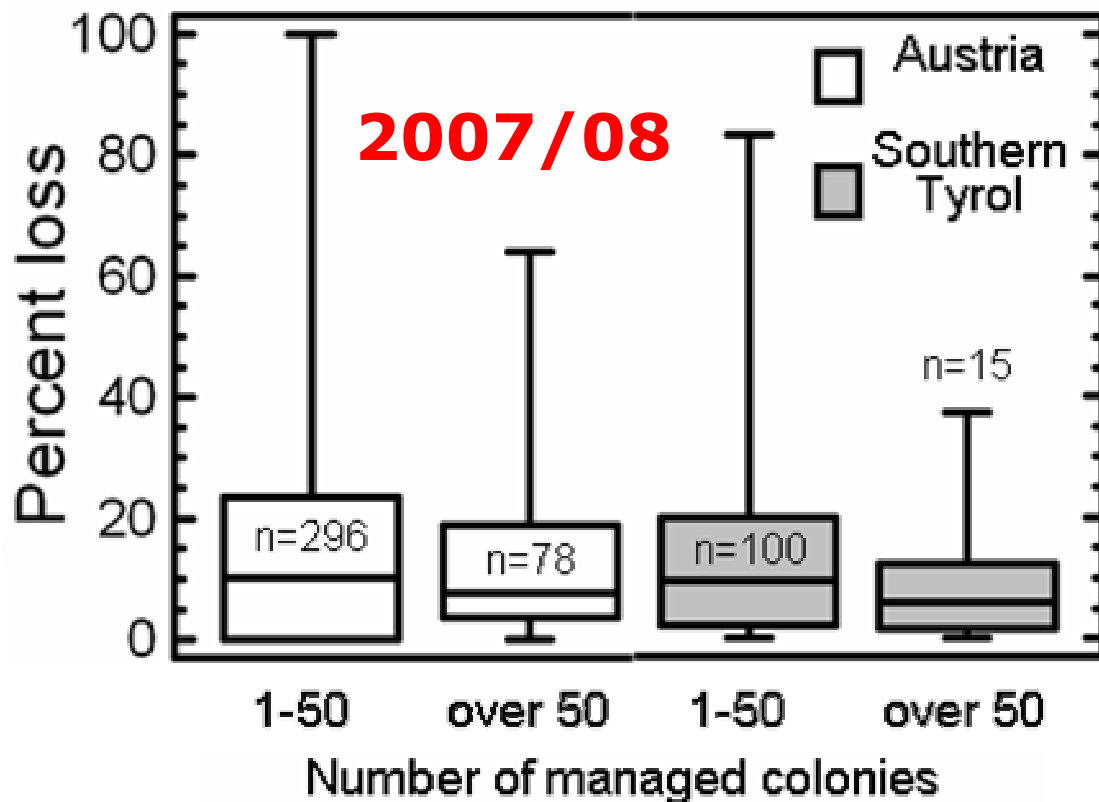
	Varroa	low Varroa	
Total loss	14,4%	8,0%	p<0,001 (Chi ² test)
Median loss	11,7%	4,5%	p<0,001 (Mann-Whitney)
Colonies Operations	2265 74	15765 496	

Colony losses in Austria

- **Both years:** No effect of date of **last feeding**
- **Both years:** No effect of **type of food** in autumn (honey, sugar solution, starch syrup, Apiinvert)
- **Both years:** No difference between beekeepers that used an essential oil (**thymol**) combined with organic acids or **organic acids only**
- **Both years:** No difference between **small (1-50)** and **bigger operations (51+)**

Colony losses in Austria

- Operation size:** Kruskal-Wallis $p > 0,05$



Colony losses in Austria

- **2008/09: Hobbyists, sideliner, professionals:** Kruskal-Wallis $p > 0,05$

Professionals

Average colonies: 251

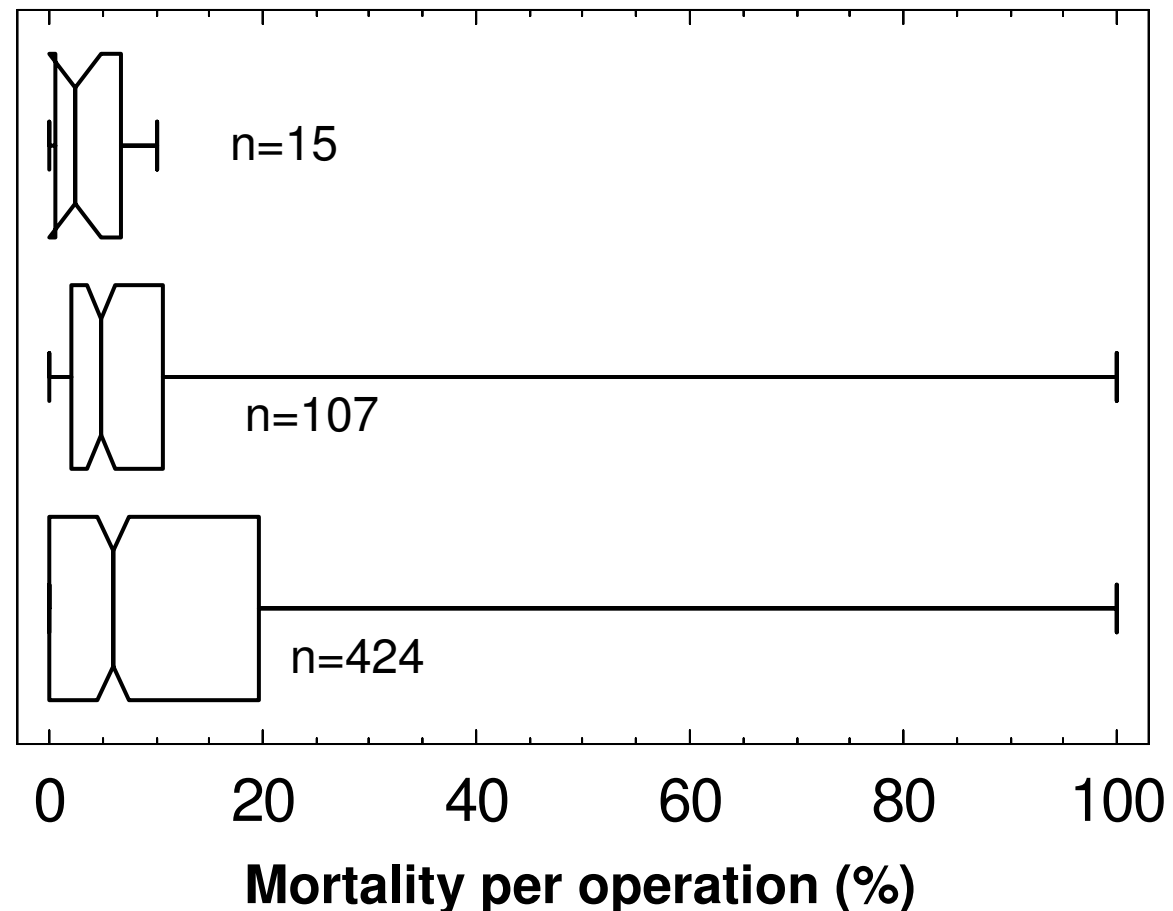
Sidelineer

Average colonies: 62

Hobbyists

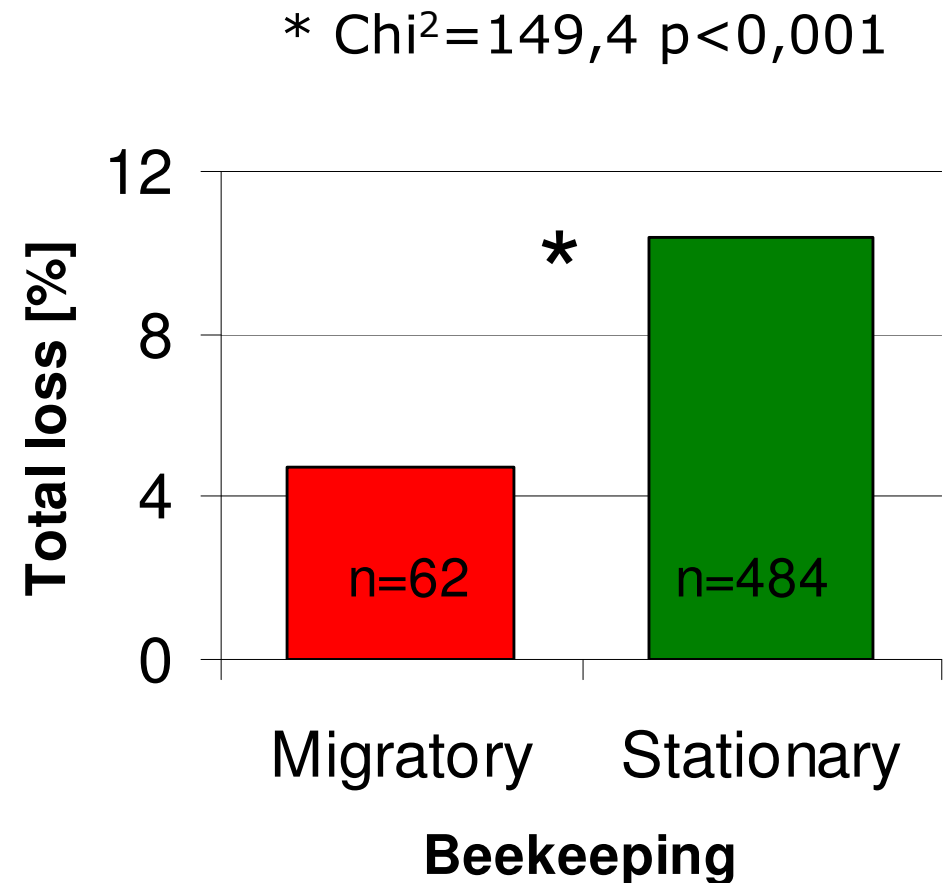
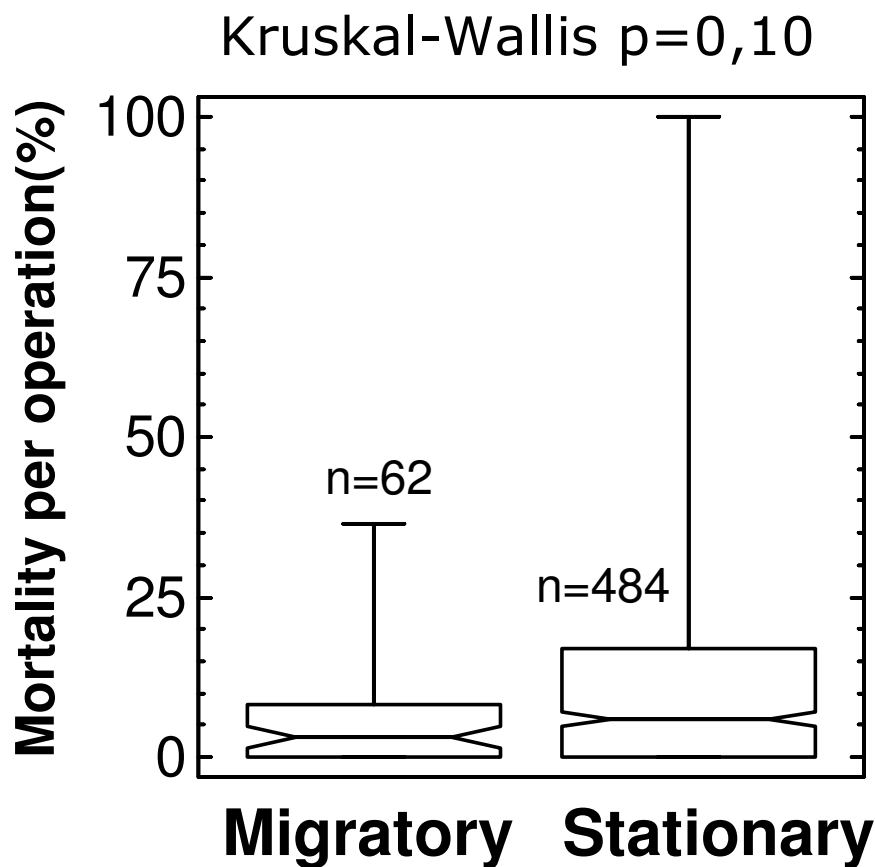
Average colonies: 17

(Self-description)



Colony losses in Austria

- **2008/09: Migratory beekeeping:**



Colony losses in Austria

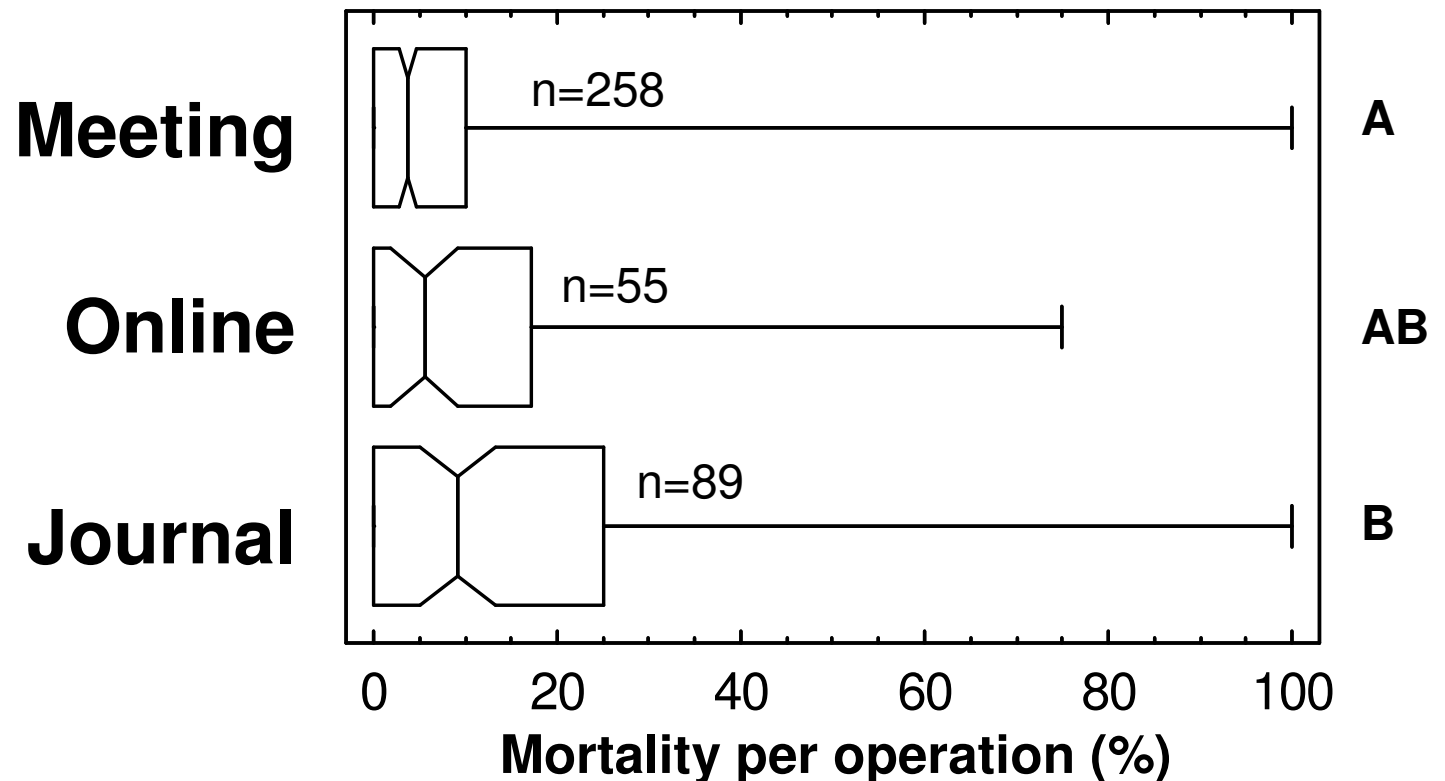
- **2008/09: Bias among responds from journal, online and meeting?**
 - **45.2% (258) Meeting**
 - **9.6% (55) Online**
 - **15.6% (89) Journal**

 - **29.6% (169) other, not classified**

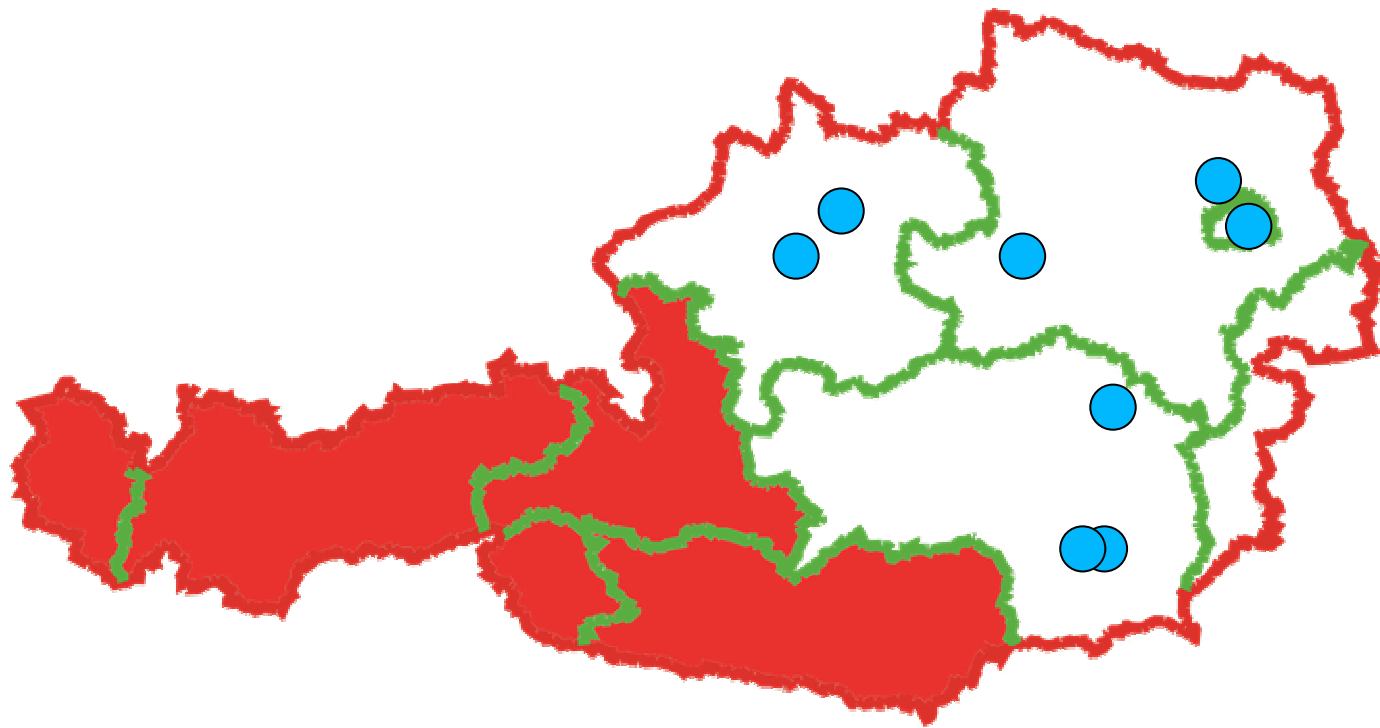
Colony losses in Austria

- **2008/09: Bias among responds from journal, online and meeting?**

Kruskal-Wallis $p < 0,05$



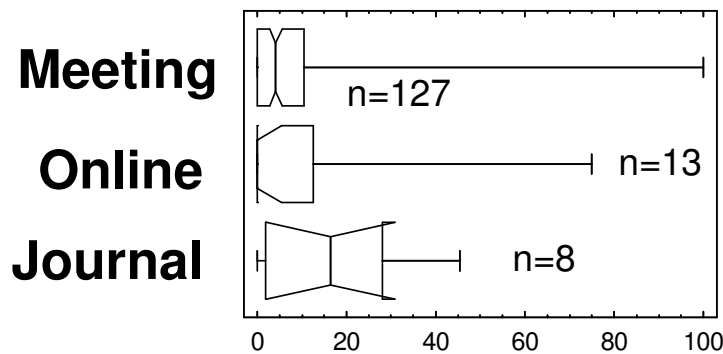
Colony losses in Austria



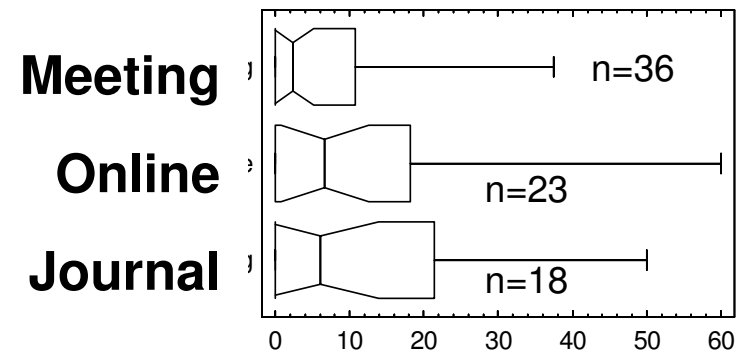
● Attended meetings in 2009

Colony losses in Austria

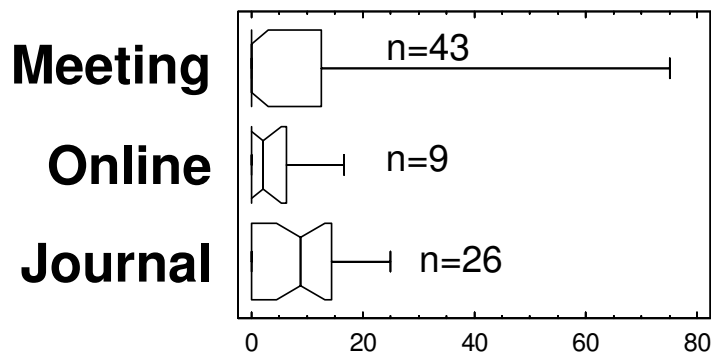
2008/09: Bias among responds from journal, online and meeting? Kruskal-Wallis $p > 0,05$



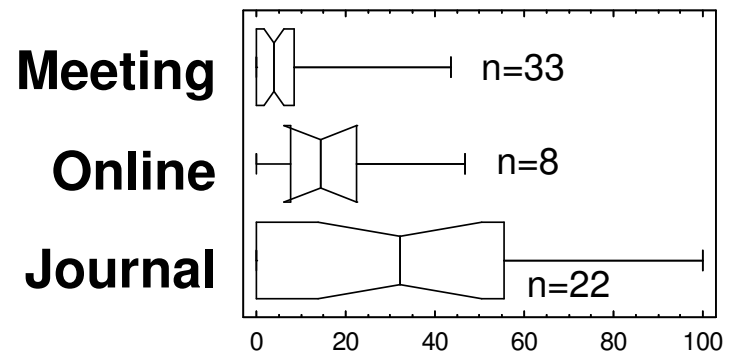
Lower Austria / Vienna



Styria & Burgenland



Upper Austria



Salzburg, Tyrol, Vorarlberg

Colony losses in Austria

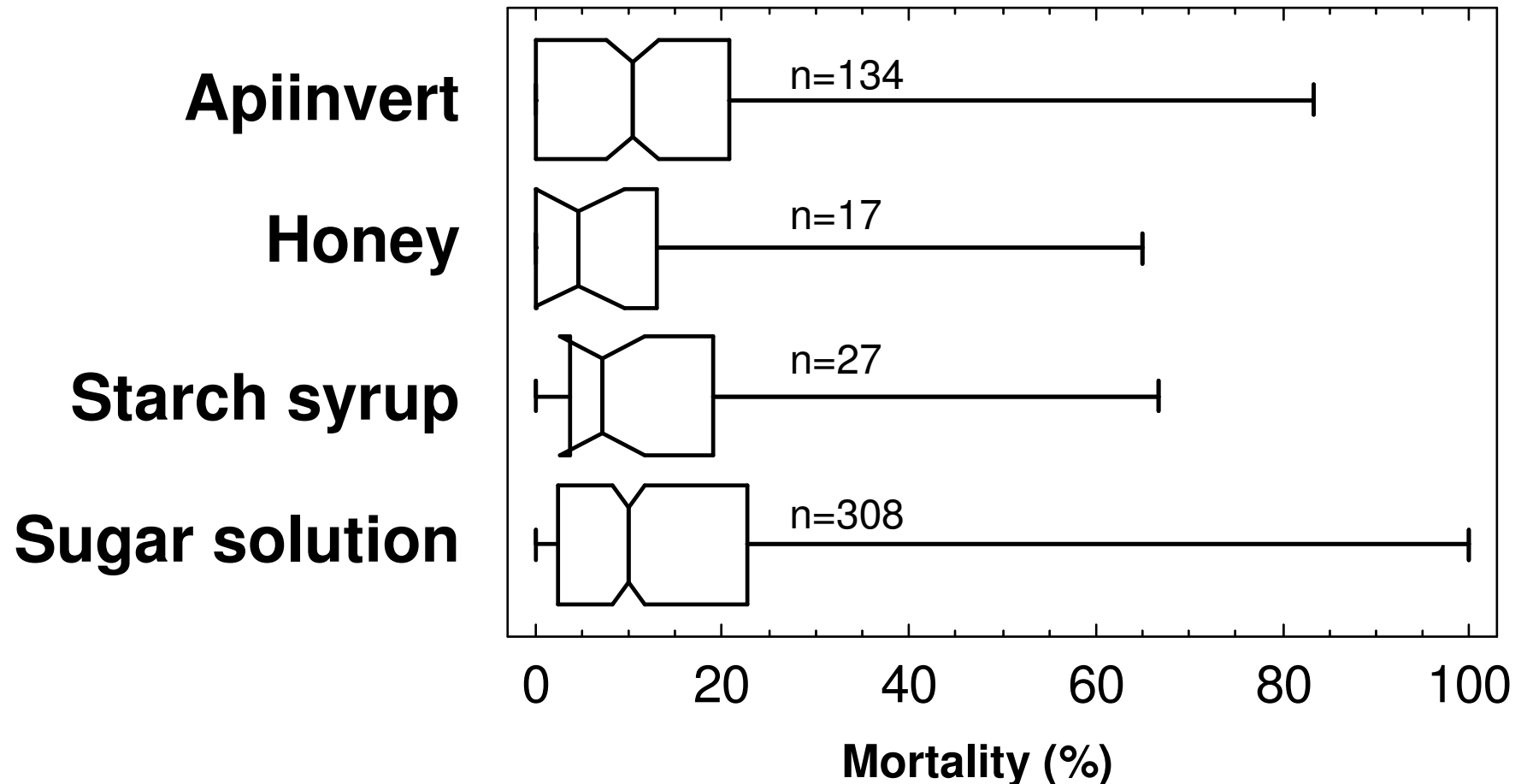
- **Summary: (total loss)**
- **2007/08: 13.3%**
- **2008/09: 9.3%**

- **Losses vary over time and region**

- **Main causes: *Varroa*, queen loss, starvation, hive management**

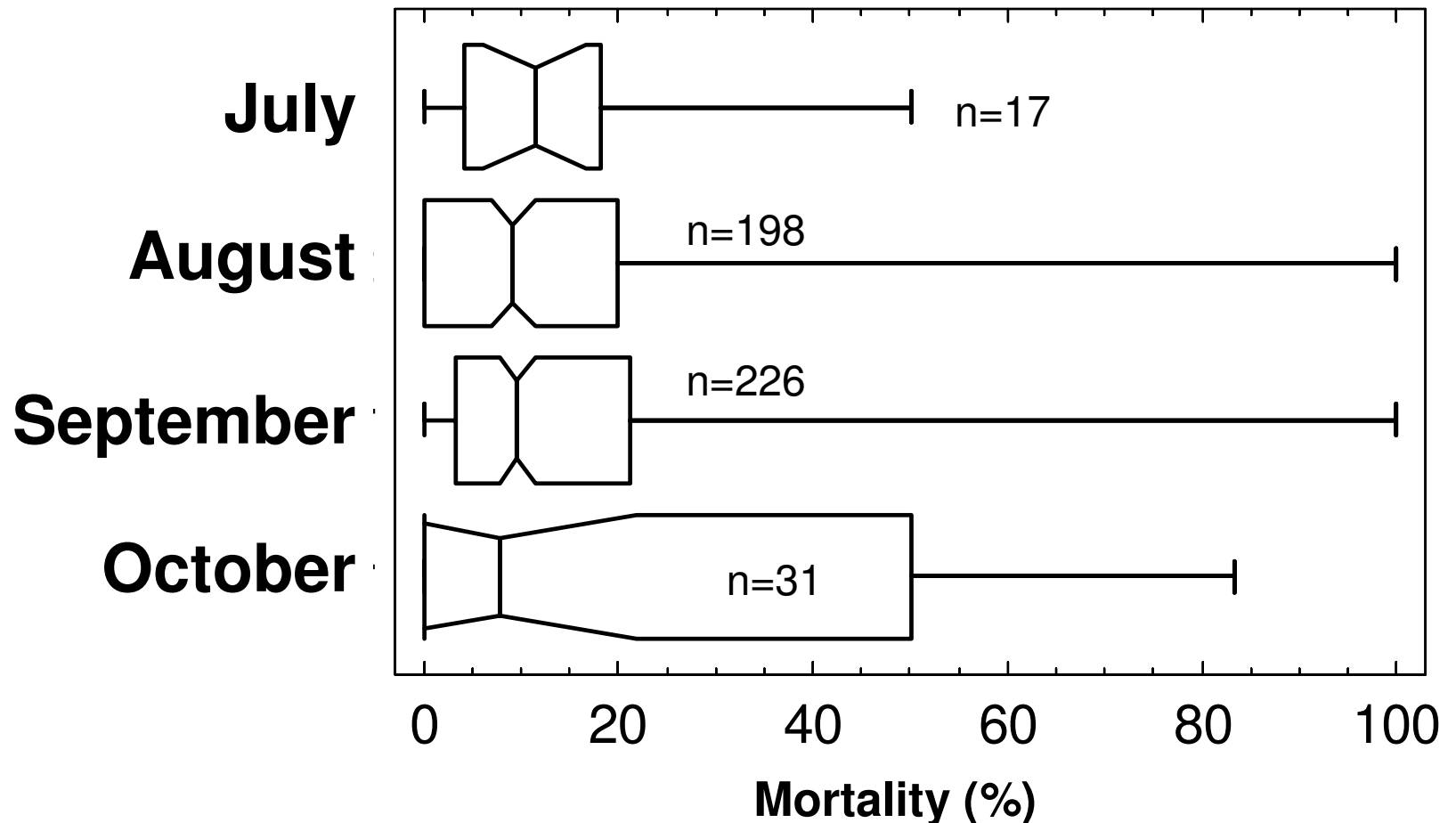
Colony losses in Austria

- **2007/08 Type of winter food:** Kruskal-Wallis $p > 0,05$



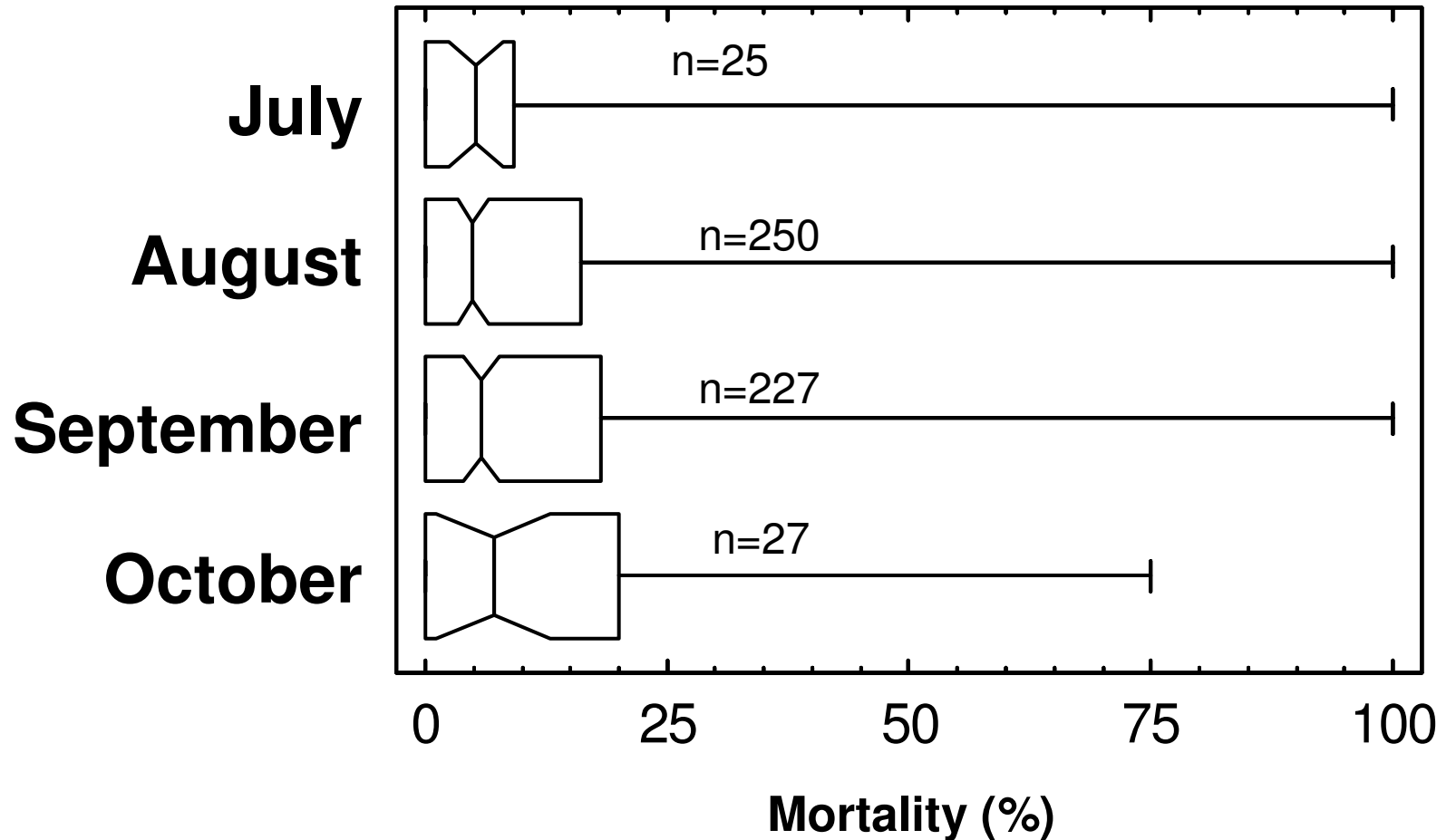
Colony losses in Austria

- **2007/08** Date of last winter feeding: Kruskal-Wallis $p > 0,05$



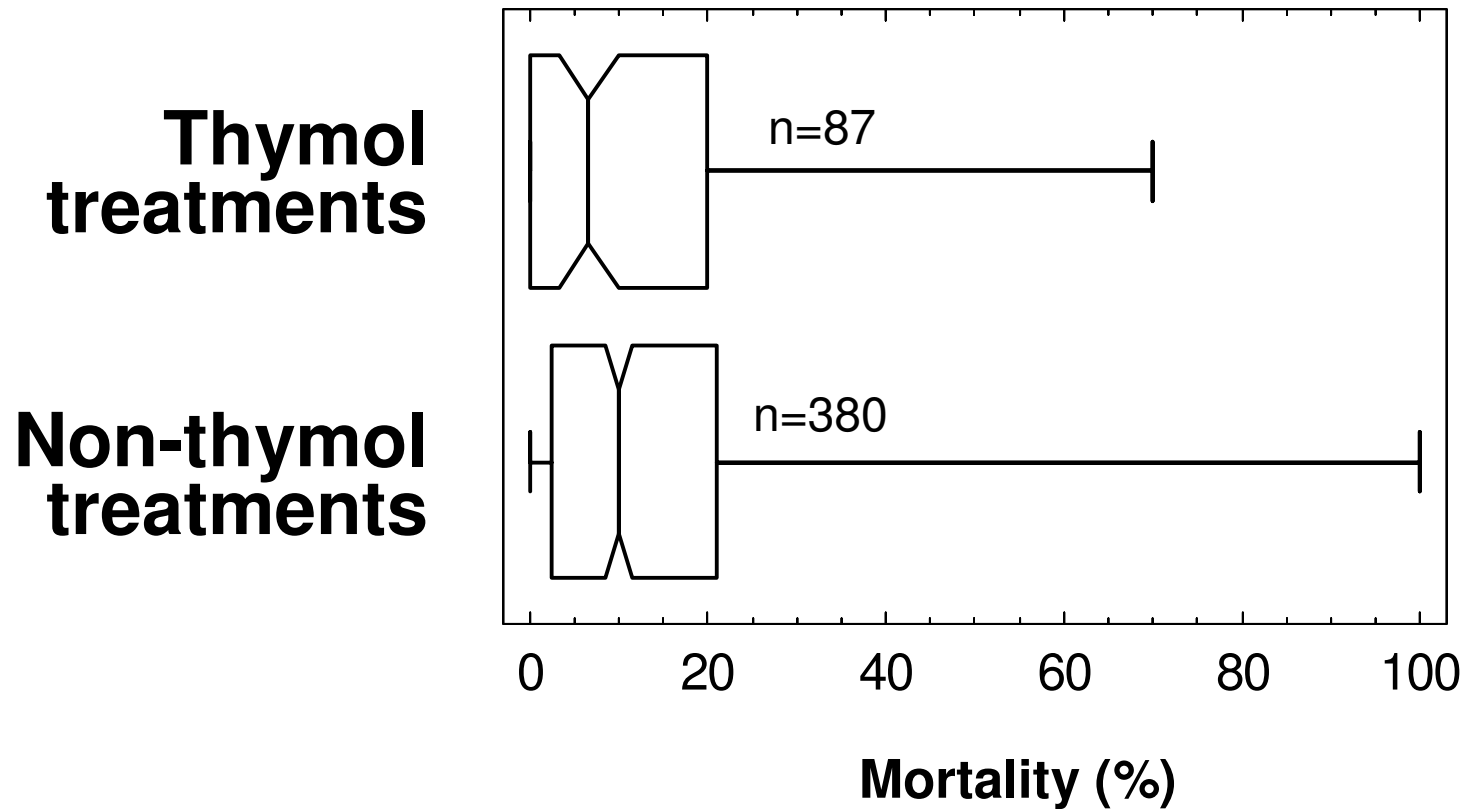
Colony losses in Austria

- **2008/09 Date of last winter feeding:** Kruskal-Wallis $p > 0,05$



Colony losses in Austria

- **2007/08 *Varroa* treatment:** Mann-Whitney $p > 0,05$



Colony losses in Austria

- **2007/08 *Varroa* treatment:** Mann-Whitney $p > 0,05$

